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ABSTRACTS

The IEA-EEF European Congress of Epidemiology 2012: Epidemiology for a Fair and Healthy Society

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Epidemiology for a fair and healthy society: Euroepi 2012

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Epidemiology is an exciting science that provides the way to formulate intelligent questions and often responses to understand the dynamics of health and disease in the communities. Bridging different methods and fields of enquire the ultimate interest of epidemiology is the ability to make the well known distance from the bench side to the bed side even shorter if it also takes the way to the population side and back.

As times are changing also epidemiology seems to follow: from communicable diseases to non-communicable diseases, from biological determinants to social capital, from cross-sectional thinking to life course approaches, from the reductionist strategy of single agents or single genes to systems biology and systems public health. Thus an extraordinary diverse world of opportunities is born and many different approaches can be tested giving epidemiology new chances.

Any simple descriptive exercise in epidemiology can show us that iniquities in health are a main challenge faced by human societies. In the 1990 the median age at death was five years for those living in sub-Saharan Africa and seventy-five for those living in what was then called the established market societies. This is an essential hallmark of what can be a claim for a universal human right to health or, as Jonathan Wolff put it, the beginning of an "exercise in cautious idealism" (1), and probably the most interesting confront that epidemiologists have ahead of them: working for a fair and healthy society, especially in societies and at times of crisis. And all societies and times face crisis!

The European Epidemiology Conference that takes place in Porto, Portugal, from 5 to 8 September 2012 brings together research findings, scientists, clinicians and public health practitioners from 45 countries addressing, from multiple perspectives, the most important methodological and substantive findings that build up the health debate through the eyes of epidemiology.

On behalf of the Organizing Committee we sincerely hope that this meeting, and all these presented and published abstracts, might be a privileged moment to share knowledge and an opportunity to make the epidemiological contribute even sounder, particularly regarding the making of evidence to inform action.

1. Wolff J. The human right to health. W.W. Norton & Company, Inc. 2012

Abstract submission and evaluation

Abstracts by country

Country	Submitted abstracts		Accepted abstracts		Accepted as oral communication	Accepted as poster
	n	%	n	%	n	n
Albania	3	0.4	2	66.7	1	1
Argentina	2	0.3	0	0.0	0	0
Australia	3	0.4	2	66.7	1	1
Austria	2	0.3	2	100.0	0	2
Belgium	3	0.4	2	66.7	1	1
Bosnia and Herzegovina	2	0.2	2	100.0	1	1
Brazil	152	23.0	99	65.1	13	86
Bulgaria	1	0.2	0	0.0	0	0
Canada	4	0.6	4	100.0	1	3
Croatia	5	0.8	5	100.0	0	5
Cyprus	3	0.4	3	100.0	1	2
Denmark	16	2.4	14	87.5	10	4
Egypt	1	0.2	1	100.0	1	0
Estonia	2	0.3	2	100.0	0	2
Finland	4	0.6	4	100.0	3	1
France	13	2.0	11	84.6	3	8
Germany	28	4.1	25	89.3	18	7
Greece	5	0.8	5	100.0	1	4
Iran	10	1.1	7	70.0	0	7
Ireland	3	0.4	2	66.7	1	1

Country	Submitted abstracts		Accepted abstracts		Accepted as oral communication	Accepted as poster
	n	%	n	%	n	n
Israel	3	0.4	3	100.0	0	3
Italy	44	6.7	40	90.9	13	27
Japan	2	0.3	2	100.0	1	1
Latvia	1	0.2	0	0.0	0	0
Lithuania	8	1.2	6	75.0	1	5
Luxembourg	1	0.2	1	100.0	0	1
Macedonia FYR	2	0.2	1	50.0	0	1
Mali	1	0.2	1	100.0	0	1
Morocco	3	0.4	1	33.3	0	1
Netherlands	4	0.6	3	75.0	3	0
New Zealand	1	0.2	1	100.0	0	1
Norway	14	2.1	13	92.9	4	9
Poland	13	2.0	13	100.0	5	8
Portugal	228	34.6	196	86.0	39	157
Republic of Korea	2	0.3	2	100.0	0	2
Romania	2	0.3	2	100.0	0	2
Russian Federation	1	0.2	1	100.0	1	0
Serbia and Montenegro	6	0.9	5	83.3	0	5
Spain	28	4.2	25	89.3	8	17
Sweden	13	2.0	11	84.6	7	4
Switzerland	2	0.3	2	100.0	1	1
Thailand	2	0.3	2	100.0	0	2
Turkey	2	0.3	2	100.0	0	2
United Kingdom	14	2.1	11	78.6	5	6
United States of America	2	0.3	2	100.0	2	0
Total	**661**	**100.0**	**538**	**81.4**	**146**	**392**

Abstracts by topic

Topic	Submitted abstracts	
	n	%
Aging	32	4.8
Birth Cohorts	17	2.6
Cancer	39	5.9
Cardiovascular diseases	37	5.6
Child's Health	56	8.5
Clinical epidemiology	17	2.6
Communicable diseases	20	3.0
Communication in health	3	0.5
Environmental epidemiology	24	3.6
Ethics	1	0.2
Gender and health	6	0.9
Health education	15	2.3
Health Services	28	4.2
Health surveys	13	2.0
HIV/AIDS	14	2.1
Immigration	6	0.9
International health	9	1.4
Mental health	21	3.2
Methods in Epidemiology and statistical analysis	21	3.2
Molecular and genetic epidemiology	6	0.9
Mortality	19	2.9
Nutrition and Lifestyles	73	11.0
Occupational Health	19	2.9
Other chronic diseases	19	2.9
Outbreaks and Alerts	5	0.8
Pharmacoepidemiology	9	1.4
Quality of life	8	1.2
Reproductive health	24	3.6
Social inequalities / Vulnerable groups	34	5.1
Spatial Epidemiology	14	2.1
Surveillance	14	2.1
Teaching and training	5	0.8
Translational epidemiology	1	0.2
Tuberculosis	15	2.3
Vaccines	8	1.2
Violence	9	1.4
Total	**661**	**100.0**

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Programme overview

Time	**Wednesday, 5**	**Time**	**Thursday, 6**	**Friday, 7**	**Saturday, 8**
8.30–16.30	Pre-congress courses and meeting	8.30–10.00	Oral Communications	Oral Communications	Oral Communications
		10.00–10.45	**Coffee and Poster Session**	**Coffee and Poster Session**	**Coffee and Poster Session**
		10.45–11.30	**Keynote Lecture**	**Keynote Lecture**	**Keynote Lecture**
		11.30–13.00	Oral Communications	Oral Communications	**Closing Ceremony**
					Plenary Session
		13.00–14.00	**Lunch**	**Lunch**	
		14.00–16.00	Thematic Sessions	Thematic Sessions	
		16.00–16.30	Coffee	Coffee	
17.00–19.00	**Opening Ceremony**	16.30–17.15	**Keynote Lecture**	**Keynote Lecture**	
	Plenary Session	17.15–18.15	Oral Communications	Oral Communications	
		18.30–19.30	General Assembly of The Portuguese Association of Epidemiology	Young Epidemiologists Meeting	
	Welcome reception		**Concert**	**Congress Dinner**	
	19.00 h		21.00 h	20.00 h	

Detailed scientific programme

Wednesday, 5th September

Time	Hall 2	Hall 3	Hall 4
	PRÉ-CONGRESS COURSE	**PRÉ-CONGRESS COURSE**	**PRÉ-CONGRESS COURSE**
	Ethics, solidarity and public health	**Pharmacoepidemiology and Risk Management**	**New epidemiological perspectives for health workforce planning**
	8.30–16.30 h	12.00–16.30 h	12.00–16.30 h
17.00–19.00	**OPENING CEREMONY**—Plenary session **Auditorium**		
	THE MILLENNIUM DEVELOPMENT GOALS AND BEYOND: CHALLENGES FOR EPIDEMIOLOGISTS		
	Cesar Victora, President of the International Epidemiological Association, Universidade Federal de Pelotas, Brazil		
	WHAT EPIDEMIOLOGY'S PAST CAN TELL US ABOUT ITS FUTURE?		
	Alfredo Morabia, Professor of Epidemiology, Columbia Mailman School of Public Health, New York, and City University of New York, USA		
	Jorge Sampaio, High Representative for the United Nations Alliance of Civilizations and U.N. secretary general's special envoy to halt TB, Portugal		

Thursday, 6th September

Time	Auditorium	Hall 2	Hall 3	Hall 4
8.30–10.00	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 1.1: Perinatal and child health I	**OC 1.2: Environmental epidemiology**	**OC 1.3: Time trends in health outcomes and risk factors**	**OC 1.4: Pharmacoepidemiology I**
10.00–10.45	Coffee and Poster Session			
10.45–11.30	**EPIDEMIOLOGY AND BIG SCIENCE: COHORTS IN EPIDEMIOLOGICAL RESEARCH**			
	Albert Hofman, Professor and chair of epidemiology, Erasmus Medical Center, Rotterdam, The Netherlands			
11.30–13.00	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 2.1: Cancer I	**OC 2.2: HIV/AIDS**	**OC 2.3: Aging**	**OC 2.4: Pharmacoepidemiology II**
13.00–14.00	Lunch			
14.00–16.00	*Thematic Sessions*	*Thematic Sessions*	*Thematic Sessions*	*Thematic Sessions*
	TS 1.1: ACHIEVING MORE EFFECTIVE TRANSLATION OF EPIDEMIOLOGIC FINDINGS INTO POLICY WHEN THE FACTS ARE NOT THE WHOLE STORY	**TS 1.2: NEW FRONTIERS OF EPIDEMIOLOGY**	**TS 1.3: ARE BIRTH COHORTS REALLY INCREASING EPIDEMIOLOGICAL KNOWLEDGE?**	**TS 1.4: ENVIRONMENTAL AND MOLECULAR EPIDEMIOLOGY**
16.00–16.30	Coffee			
16.30–17.15	**PHARMACOEPIDEMIOLOGY: ENSURING PUBLIC HEALTH BENEFITS OF MEDICINES**			
	Hubert G. Leufkens, Utrecht Institute for Pharmaceutical Sciences (UIPS) and Dutch Medicines Evaluation Board (MEB), The Netherlands			
17.15–18.15	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 3.1: Child and adolescent health	**OC 3.2: Tobacco**	**OC 3.3: Cancer II**	**OC 3.4: Maternal health**
18.30–19.30		**General Assembly of The Portuguese Association of Epidemiology**		

Friday, 7th September

Time	Auditorium	Hall 2	Hall 3	Hall 4
8.30–10.00	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 4.1: Inequalities and health	**OC 4.2: Occupational health**	**OC 4.3: Nutrition and health promotion**	**OC 4.4: Cardiovascular diseases**
10.00–10.45	Coffee and Poster Session			
10.45–11.30	**LEARNING FROM OUR NEIGHBORS: CROSS-NATIONAL COMPARISONS OF PERINATAL HEALTH**			
	Jennifer Zeitlin, Epidemiological Research Unit on Perinatal Health and Women's and Children's Health and INSERM (Institut national de la santé et de la recherche médicale), France			
11.30–13.00	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 5.1: Young Epidemiologists Session	**OC 5.2: Respiratory diseases**	**OC 5.3: Lifestyles**	**OC 5.4: Perinatal and child health II**
13.00–14.00	Lunch			
14.00–16.00	*Thematic Sessions*	*Thematic Sessions*	*Thematic Sessions*	
	TS 2.1: NEW EU DATA PROTECTION REGULATION PROPOSAL AND THE IMPACT ON EPIDEMIOLOGICAL WORK	**TS 2.2: BEYOND THE BASICS STATISTICS IN EPIDEMIOLOGY**	**TS 2.3: WHERE NEXT FOR PERINATAL EPIDEMIOLOGY IN EUROPE**	
16.00–16.30	Coffee			
16.30–17.15	WHAT ARE THE MOST CITED BOOKS OF EPIDEMIOLOGY & BIOSTATISTICS IN THE PAST 50 YEARS?			
	Miquel Porta, IMIM—Hospital del Mar Research Institute, Universitat Autònoma de Barcelona and Professor, IMIM—Hospital del Mar Research Institute and School of Medicine, Universitat Autònoma de Barcelona, Spain			
17.15–18.15	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 6.1: Methods in Epidemiology and statistical analysis	**OC 6.2: Sleep and health**	**OC 6.3: Migration and health**	**OC 6.4: Health services**
18.30–19.30		**Young Epidemiologists Meeting**		

Saturday, 8th September

Time	Auditorium	Hall 2	Hall 3	Hall 4
8.30–10.00	*Oral Communications*	*Oral Communications*	*Oral Communications*	*Oral Communications*
	OC 7.1: Infectious diseases	**OC 7.2: Mortality**	**OC 7.3: Obesity**	**OC 7.4: Cancer III**
10.00–10.45	Coffee and Poster Session			
10.45–11.30	**EXPERIENCES FROM THE PARADISE OF REGISTER-BASED STUDIES ON CANCER EPIDEMIOLOGY**			
	Eero Pukkala, Professor in Public Health and Epidemiology, Director of Statistics, Finnish Cancer Registry, Institute for Statistical and Epidemiological Cancer Research, Finland			
11.30–12.15	**EVIDENCE AND INDEPENDENCE IN TACKING DECISIONS ON PUBLIC HEALTH POLICIES**			
	Ildefonso Hernandez Aguado, Professor of Preventive Medicine and Public Health, Head of the Department of Public Health, History of Science and Gynecology, Universidad Alicante, Spain			
12.15–13.30	**CLOSING CEREMONY**—Plenary session			

Oral communications

6th September 2012

Time: 8.30–10.00

Oral Communications Session 1.1. Perinatal and child health I

OC 1.1.1

The preterm birth prediction: recurrence risk of preterm birth in Northern Tanzania: a registry-based study

Michael Johnson Mahande, Anne Kjersit Dalveit, Gunnar Kvaale, Blandina Theophil Mmbaga, Joseph Obure, Rachel Manongi, Rolv Terje Lie

Kilimanjaro Christian Medical College, Moshi, Tanzania; Department of Public Health and Primary Health Care, University of Bergen, Norway; Centre for International Health, University of Bergen, Norway; Norwegian Institute of Public Health, Norway; Department of Obstetrics and Gynaecology, Kilimanjaro Christian Medical Centre, Moshi, Tanzania

Background Preterm birth is a major clinical problem associated with perinatal morbidity and mortality and long-term life consequence. It remains a public health problem in developing countries, particularly in sub Saharan Africa. Studies in developed countries indicated high recurrence risk of preterm birth in subsequent pregnancies. Little is known about recurrence preterm birth in developing countries including Tanzania.
Objective To study the recurrence risk of preterm birth in the second pregnancy among women with a prior singleton preterm birth in their first pregnancy in the northern Tanzania.
Design prospective cohort birth-registry study.
Setting Medical birth registry, Kilimanjaro Christian Medical Centre.
Participants 19,811 women who delivered their first singleton between 2000 and 2008 were studied. Mother hospital numbers was used to link siblings with their biological mothers, and these women were followed to their second pregnancies to 2010. We excluded multiple deliveries, referrals from rural areas for various medical reasons and first deliveries between 2009 and 2010. Women who had preterm birth (<37 gestational weeks) in their first pregnancy formed an exposed cohort and those who had term births formed unexposed cohort. Recurrence risk of preterm birth was estimated using log-binomial regression for known confounding factors.
Main outcome measure relative risk and recurrence risk of preterm birth.
Results Recurrence of preterm birth was 2.7 times (95 % CI: 2.1–3.4) higher among women with previous preterm birth compared with women who had term births. Preeclampsia, low birth weight, cesarean section delivery, induced labour and stillbirth in the first pregnancy were associated with increased risk of preterm birth recurrence. The women with previous preterm births were more likely to continue to the second pregnancy compared to those who had term births in the first pregnancy (25 vs.19 %).
Conclusions Preterm birth in the first pregnancy is a strong predictor for preterm birth recurrence in the subsequent pregnancies. These findings are useful for clinicians in designing better prenatal care programs especially for counseling women with previous preterm birth who plan to continue for the next pregnancy and early identification of women at high risk of preterm recurrence. The current study has provided important information for future research directions in sub-Saharan African.

OC 1.1.2

Prenatal exposure to Ramadan is associated with smallness and thinness in adulthood: results from a large Indonesian population based study

Reyn Van Ewijk, Rebecca Painter, Tessa Roseboom

Institute of Medical Biostatistics, Epidemiology and Informatics, University Clinic Mainz, Germany; Department of Obstetrics and Gynaecology, Academic Medical Center, Amsterdam, The Netherlands

Background A growing body of evidence suggests that maternal diet during pregnancy can lead to permanent alterations to physiology and metabolism of the fetus (1). Such permanent alterations can increase the risk of disease in later life (2). It is unknown whether maternal intermittent fasting during Ramadan has long term effects on the offspring's body composition.
Objectives Objective of this study is to assess how prenatal exposure to Ramadan affects later body size.
Methods Using data from the Indonesian Family Life Survey on 14,120 men and women aged 18+, we compared body mass index (BMI), weight and height of Muslims who had, versus had not been in utero during Ramadan. We used information on overlap between Ramadan and gestation, but were uninformed about whether mothers had actually fasted. Our "intent-to-treat" approach implicitly assumes that all pregnant Muslims who could, did fast during pregnancy. This avoids several types of bias, but underestimates the true Ramadan effect to the extent that not all mothers fasted (3). We also performed the same analyses for Indonesian non-Muslims, who experience the same factors coinciding with Ramadan (natural catastrophes, general lifestyle changes, holidays), except for those related to Ramadan observance itself, to assess whether the associations were due to Ramadan observance itself, or to coinciding factors.
Results Adult Muslims who had been in utero during Ramadan were slightly thinner than not-exposed Muslims (adult BMI after adjustment for relevant covariates: -0.32 kg/m^2 (95 % CI -0.57 to -0.06)). Effects were found for those exposed in various periods of gestation. Effects of Ramadan on BMI were mainly due to effects on weight, but not height. However, those conceived during Ramadan also had smaller statures (0.80 cm shorter than not-exposed Muslims). Among non-Muslims these effects were absent.
Conclusions This study suggests that Ramadan during pregnancy may have lasting consequences for adult body size of the offspring.

References

1. Gluckman PD, Hanson MA, Bateson P et al. Towards a new developmental synthesis: adaptive developmental plasticity and human disease. Lancet 2009;373(9675):1654–1657.
2. Barker DJP. Fetal origins of coronary heart disease. BMJ 1995;311:171–174.

OC 1.1.3

Determinants of infant hospital readmission within 30 days the postbirth discharge: a cohort study in the Lazio region, Italy

Sara Farchi, Francesco Franco, Domenico Di Lallo, Gabriella Guasticchi

Public Health Agency, Lazio region

Background Previous studies have shown that early postbirth discharge of healthy newborn could have an effect on the risk of hospital

newborn readmission. An appropriate length of stay of the mother and her babies should be useful to allow the identification of early problems and to allow the family to be prepared to care for the baby. It is also important to understand determinants of readmission in order to identify high risk mothers and to pay attention to them.

Objectives The aim of this analysis is to observe the proportion and determinants of infant hospital readmission within 30 days the post-birth discharge.

Methods A cohort population-based study was conducted on all at term newborns to mothers resident in Lazio region, who were born in 2009 (from January to October), and discharged at home from the hospital (*N = 26,382*). The source of data was hospital discharge files of Lazio region, Italy. Hospital readmissions within 30 days of the discharge were identified using the patient ID. The following predictors of readmission were examined using multilevel logistic regression: gestational age (37–41 weeks), gender, mother's place of birth (Italy, industrialised countries, non industrialised countries), maternal education (none-primary and junior secondary school vs. secondary school-university degree), age (less then 20, 21–30, 31–40, more than 40 years) and parity (nulliparous vs. multiparous), maternal place of residence (Rome, Outside Rome), type of delivery (vaginal vs. caesarean), month of birth, at individual level and the hospital at aggregate level.

Results The proportion of infants who were readmitted to the hospital at least once within 30 days of postbirth hospital discharge was 2.21 %, with perinatal jaundice as the leading cause (20.1 % of readmissions). Risk of readmission was lower for infants who were at higher gestational age, who were born to highly educated mothers (OR: 0.81; 95 % CI: 0.68–0.98), who were born between May and October. Gender, maternal age and place of birth, type of delivery showed only non significant association.

The 12 % of the total variance was explained by the variability between hospitals.

Conclusions Gestational age is strongly associated to newborn readmission also within term babies, indicating that 37 weeks newborns need attention in their care and discharge. Also mother's education is a predictor of hospital readmission. At aggregate level, hospital characteristics are strongly associated with newborn hospital readmission. The knowledge of factors explaining hospital variability is important in order to reduce this negative event.

OC 1.1.4

Is late fetal death risk partially explained by inadequate prenatal and intrapartum care?

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Background Late fetal deaths constitute almost half of perinatal mortality in developed countries. However, the understanding of factors contributing to the phenomenon of stillbirths is not satisfactory. It seems that more studies aiming at better recognition of late fetal deaths as seen from different perspectives should be performed.

Objectives The objective of this study was to investigate geographical patterns of late fetal mortality in Poland using data from all 379 administrative areas of middle level (poviats).

Methods The geographical patterns were based on Polish birth certificates for the period 2007–2009, aggregated according to the maternal place of residence. Areas were stratified based on quartiles, frequentists' approach and Bayesian approach. Additionally, for the year 2009, Poisson regression was estimated with the number of singleton fetal deaths as outcome variable and explanatory variables defined as living in area with a hospital at a given level of perinatal care adjusted for gestational age and maternal educational level (n = 408,607). Separate models were evaluated for total, prepartum and intrapartum late fetal deaths and gestational age subgroups.

Results The observed geographical patterns suggest, that in areas which are far from local administrative capitals (present or past), late fetal death rate is higher than in areas closer to such centers. Poisson regression has revealed that living farther from facilities at the tertiary or secondary level of maternity care, together with lower educational level, increases the risks of prepartum and intrapartum fetal death at or above 32 weeks GA, although the shapes of these relationships are slightly different. In comparison to administrative regions with tertiary care, relative risk of prepartum fetal death at or above 32 weeks GA was 1.2 in areas surrounding regions with tertiary care units, 1.1—in areas with secondary care units, 1.3—in areas surrounding regions with secondary care units and 1.4—in areas farther from regions with tertiary or secondary care units (p for trend = 0.012, adjusted analysis). Relative risks for intrapartum late fetal deaths at or above 32 weeks GA were 3.2, 4.0, 4.5 and 6.0, respectively (p for trend = 0.002, adjusted analysis). Stillbirts before 32 week of GA were not affected neither by an access to high level maternity care nor by the maternal educational level.

Conclusions The analyzed data suggest that there is a potential for some improvements in organization of prenatal care at the community level aiming at decrease of late fetal deaths, despite lack of full understanding of pathophysiology of stillbirths.

OC 1.1.5

Weight and length/height trajectories in a Portuguese birth cohort during the first 4 years of life: the Geração XXI study

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Background Children who gain weight rapidly during early life are at higher risk of obesity later on. Most studies approximate height or weight growth velocity by the difference between two measures using the average growth over the period, rather than estimating trajectories from multiple measures of growth.

Objective To model individual trajectories of weight and height in early childhood in a Portuguese birth cohort.

Methods Geração XXI included 8,647 infants, recruited between April 2005 and August 2006. Four years after birth, the whole cohort was invited to our clinic and 7,458 were assessed. Mothers were asked to bring their child health book in order to abstract data regarding measurements of the child's weight and length/height from birth to the current age. 2,076 children without child health book data and 100 twins were excluded. After these exclusions analyses were conducted on 5,282 children who contributed a total of 101,723 measurements of weight and 86,936 of length/height. There was a median of 10 measurements (IQR: 5–16) of weight and 8 measurement of height (IQR: 4–12) per child. Growth was estimated from birth up to the age of 70 months. Growth trajectories for each child were estimated using linear spline random effects models (MLwiN version 2.24). Fractional polynomials were first used to find the best fitting growth trajectory and identified the best fitting spline knots at 10 days, 3, 12 and 36 months for weight and 3, 12, and 36 months for length/height, for each sex.

Results The model for weight predicted the following means (standard deviations): in girls at birth 3.11 kg (0.40), birth to 10 days 0.42 kg/month (0.64); 10 days to 3 months 0.87 kg/month (0.16); 3–12 months 0.40 kg/month (0.09); 12–36 months 0.22 kg/month (0.05); > 36 months 0.19 kg/month (0.05); in boys the means (standard deviations) were 3.22 kg (0.43); 0.52 kg/month (0.70); 0.99 kg/month (0.17); 0.41 kg/month (0.09); 0.22 kg/month (0.05); 0.18 kg/month (0.05) for the five growth periods, respectively. Corresponding values for length were [mean (standard deviation)]: in girls at birth 48.3 cm (1.86), birth to 3 months 3.79 cm/month (0.22); 3–12 months 1.70 cm/month (0.17); 12–36 months 0.90 cm/month (0.08); > 36 months 0.53 cm/month (0.02); in boys: 49.0 cm (1.94); 4.12 cm/month (0.22); 1.80 cm/month (0.18); 0.88 cm/month (0.07); 0.51 cm/month (0.02) for birth and the four growth periods, respectively.
Conclusions This was the first description of longitudinal growth in the Portuguese population. The use of these models allows the exploration of determinants of growth as well as the assessment of associations between early growth and later outcomes.

OC 1.1.6

Allergic diseases from birth to early adulthood: Results from the German MAS birth cohort*

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Background Asthma, allergic rhinitis and atopic eczema are the most common chronic childhood diseases in Europe but longitudinal patterns from birth up to adolescence and adulthood have rarely been described in prospective studies.
Objectives We aimed to evaluate frequencies and longitudinal patterns of allergic diseases from birth to young adulthood based on 20 years of follow-up of the MAS birth cohort.
Methods For this multi-centre birth cohort a total of 1,314 newborns were recruited in 5 German cities in 1990. Doctor's diagnoses and symptoms of allergic diseases as well as medication were assessed by ISAAC-based questionnaires at 19 time points during 20 years of follow-up. Specific immunoglobulin E in serum against aero- and food allergens were measured in blood samples taken during clinical visits at 8 time points. The results presented account for risk-enriched sampling at birth and loss to follow up.
Results Out of all recruited subjects, 942 (72 %) participated at the 20 year follow-up. Raw lifetime prevalence of doctor's diagnosed asthma (females/males) was 12.1/14.0 %, allergic rhinitis 20.8/21.7, and atopic eczema 30.6/33.3 during the first two decades of life. Puberty onset asthma was more common in girls, with incidence at 15 years of 2.4/1.1 %. Atopic eczema started mostly during preschool age, whereas onset in early school age or adolescence was rare, with yearly incidences below 0.3 % for both sexes. Detailed frequency of disease subtypes based on onset and progression as well as typical symptoms, use of medication, and allergen specific immunoglobulin E will be presented.
Conclusion This is the first multi-centre European birth cohort to record longitudinal patterns of allergic diseases up to the age of 20 years. New onset of asthma, allergic rhinitis and atopic eczema was rare after the age of 15 years.

* To be presented at Thematic Session 1.3.

Oral Communications Session 1.2. Environmental epidemiology

OC 1.2.1

Effect modification by summer heat on the association between short-term ozone exposure and mortality in 9 Japanese cities

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Background Ambient ozone has been linked to premature mortality among the elderly in Japan, but little is known about the effect modification by heat during summers when high concentration of ozone is often observed. Given the wide latitude of Japan, regional difference of such effect modification is also unknown.
Objectives This study explores the modifying effect of summer heat on the association of ambient ozone and daily mortality among the elderly in nine large Japanese cities.
Methods A total of 714,488 natural deaths among the 65 year-olds and over during April to September, 2002–2007 were included in a time-series analysis. Study locations encompassed nine cities from the north to the southwest of Japan. Heat indicator was constructed from full-year temperature-mortality thresholds estimated using piecewise log-linear model. The 95th percentile of the 2-day mean temperature was used for cities whose models did not converge. Acute effects of heat, 3-day average of daily maximum 8-h ozone concentration, and their interaction were estimated using over-dispersed Poisson regression. Adjustment was made for temporal component, 2-day mean of temperature, and particulate matter (aerodynamic diameter <2.5 μm). City estimates were combined using random effects model and their sensitivity to smoothing strategies, measurement metrics, and heat definitions was also examined.
Results Combined city effect estimates suggest significant adverse effects of heat and ozone, but not the interaction term. Modification of ozone effect by heat was observed in the north-most city of Sapporo where temperature thresholds were the lowest. In this city, the rate ratio for ozone-heat interaction was 1.017 (95 confidence interval [CI]: 1.006, 1.029), 1.016 (95 % CI: 1.006, 1.027), and 1.018 (95 % CI: 1.008, 1.027) for total, cardiovascular, and respiratory mortality, respectively. When temperature threshold was replaced with the 95th percentile of 2-day mean temperature, interaction remained significant only for total mortality at 1.006 (95 % CI: 1.004, 1.012). The *I*-squared for heat effects ranged from 54 to 72 % depending on mortality outcome. Interaction terms were sensitive to heat cut-offs, but not to the degree of freedom for the smoothing splines of time or the daily maximum 1-h temperature.
Conclusions Heterogeneity of heat effects among the cities and the significant synergistic effect of heat and ozone observed in the northern island suggest the need to consider regional differences when assessing the health impact of ozone and heat in Japan.

OC 1.2.2

The trigger effect of 21st May 1997 earthquake on hospital admissions for acute myocardial infarction in Northern Portugal

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Background The association between cardiac events and the experience of an earthquake is known for a long time and was reported worldwide. However, few studies examined the effects over non-fatal episodes such as hospital admissions (HA) especially after mild seisms. Among the latest earthquakes felt in Continental Portugal, only one is known to have caused deaths attributed to heart attack, the 21st May 1997 earthquake (5.3 magnitude; intensity VII).
Objective The purpose of the present work is to evaluate if the 21st May 1997 earthquake caused an increase in HA due to AMI (acute myocardial infarction) to test the hypothesis that even moderate earthquakes raise cardiac morbidity.
Methods *Study area*: Although the earthquake was felt in the entire northern Portugal, were only considered the places where it reached an intensity of IV (minimum perceived for almost everyone). Consequently, the study area comprised 59 municipalities with 1,703,030 residents, considered the exposed population. *Data*: Information from the National Hospital Discharge Register was used. Only HA with a primary diagnosis of AMI, ICD9-CM codes 410.x were included. The 10-days between 22nd and 31st May were examined, as well as eight control periods in the same week days and season in 1997–1999. *Statistical analysis*: Proportions of HA for AMI from the national total number were computed in the affected area for the ten-days after the earthquake and for the control periods. Binomial non-parametric test for proportions was used for comparisons.
Results The absolute ($n = 37$) and relative number (Confidence Intervals 95 % CI (18.5 %, 13.7–24.5 %) of HA was higher in 22th–31st May 1997 when comparing with all the remaining time windows. An increase of 61 % A statistical significant difference between the proportion of national HA between 22th and 31st May and for the total control periods was found (18.5, 13.7–24.5 vs. 11.5, 11.1–13.1 [$p = 0.002$]), i.e., a 61 % increase above the expected number of HA was observed.
Conclusion An increased number of HA for AMI was observed after a mild earthquake, a quite frequent phenomenon in Portugal, as in many countries. If even mild earthquakes trigger acute coronary events, policymakers should invest in awareness campaigns and educational sessions in order to avoid unnecessary panic situations.

OC 1.2.3

Climate variations and Salmonella infection in Astana, Kazakhstan: a time-series analysis

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Background Several studies have reported associations between enteric infections and climatic factors, but most of them were conducted in Europe, North America and Australia warranting further research in other settings. The objective of the study was to investigate associations between Salmonella infection and ambient air temperature and precipitation in Astana, Kazakhstan.
Methods Data on all laboratory-confirmed cases of Salmonella infection in the city of Astana from 2000 to 2010 were obtained from the regional infectious diseases surveillance centre. Associations between monthly counts of cases and climatic variables with lags 0–2 were studied by negative binomial regressive models with dichotomous indicator variables for each year and month to control for long-term trends and seasonality. The model was adjusted for first- and second order autocorrelation. "Hockey-stick" models were also applied to logarithmically transformed monthly counts to detect a threshold of the effect of mean temperature on monthly counts of Salmonella infection to ensure comparability with the European studies.
Results We observed a linear association between the number of reported cases of Salmonella infection and mean monthly temperature with lag 0 across the whole range of temperatures. An increase by 1 °C was associated with a 5.3 % (95 % CI: 2.1–8.6) increase in the number of cases in the same month. An increase in precipitation by 1 mm was associated with a 0.5 % (95 % CI: 0.02–1.0) increase in the number of cases of Salmonella infection 2 months later. No thresholds were detected by the "hockey-stick" models for either temperature or precipitation.
Conclusions Higher temperatures are associated with higher monthly counts of Salmonella infection in Astana, Kazakhstan. Moreover, higher precipitation was associated with higher counts of salmonellosis 2 months later. Potential mechanisms behind the associations will be discussed. The results may have implications for the future patterns of enteric infections in the Republic of Kazakhstan related to climate change.

OC 1.2.4

Dampness and moulds in relation to respiratory and allergic symptoms in children: results from phase two of the International Study of Asthma and Allergies in Childhood (ISAAC phase two)

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Background and objectives Many studies report that damp housing conditions are associated with respiratory symptoms. Less is known about mechanisms and possible effect modifiers. Studies of dampness in relation to allergic sensitization and eczema are scarce. We investigate these aspects in the Phase Two of the International Study of Asthma and Allergies in Childhood.
Methods Twenty-eight cross-sectional studies of 8–12-year-old children (totalling 46,051 participants) used the standardized methodology of Phase Two of the International Study of Asthma and Allergies in Childhood (ISAAC). Symptoms of asthma, rhinitis and eczema, as well as residential exposure to dampness/moulds were ascertained by parental questionnaires. Skin examination, hypertonic saline bronchial challenge and skin prick tests were performed. In stratified subsamples (total 1,175 children), dust was sampled and analysed for house dust mite (HDM) allergens and endotoxins. Random effect models for meta-analysis were used to calculate combined odds ratios.
Results Current exposure to dampness was more common for wheezy children (pooled odds ratio 1.58, 95 % CI 1.40–1.79) and was associated with greater symptom severity among wheezers, irrespective of atopy. These associations were observed for present exposure and also for individuals exposed earlier in life. A significant ($p < 0.01$) adverse effect of dampness was also seen for cough and phlegm, rhinitis and reported eczema but not for examined eczema, nor bronchial hyperresponsiveness. HDM sensitization was more common in damp homes (OR 1.16, 1.03–1.32). HDM allergen levels were higher in damp homes and were positively associated with HDM-sensitization but not wheeze. No housing factor acted as an effect modifier, however there was an indication that protective bedding effects are abolished by dampness.
Conclusions A consistent association of dampness with respiratory symptoms is found in both affluent and non-affluent countries, among

both atopic and non-atopic children. HDM exposure and sensitization may contribute, but the link seems to be related principally to non-atopic mechanisms.

OC 1.2.5

Industry and traffic related air pollution and diabetes type two incidence: results from a German cohort study

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Background and objectives Studies investigating the link between long-term exposures to air pollution and incidence of type 2 diabetes mellitus (T2DM) are still scarce. Results regarding nitrogen dioxide (NO_2), a commonly used indicator of traffic-related air pollution, showed a positive relation, whereas no results are available for nitrogen oxide (NO). None of the studies investigated specific contributions from traffic and industry. These points are addressed in this study.
Methods We followed prospectively 3,424 individuals without diabetes at baseline (2000–2003) from the Heinz Nixdorf Recall Study in Germany. First follow-up examination took place in 2006–2008. Residential 365-day average background NO_2 and NO-concentrations preceding baseline examination were estimated using a chemistry transport model (EURAD, 1-km^2 resolution), with additional specification of concentrations attributable to traffic and industry. Effect estimates for total and source-specific pollutants were obtained with Poisson regression adjusting for sex, age, body mass index, education, occupational status, smoking status, physical activity, cholesterol, hypertension and city of residence. In source-specific models, industry- and traffic-specific concentrations of either NO or NO_2 were included simultaneously in the model and incidence rate ratios (IRR) are reported by interquartile range of the pollutant.
Results Interquartile ranges were 9.3–14.7 and 37.0–42.9 $\mu g/m^3$ for total NO and NO_2 concentrations, respectively; 0.5–3.2 and 3.4–5.5 $\mu g/m^3$ for industry and traffic related NO, and 1.1–8.5 and 8.7–12.2 $\mu g/m^3$ for industry and traffic related NO_2, respectively. 309 incident cases of T2DM were observed. Total background concentrations of NO were related with T2DM incidence (IRR: 1.13; 95 % confidence interval: 1.03–1.24), while NO_2 was not (0.94 (0.85;1.05)). Both, industry related background NO and NO_2 were inversely related with the outcome with IRR of 0.74 (0.65;0.85) and 0.75 (0.65;0.86), respectively. On the contrary, there was a positive relation with traffic related concentrations with IRRs of 1.17 (1.06;1.30) and 1.11 (1.00;1.22) for NO and NO_2, respectively. Inclusion of road proximity into the model only slightly attenuated these relations.
Conclusions Different relations with NO and NO_2 as indicators of air pollutants from industry and traffic, respectively, were observed. Urban traffic-related NO and NO_2 background concentrations increased the risk of T2DM, whereas industry-specific NO and NO_2 did not. Causes of the inverse association with industrial background NO_x air pollution remain to be investigated and may be site specific. Possibly, NO and NO_2 act as surrogates for unmeasured toxic traffic-related air pollutants.

OC 1.2.6

Effect of high temperature on pre-term births in Rome, years 2001–2010

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Background The incidence of preterm birth is between 5 and 7 % in developed countries and these figures are increasing, making this problem an important issue for public health. Children who are born prematurely have higher rates of cerebral palsy, sensory deficits, learning disabilities and respiratory illnesses and a higher susceptibility for many health conditions in later life. Recently some studies have shown an effect of high temperature on preterm births, but evidences are still inconclusive.
Our objective is to analyse the effect of high temperature on preterm birth in a 10 years cohort of new-born in Rome.
Materials and methods All singleton live-births in hospitals of Rome, from women residents in Rome, between 2001 and 2010, during the warm season (1st April–31st October) were analysed, excluding caesarean section and congenital malformation (Source of data: Lazio Region Certificate of Delivery Care Register). Births occurred between the 22nd and the 36th week plus 6 days since the date of the last menstrual period were defined as preterm. Exposure was the daily level of maximum apparent temperature (MAT) in the last week before delivery (Airport city station). The shape and lag dimension of the heat-preterm birth relationship was tested using a GAM and a distributed lag model respectively. The effect was evaluated through a Poisson GAM model, with MAT as a linear term, controlling for seasonal and long term trends, day of the week, holidays, and air pollutants (PM10, NO_2, and O_3).
Results A cohort of 77,965 births was enrolled, including 4,272 preterm; of these 3,799 were born between the 33rd and the 36th week of gestation. We analysed data including and excluding births between the 22nd and the 32nd week of gestation to avoid confounding by gestational age. The effect of MAT appears linear when analysed only during the warm season. The percent change increase in preterm births between the 29th and the 36th week of gestation for 1 °C increase in MAT in the last 3 days before delivery is of 1.246 (IC 95 % 0.270–2.230). We didn't find a significant effect for exposure lagged on the last 7 days before delivery, and no independent effect by air pollutants.
Conclusions We found a significant effect of high temperature on preterm birth in a large Italian city. Because of the importance of preterm births in the public health agenda and the lack of conclusive evidence, our results suggest the necessity of a multicenter study to confirm findings with a more representative and powerful sample.

Oral Communications Session 1.3. Time trends in health outcomes and risk factors

OC 1.3.1

Trend of occupational permanent disability in Spain (1992–2010)

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Background Social protection policies aim to improve the health status of workers with permanent disability (PD), replacing the lost income of workers and promoting their reintegration into the job market. In the three last decades, Spain has consolidated its welfare state system.
Objective To describe the trend of the incidence of PD in Spain between 1992 and 2010.
Methods Based on official statistics on PD and the affiliation of workers to the Social Security System (http://www.empleo.gob.es/series/), the annual incidence rate was calculated. For the assessment of trends, we estimated the percentage of annual change in rate and its 95 % confidence interval (95 % CI) assuming a negative binomial distribution of the number of new cases of PD. The existence of two joinpoints (one in 1997 and the other in 2000) was assessed using the same model.
Results We distinguish three sub-periods based on the analysis of the overall incidence. Between 1992 and 1997, there was an incidence around 75 cases per 10,000 worker-years. This was followed by a three-year period of uniform descent placing the incidence at 52 cases per 10,000 worker-years between 1998 and 2000. Finally, from 2000 until 2010, the incidence remains constant around 50 new cases per 10,000 worker-years.
Conclusions The trend of the incidence of PD in the last 20 years has decreased in Spain. This result could be due to improvement in the management of PD (better training of medical evaluators, applying more clearly medical criteria on evaluations, control of fraud, etc.). However, this trend could change, especially considering the progressive ageing of the workforce and changes in Spain's retirement age (increasing to 67).

OC 1.3.2

Combined effect of risk factors on type 2 diabetes development during 8 years in the historical cohort of the Brisighella Heart Study

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Background Brisighella Cohort study started in 1972 and till 1984 has remained an observational study. In future years, some changes had been brought to the design by initiating a nutritional interventional study and a pharmacological trial on high-risk patients (1986–1988; 1988–1993). In 1996 the Brisighella Heart Study Group lead it back to an observational design. As in other cohort studies (e.g.Framingham Heart Study) which investigate cardiovascular diseases, the relevance of associated risk factors in order to determine the risk in developing diseases has increased and induced some researchers to find the way to build risk score for different conditions.
Objectives To define the probability of developing diabetes in untreated adults, in a certain period of time (from 1996 to 2004) in order to establish a classification of different conditions combined, statistically associated with higher risk.
Methods This study used data from Brisighella Cohort study in an historical cohort design. We collected, from the cohort data pool, the data regarding the cohort individuals which include anthropometric measures (BMI) and information on metabolic and cardiovascular risk factors parameters (Blood pressure, Fasting glucose, Hdl and Triglicerides) and diagnosis (defined diabetes as non hyperglicemic/not therapy in 1996 and hyperglicemic or in therapy in 2004). We created different variables in order to establish the association of these combined risk factors in a vision of contributing to the arousal of diabetes (one condition or a case mix of two or three different conditions). At the end we performed a multivariate logistic regression, stratified by gender, where combinations of risk conditions at the beginning of observation (1996) and diabetes diagnosis (2004) were correlated.
Results In our cohort study, show an increased probability of 24 % in developing diabetes when BMI in men is higher. Fasting glucose (over 100 mg/dl) is also a predictive factor of developing diabetes after 8 years (OR 13,29; $p = 0{,}000$) and furthermore fasting glucose, if associated with high blood pressure (defined by >130/85 mm Hg or receiving therapy), increase the probability of developing this metabolic disorder by several times (WOMEN: OR 40,34; $p = 0{,}001$; MEN: 26,507; $p = 0{,}005$). Other combined variables were revealed statistically insignificant.
Conclusions These data confirm that BMI and fasting glucose are important predictors for the development of diabetes in our patients. What we add is that the combination with high blood pressure can double or more the probability of acquiring the disease depending on gender. More data on score risk determination will be pursued.

OC 1.3.3

Patterns and trends of tobacco consumption in the Portuguese population: National Health Survey data 1987–2005

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Background Smoking is a significant risk factor for many diseases, particularly respiratory, cardiovascular and cancer. Describing smoking patterns in the Portuguese population is important for monitoring and planning preventative strategies for this public health problem.
This study aims to contribute to the epidemiological survey of smoking in Portugal using data from the several National Health Surveys.
Objectives Estimate prevalence of smoking and its evolution from 1987 to 2005 according to socio-demographic characteristics.
Methods We used data collected in National Health Surveys 1987, 1995, 1998 and 2005. For each survey, gender specific smoking prevalences were computed for different age-groups. Also, age-standardized prevalences were estimated (direct method, standard European population), stratified by occupation, educational degree, professional category, marital status and region.
Results Smoking prevalences suggest cohort effects both in men and in women, with higher estimates moving from survey to survey to older age-groups.
Removing the effect of the different age structures smoking prevalence in men is decreasing between periods, from 35.2 % [95 % Confidence Interval (95 % CI): 34.2; 36.2] for 1987 to 28.8 % (95 % CI: 27.8; 29.9) in 2005/2006. Unemployed (from 40.6 in 2005 to 51.6 in 1995), divorced (range: 44.9 % in 2005 to 58.4 % in 1987), resident in Alentejo (range: 34.1 % in 2005 to 46.8 % in 1987), non-qualified workers (range: 35.8 % in 1995 to 42.7 % in 1987) had the highest smoking prevalences. No trends were observed by occupation, marital status, region and professional category. Similar analysis in women showed that smoking prevalence is increasing: 6.0 % (95 % CI: 5.6; 6.4) in 1987 to 11 % (95 % CI: 10.6; 11.9) in 2005/2006. Across the different surveys we observed that divorced (range: 19.3 % in 1987 to 27.4 % in 1995) and resident in Lisbon (range: 9.2 % in 1987 to 16.0 % in 2005) women had the highest smoking prevalences. No trends were observed in marital status and region. In the educational level we observed a trend, where a higher prevalence was verified for the high education in 1987 (23.4 %) and 1995 (18.2 %) switching for high school in more recent surveys

(18.9 and 14.8 % for 1998 and 2005, respectively). No patterns were identified for the remaining variables in either gender.
Conclusions Smoking trends have some differences in Portuguese men and women irrespective of age effects, with prevalence diminishing among men and rising among women. Smokers profiles also differ by gender, with highest tobacco consumption in men observed in more deprived socio-economical groups, while in women the pattern seems to affect more affluent groups.

OC 1.3.4

Long-term trends in prevalence of overweight, lipid disorders, physical inactivity and smoking in the Siberian adolescent population (1989–2009)

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Control of CVD risk factors since adolescence may reduce cardiovascular events in adulthood. During the 1990s Russian population has been exposed to major political, economic and social changes accompanying by remarkable changes in health status. The aim of the study was to evaluate 20-year trends in prevalence of overweight (OW), lipid disorders, physical inactivity and smoking among adolescents aged 14–17 in Novosibirsk (Russia).
Methods Five cross-sectional surveys of representative samples of school children aged 14–17 were carried out in Novosibirsk in 1989, 1994, 1999, 2003 and 2009. This time period included years of Russian reforms. Total sample was 3,311 (46 % males) with response rate 88–92 %. The program was unified for all screenings. Body mass index (BMI, kg/m^2), blood total cholesterol (TC) were measured. Self-reported smoking (1 cigarette a week and more), low physical activity (2 h/week of exercises and less) and sedentary behavior (weekly screen time) were obtained. To define OW the sex- and age-specific BMI cutoffs recommended by IOTF (2000) were used. High TC registered if TC >/= 200 mg/dl (NCEP-peds, 1992).
Results The schedule of OW prevalence among Russian adolescents during 1989–2009 looked like U-curve with a lowest point in 1999. At the period 1989–1999 the frequency of OW significantly decreased in both gender groups (from 14 to 4 %, $P < 0{,}001$). At the next period (1999–2009) the prevalence of OW considerably increased, mostly among boys: from 4 to 13 % ($P < 0{,}001$). Average levels of TC for 20 years significantly decreased from 22 to 5 % in boys and from 32 to 6 % in girls ($p < 0{,}001$). Levels of low physical activity (2 h/week and lower) were stably high during all period in boys (49–62 %) and girls (83–79 %) with tendency to rising. At 2009 average screen time (computer, Internet, TV, video) were 18 h/week. Prevalence of regular smoking among boys during the period linearly declined from 45 to 18 %, among girls—from 19 to 13 %.
Conclusion Significant changes in CVD risk factors profile during the last two decades in adolescent population of Siberia were revealed. It indicates on considerable influence of socioeconomic reforms on some health parameters and lifestyle in adolescence.
Grant RHF #12-06-00878.

OC 1.3.5

Trends in prevalence of diabetes mellitus and mean fasting glucose levels in Portugal (1987–2009): a systematic review

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Background Worldwide, the prevalence of diabetes is rising, paralleling the increasing adiposity and population ageing. However, time trends markedly differ by geographic region, making locale-specific data essential for public health planning.
Objective To assess time trends of the prevalence of diabetes and mean blood glucose in Portuguese adults through a systematic review.
Methods The search strategy included Pubmed search and manual screening of bibliographic references of review articles. Selection was independently performed by two researchers, applying pre-defined criteria. Studies addressing only type 1 diabetes, relying on random blood glucose or not presenting sex-stratified data were excluded. Sex-specific linear regression models of the prevalence of diabetes and mean fasting glucose, with survey year and participants' age as independent variables, were used to predict estimates of the outcomes at 30, 50 and 70 years of age, in 1987 and 2009 (period for which data was obtained).
Results Twenty-seven eligible studies were identified. Twelve studies presented data on the prevalence of objectively defined diabetes, 14 on the prevalence of self-reported diabetes and 6 on mean blood glucose. The proportion of objectively defined diabetes ranged from 0.0 % (defined as fasting glucose >110 mg/dL) among male university students in 2005 to 40.0 % (defined as fasting glucose ≥126 mg/dL and/or previous diagnosis and/or under treatment) among women aged 85–93 years, in 1999–2003. Time trends of this outcome could not be quantified due to the heterogeneity of the diagnostic criteria. For self-reported diabetes there was a significant interaction between year and sex. Between 1987 and 2009, its prevalence remained approximately constant in young adults, while it more than doubled in middle-aged and more than tripled in older adults, in both sexes. In 2009, the estimated prevalence of self-reported diabetes assuming a mean age of 50 years was 8.7 % [95 % confidence interval (95 % CI): 7.2–10.3] and 9.1 % (95 % CI: 7.9–10.4), among women and men, respectively. Between 1987 and 2009, mean fasting glucose increased 7 mg/dL (95 % CI: 1–12) among women and 8 mg/dL (95 % CI: 0–19) among men. In 2009, the estimated mean fasting blood glucose assuming a mean age of 50 years was 96 mg/dL (95 % CI: 93–99) and 103 mg/dL (95 % CI: 101–104), among women and men, respectively.
Conclusions The prevalence of self-reported diabetes and mean fasting glucose increased in the last two decades, demanding for effective strategies to reverse this tendency and to manage the increasing number of diabetics in the Portuguese population.

OC 1.3.6

Trends in incidence of cardiovascular diseases by social class in Sweden 1987–2010

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Background There are concerns about persistent significant socioeconomic differences in incidence of cardiovascular diseases in Sweden. Simultaneously the incidence in Myocardial Infarction (MI) and stroke has declined over time for all age groups as well as for men and women. It is unclear whether morbidity and mortality rates from cardiovascular diseases have been declining among all social groups to the same extent.

Objectives This study will analyze temporal trends in MI and stroke incidence between different social classes in Sweden. Temporal trend over 23 year-period are reported from 1987 to 2010.
Method We used a national-wide matched cohort study, based on all Swedish residents born 1932–1960. Nearly three million individuals were included. The follow-up period was from 1987 to 2010 (ages 30–78 years). The socioeconomic status was retrieved from 1980 or 1990 Population and Housing Censuses. Socioeconomic groups were classified in Low Manual, High Manual, Self-Employed, Low Non-Manual and High Non-Manual. The Swedish Hospital Discharge Register and Cause of death register were used to identify incidence cases in MI and Stroke. Totally 139.739 MI and 76.460 Stroke incidence cases was observed by using ICD-9 and ICD-10 codes. Flexible parametric survival models were used to analyze the temporal trends during the follow-up period. These models can provide estimates of both the absolute incidence rates as well as the incidence rate ratios comparing the different socioeconomic groups with respect to their risk for MI and Stroke. The analyses were stratified for both age and sex. In all models, attained age and calendar year were used as the underlying time scales.
Preliminary results There was a general decline in MI and Stroke incidence between 1987 and 2010 for both Swedish men and women. There were large socioeconomic differences in MI and Stroke incidence, which were stable over time. The socioeconomic differences in MI and Stroke incidence, increased with age for both men and women. The MI and Stroke incidence over time was similar for the High-Manual, Self-Employed and Low Non-Manual groups. Most pronounced social differences in MI and Stroke incidence were observed between the High Non-Manual and Low Manual groups.
Preliminary conclusions The incidence of MI and Stroke decreased over time period for both men and women. However, the large socioeconomic differences in MI and Stroke incidence persist over time. The absolute difference in incidence of MI and Stroke over time period is substantial between socioeconomic groups in both men and women.

Oral Communications Session 1.4. Pharmacoepidemiology I

OC 1.4.1

Folic acid use in France: results from the National Perinatal Survey 2010

Béatrice Blondel, Julie Tort

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Background Randomized controlled trials have shown that folic acid supplementation in the periconceptional period reduces the risk of neural tube defects. In many European countries, professional organizations and public agencies recommend folic acid supplementation before pregnancy. In France, several health agencies have recommended supplementation since 2000, but information campaigns targeting women and health professionals have been limited.
Objectives Our aim was to assess the proportion of women who took folic acid supplementation before pregnancy or in the first month and to study factors associated with supplementation in France.
Population and methods We used data from a representative sample of mothers who gave birth in France in 2010 (N = 14,700). Women were interviewed in the postpartum ward about their sociodemographic characteristics, prenatal care and preventive behavior. We asked women whether they had taken folic acid and when they began (before pregnancy, in the first month or later). The determinants of folic acid uptake were studied with bivariable and multivariable analyses.
Results 23.1 % (95 % CI: 22.4–23.8) women said that they used folic acid before or in the first month of pregnancy. Uptake was strongly associated with maternal characteristics. Women having their first birth were more likely to use folic acid (aOR = 2.4, 95 % CI: 1.9–3.1) than those who already had four births or more. Women with a higher educational level, who had fertility treatments and who stopped contraceptive use to become pregnant took folic acid more often than other women. Chronic diseases, which require medical care in general or specifically for pregnancy, were also associated with higher uptake.
Conclusion Folic acid use in the periconceptional period was low in France in 2010 compared to other countries such as The Netherlands where educational campaigns were undertaken. It is difficult to catch and inform women before pregnancy. However, as most pregnancies are planned in France, information could be provided by medical doctors during family planning consultations.

OC 1.4.2

Prevalence of vitamin/mineral supplement use in the elderly: results from the KORA-age study

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Background Despite the ongoing debate on positive and negative health effects of dietary supplements, only few information are available on the prevalence of dietary supplement use in the general population, especially for elderly subjects.
Objective The aim of the present study was to examine the prevalence of vitamin/mineral supplement use in a population-based sample of subjects aged 65 years and older.
Methods The KORA-Age cohort study includes 9,197 persons who were born before the year 1944 and participated in previous KORA (Cooperative Health Research in the Region of Augsburg) studies. Data on supplement use are available from a gender and age-stratified random sample of the cohort consisting of 1,079 persons, who took part in a physical examination in the years 2008/2009. Participants were asked to bring the packages of all supplements ingested during the last 7 days prior to the interview to the study center. Supplement use was ascertained together with medication intake using a database supported computer software. Drugs containing vitamins or minerals were included in the present analyses.
Results Of the total study population, 46.9 % reported taking at least one supplement containing at least one vitamin or mineral. The prevalence was significantly higher among women (56.5 %) than among men (37.2 %), $p < 0.001$. The most commonly supplemented vitamins were vitamin D (21.0 %) and vitamin E (19.6 %) in women and vitamin E (12.5 %), vitamin C and folic acid (each 10.1 %) in men. The most frequently used minerals were magnesium and calcium in women (31.6, 23.1 %) and men (18.8, 8.2 %). The mean number of preparations taken per person was 1.6 (range 1–8). Of the subjects who reported taking supplements, 86.6 % took these regularly. Among regular users the highest median intakes, expressed as percentage of the German Dietary Reference Intakes, were reported for vitamin B_6 (women: 225 %, men: 243 %). Excessive intakes (equal or above the European Tolerable Upper Intake Levels) were observed especially for magnesium. 20.7 % of the women and 31.6 % of the men who took

magnesium supplements regularly exceeded the Tolerable Upper Intake Levels.
Conclusion A high proportion of the general population aged 65 years and older in Southern Germany uses supplements. The prevalence is especially high for supplements containing vitamin D, vitamin E and magnesium. The intake of supplemental vitamin D is recommended in elderly under insufficient sun exposure whereas negative health effects of high doses of supplemental vitamin E were reported.

OC 1.4.3

Evidence based drug therapy after acute myocardial infarction: adherence and spatial differences in Rome and in the Lazio region

Lisa Bauleo, Ursula Kirchmayer, Mirko Di Martino, Nera Agabiti, Danilo Fusco, Valeria Belleudi, Silvia Cascini, Luigi Pinnarelli, Massimo Arcà, Marina Davoli

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Background Evidence based guidelines in cardiovascular secondary prevention recommend treatment with anti-platelets, beta-blockers, ACE-inhibitors/sartans and statins (=EB therapy). Previous analyses gave evidence for differences in adherence for age and gender in the Lazio region.
Objectives We estimated the prevalence of EB therapy in a cohort of AMI patients and investigated potential spatial differences in adherence.
Methods From hospital discharge records a cohort of residents in the Lazio region discharged after AMI in 2006–2007 was enrolled. Only patients who did not experience death or readmission during follow-up were included (N = 6,168). Follow-up was defined as the 6 months after discharge. Exposure was residence at discharge in one of the local health districts. Analysis referred to the city of Rome alone (19 small health districts), and, separately, the entire Lazio region, in which Rome was included considering 5 larger health districts, plus 7 health districts in the remaining areas of the region. EB therapy was the outcome, and information was retrieved from the regional outpatient drug claims register. Adherence was defined through the proportion of days covered (PDC) with 75+ % cut-off. For each health district the percentage of patients adherent to EB drug therapy was calculated, and the quintiles of the age standardised distribution were mapped. Analysis was repeated considering a 24 months observation period (N = 5,796), and stratifying by gender.
Results In the city of Rome and the Lazio region, adherence to EB therapy was generally poor and heterogeneity in adherence between health districts was observed in both areas, with higher variability in Rome (4.9–22.6 %), than in the Lazio region (6.7–14.1 %). Best adherence was observed in Rome and close surroundings, where percentages were double (5th quintile: 13.1–14.1 %) with respect to the poorest areas (1st quintile: 6.7–7.6 %). Considering a longer observation period, adherence generally dropped (Lazio: 4.3–9.2 %), but spatial differences persisted, with changing patterns and increasing differences between districts in Rome (2.8–23.7 %). Spatial heterogeneity was confirmed for both genders, with higher variability among females (e.g. Lazio: females 2.4–16.1 %, males 6.4–13.8 %) and these results were robust also for the longer observation period.
Conclusions In contrast with the continuous increase of cardiovascular drug prescribing, which is observed in all Italian regions, the present study gave evidence for remarkable underuse of EB therapy in secondary prevention in Rome and Lazio. Efforts should be made to increase adherence to EB therapy in general, and to overcome spatial heterogeneity.

OC 1.4.4

Control of patients under oral anticoagulant therapy and its determinants

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Background Vitamin K antagonists are oral anticoagulants with proven effectiveness in preventing and treating thromboembolic events. However, their use in clinical practice is a huge challenge because: the narrow therapeutic range, the considerable inter/intra-individual dose–response variability, influenced by many factors (sociodemographic, behavioral, genetic, clinical or therapeutic), the potential interactions with drugs and dietary supplements, and the need of frequent monitoring of international normalized ratio (INR). Having regard to these specificities, therapeutics success requires ongoing patient education and communication between patients and caregivers, and is certainly influenced by patients' characteristics.
Objective To evaluate the proportion of controlled patients under oral anticoagulant therapy (OAC), and to identify potential determinants of the control.
Methods Cross sectional study carried out in 15 community pharmacies of Lisboa e Vale do Tejo region (October 2007–June 2008).

Information was gathered by interview based on a structured questionnaire applied to adult pharmacy users presenting a prescription containing an oral anticoagulant for self-consumption (20 per pharmacy).
Results A total of 241 individuals were enrolled in the study. Mean age was 66.77 years (range 18–88) and 55.2 % were men. Warfarin was taken by 88 % of the sample (22 % taking acenocumarol). On average, patients monitor their INR every 1.15 month (68.1 % monthly). The mean value of INR was 2.40 (minimum-0.96; maximum-4.90). Most patients (62.3 %) were controlled (INR 2–3). Regarding the place where monitoring was performed: 45.8 % in hospital, 20.6 % in clinical analysis laboratory, 17.2 % in health-centers, 2.5 % in pharmacies and 1.3 % at home. It was found that 15.8 % of patients didn't know for what they were taking OAC and 22.4 % which was the clinical condition behind the use of this drug. With respect to knowledge of side effects and therapeutic range of INR, 44.8 and 49.8 % of patients, respectively, showed ignorance on this matter. Finally, 23.7 % of the patients didn't know what to do if INR was too high or low. No association was found between age and sex and level of knowledge and the INR control ($p > 0.05$). Therapy duration for over 1 year showed to be positively associated with INR control, whereas polymedication, pharmacological interaction and concomitant use of antiplatelet drugs showed to be negatively associated with this parameter.
Conclusions Despite the fact that the patients showed a low level of knowledge regarding OAC, most of them were controlled. The low proportion of patients that monitor their INR at home or in pharmacies demonstrates that the use of portable coagulation devices is not yet being fully exploited in Portugal.

OC 1.4.5

Disagreement between physician estimates and self-reported adherence to antiretroviral treatment in HIV1 infected adults

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Background The evaluation of patient adherence to antiretroviral therapy (cART) by the physician is a common but difficult feature in the management of HIV infection. Misclassifications may impact the progression of HIV infection/AIDS.
Objectives To determine the agreement between adherence estimates by the physician and self-reported by the patient, and to explore factors associated with disagreement between methods.
Methods Cross-sectional analysis from the baseline evaluation of a prospective cohort study, with systematic sampling of HIV-1 infected adults prescribed cART and followed at the Infectious Disease Outpatient Clinic (Hospital de Santa Maria, Lisbon), with at least one medical appointment during the 3-month enrolment period (May–July 2011). Questionnaires were applied to both patients and their physicians. Each patient was classified as highly, mildly or weakly adherent by his physician and according to the Adults AIDS Clinical Trials Group (AACTG) Adherence questionnaire. Agreement between methods was measured, and kappa statistics were calculated. Hypothesis of association between independent variables (sociodemographic, behavioural and clinical) and adherence disagreement were tested ($\alpha = 5$ %).
Results A total of 184 subjects were included. The majority were Portuguese (94 %) caucasian (91 %) males (75 %). The mean $\pm$ SD age was 48 $\pm$ 10 years, and 50 % of the participants had over 139 months of antiretroviral therapy, while 33 % presented AIDS. The agreement between methods to evaluate nonadherence was low (weighted kappa = 0.098), with physicians showing tendency to overestimate adherence (90.5 % of total disagreement). Living alone, being addicted to any kind of drugs, alcoholism (chronic and binge-drinking), stress, depression and anxiety were associated with disagreement. Adherence overestimation was linked to no recommendations for therapeutic adherence from the physician.
Conclusions Adherence misclassifications by the physician are apparently common and could have an impact on the management of HIV infection. The need of standardized and evidence based nonadherence risk classification seems necessary. Self-report seems easy to apply and has moderate to high specificity for nonadherence, and a classification that includes this method is apparently suitable. Further investigations with other methods of assessing non-adherence are needed to better characterize this question.

OC 1.4.6

Oral contraceptive use among women 18–49 years: a population telephonic survey

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Universidade Federal de Minas Gerais

Oral contraceptive use among women 18–49 years: a population telephonic survey. Women in reproductive age represent about 30 % of the Brazilian population. The government actions directed to them are related to family planning ensuring full and open access to information and contraceptive methods. The Ministry of Health adopts clinical eligibility criteria (clinical procedures based on scientific evidence to guide the prescription and use those methods to ensure their effectiveness and to avoid damaging the health of those who use them) developed by the World Health Organization. Among methods for family planning, the world's most used is the oral contraceptive (OC).
Objectives To know the using patterns of contraceptives in Brazilian women and evaluate the appropriate appliance of oral contraceptives according to the clinical eligibility criteria that ascertains the occurrence of iniquities.
Methods A population-based epidemiological study, which used cross-sectional descriptive secondary data from the VIGITEL, which collects information on risk factors for chronic diseases and protection of the population through telephone interviews. It considers the Brazilian female population 18–49 years, living in 26 state capitals and the Federal District, attended by *fixed* telephone line on the year 2008 (n = 21,074). The estimations were calculated by observing an accuracy range of 95 %. Educational level was used as proxy of socioeconomic status for the inequities analysis. The inappropriate use of oral contraceptives is defined with the presence of the following factors: hypertension and/or smoking in women over 35 years and/or cardiovascular disease. Due to the probabilistic nature of the samples, weights were used for correction and inferences. All information is self reported and informed consent was replaced by verbal consent.
Results Approximately 70 % of women use some kind of family planning method, the OC is the most used (33.8 %). Hypertension (15.5 %) and smoking (12.2 %) were the main risk factors for cardiovascular disease presented in OC users and are also contraindications for its use. The contraindicated use was present in 13.1 % of the population. There were no differences in the proportions between regions, however the analysis by capital, thirteen of them are above the overall national average and almost all of them concentrated in the Northeast and North region. The inappropriate use of OC is higher among women with less education. Its proportion in Brazil should be considered high, therefore, actions related to health education and smoking cessation should be prioritized, especially on those specific group.

Time: 11.30–13.00

Oral Communications Session 2.1. Cancer I

OC 2.1.1

Model-based patterns in stomach cancer mortality across countries

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Background The decline in stomach cancer mortality observed in the last decades has been attributed to non-planned interventions, and we may hypothesize that different countries share the same overall pattern of variation.
Objectives To identify patterns in the time trends of stomach cancer mortality across countries and to propose an overall model for the declining trend, based on the temporal relation between the patterns identified.
Methods Stomach cancer mortality rates were retrieved from the World Health Organization mortality database for 62 countries, by sex and age-groups between 35 and 74 years. Sex-specific mixed models were used to identify time trends in age-standardized rates (world reference). All models included random terms by country for the intercept, slope, quadratic and cubic terms. Model-based clustering was used to identify the patterns.
Results Three patterns, similar for men and women, were identified for the period 1980–2010. Pattern 1 presented the highest median mortality rates in 1980 (men: 81.5/100,000; women: 34.4/100,000)

and lowest median gross national income (GNI) per capita (men: 6,770 US$; women: 5,950 US$), and pattern 3 the lowest median rates (men: 24.4/100,000; women: 12.4/100,000) and highest GNI (men: 43,590 US$; women: 43,110 US$); pattern 2 had intermediate values. The decrease in mortality rates varied between −1.6 %/year (pattern 1) and −2.8 %/year (pattern 3) in 1980–1995. During 1995–2010, the decrease varied from −2.2 %/year (pattern 1) to −2.8 %/year (pattern 3) in men and from −2.7 %/year (pattern 1) to −2.5 %/year (pattern 3) in women. Assuming that the patterns characterized by the highest rates precede temporally those with lower mortality, the overlap of model predictions that describe trends in each pattern support a lag of approximately 20 years between adjacent patterns. This was validated by comparison with the observed rates between 1950 and 1980: for countries included in pattern 2 the rates for years <1980 were in accordance to the estimated for 1980–2010 in pattern 1; for pattern 3 the rates <1980 were in accordance to the estimated for 1980–2010 in patterns 1 and 2. The model-based clustering yielded a grouping of the countries according to their patterns in stomach cancer mortality that is distinct from a grouping based on geographical criteria.
Conclusions We propose a model for the variation in stomach cancer mortality with 3 different stages that develop sequentially through a period of approximately 70 years. It may contribute to more accurate predictions of the future trend in countries where rates remain high despite of the decreasing trend.

OC 2.1.2

Implications of mammography screening on breast cancer epidemiology in the population

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Digital Mammography Screening (DMS) was introduced in the north-western part of Germany in 2005. All women between the ages of 50 and 69 years are eligible for a DMS examination every 2 years. We evaluated the impact of the introduction of the DMS program on the epidemiology of breast cancer in the target population.
Methods Breast cancer incidence (invasive: ICD-10 C.50; in situ: D.05) was registered in the region since 2000 by a population-based cancer registry (EKR). We present age-specific incidence rates, comparing women aged 50–69 years (eligibles) with those 30–49 and 70–85 years up to the end of 2010.
Results Invasive breast cancer incidence among eligible women rose substantially after introduction of the DMS program in 2005 (from 276 in 2000/2004 to 385 per 100.000 in 2007/2008) and decreased moderately in 2009/10 (305); likewise, the incidence of in situ breast cancer more than tripled among the eligibles after DMS onset. No such effects were seen in the younger and older age groups of women. These changes were accompanied by marked shifts in the distribution of tumors towards smaller, prognostically more favorable stages. In 2009, and more so in 2010, a decline in the incidence rate of the prognostically tumors of size T2+ of about 30 % was observed. Of note, no such changes were seen in the 30–49 and the 70–85 year old women.
Conclusion Despite a fairly low coverage of about 55 %, the short-term implications of a DMS program on the epidemiological parameters of breast cancer in the population are clearly visible. Together with indicators of DMS performance, these data may be used in the near future to estimate the potential impact of the DMS program for evaluation purposes.

OC 2.1.3

Cancer incidence among Danish Seventh-day Adventists and Baptists

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Background American Seventh-day Adventists have been reported to have lower cancer mortality and incidence than the general population. Adventists do not consume tobacco, alcohol or pork, and many adhere to a lacto-ovo-vegetarian lifestyle. Baptists discourage excessive use of alcohol and tobacco.
Objectives In this study we investigated the incidence of cancer in a large cohort of Danish Adventists and Baptists.
Methods We followed 11,767 Danish Adventists and Baptists in the nationwide Danish Cancer Registry, which contains information on cases of cancer for 1943–2008. Cancer incidence in the cohort was compared with that in the general Danish population as standardized incidence ratios (SIRs) with 95 % confidence intervals (CIs), and within-cohort comparisons were made with a Cox model.
Results Lower cancer incidences were observed for both men (SIR, 70; 95 % CI, 65–75) and women (86; 81–90). The differences were most pronounced for smoking-related cancers such as those of the oral cavity and lung (SIR, 28; 21–37 for men and 35; 25–47 for women). The incidences of other lifestyle-related cancers, such as of stomach, rectum, liver and cervix, were also decreased. In general, the SIRs were lower for men than for women, and Adventists had lower hazard rates than Baptists.
Conclusions Our findings point to the benefits of compliance with public health recommendations and indicate that lifestyle changes in the population might change the cancer risks of individuals.

OC 2.1.4

Rates and phenotype of interval cancer subtypes in breast cancer screening programs in Spain: INCA project

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Background Rates and phenotype of different subtypes of interval cancer (IC) according to their mammographic findings have been scarcely reported from population breast cancer screening programs. A retrospective Spanish nationwide and multidisciplinary project started with the aim to estimate rates and determinants of IC as part of performance evaluation to imporve their effectiveness.

Methods Information from women aged 45/50–69, participating in 7 population-based screening programs in Spain between January 2000 to December 2006, was collected. The cohort was followed-up to June 2009 for IC identification. For IC identification, screening programs's databases were linked with poblational and hospital-based cancer registries and active follow up was performed. IC were radiologically classified into 5 subtypes by experienced radiologists following a consensued protocol.
Results Information of 1,509,198 mammographies from 646,339 screened women were included in the analysis. A total of 5,311 breast cancers were detected in the screening process (detection rate 3.48 cancers per 1,000 screened women; 95 % CI: 3.39–3.57) and 1,682 cases were diagnosed in the time period between two screening rounds (interval cancer rate 1.11 ‰; 95 % CI: 1.08–1.19). From the 1,014 interval cancers (60.3 %) that could be radiologicaly classified, 48.5 % (n = 489) were true interval cancer, 23.2 % (n = 235) were false negative, 17.3 % (n = 175) were minimal signs and 11.3 % (n = 115) were occult tumors. The most frequent phenotype in all interval cancers subtypes was luminal A [estrogen and progesterone receptor positive (ER+ PR+)], ranging form 37.9 % in true interval and 55.7 % in occult tumors. The highest Her-2 and triple-negative phenotypes (ER− PR− Her2−) were observed in true interval cancer (15.1 and 20 % respectively), followed by minimal signs (9.8 and 18.2 % respectively), while in false negative were 7.7 and 8.7 % respectively.
Conclusions Cancer detection and interval cancer rates were in the expected ranges. Different proportions of phenotypes were observed in the different subtypes of interval cancers. The study of risk factors of different interval cancers could be useful to improve the efficacy of screening programs and could offer new insights on cancer prevention for specific subsets of women.

OC 2.1.5

Disability-adjusted life years: country-specific estimates for 27 cancers in 12 world regions

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Background In order to aid health care planning, country comparisons that consider both the impact of fatal and non-fatal disease outcomes are valuable summary measures of population health.
Objective We aimed to calculate disability-adjusted life years (DALYs) and its two components—years of life lost (YLLs) and years lived with disability (YLDs)—for 27 cancer sites and for all cancers combined. We estimate these for 184 countries worldwide 12 world regions, taking into account indicators of human development at the global level.
Method YLLs and YLDs were calculated using country-specific estimates of incidence, mortality, life expectancy, duration of disease, age at onset and at death, alongside derived proportions of patients treated and living with sequelae, or considered cured. In the calculation, zero discounting and uniform age weighting were used.
Results An estimated 168.1 million years of healthy life were lost due to cancer worldwide in 2008. Colorectal, lung, breast and prostate cancers were the main contributors to the total DALYs in most world regions, and explained 22–49 % of the total burden from cancer. In Sub-Saharan Africa and Eastern Asia, an additional large burden from infection-related cancers (liver, stomach and cervix) was estimated (30 and 27 % respectively). We observed marked global differences in the cancer profile of DALYs by country and region, however in all countries and for all cancers, YLL are the most important component in DALYs and contributed to over than 90 % of the total burden. Nonetheless, we consistently observed higher YLLs (as a proportion of the total DALYs) in low resource settings.
Conclusions Irrespective of world region, age-adjusted DALYs lost from cancer are substantial. The consistently larger proportions of YLL in lower HDI countries imply that there are marked inequalities in prognosis after cancer diagnosis by level of human development, highlighting the need for radically improved cancer care in low resource countries.

Oral Communications Session 2.2. HIV/AIDS

OC 2.2.1

Portuguese HIV/AIDS in-hospital lethality

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Background The beneficial effects of highly active antiretroviral therapy, increasing survival and preventing the development of an AIDS defining illness, are well established. However the Portuguese annual in-hospital lethality is still higher than the expected. It is crucial to understand the hospitalization behaviour to better allocate resources.
Objectives The aim of this paper is to investigate predictors of in-hospital lethality among HIV/AIDS patients of the Portuguese National Health System. We propose the use of a logistic binomial random effects model for both hospital and patient level characteristics of HIV discharges in Portuguese hospitals from 2007 to 2009.
Methods The data were provided by the Central Administration of Health System and refer to the Portuguese national database of the diagnosis related groups (DRG). Between 1st January 2007 and 31st December 2009 there were 9,257 discharges registered in National Health Service hospitals. For this study we considered only those that met the following criteria: hospitalizations classified under the major diagnosis category 24 created for HIV infections, which incorporates the DRG 700–716; inpatients aged 18 years or older; hospitalizations from hospitals with more than 10 discharges; and all hospitalizations except those for transfers to another hospital (to avoid including the inpatient episode twice). With these criteria, 8,555 hospitalizations were analysed occurring in 41 hospitals.

To evaluate differences between patients who were discharged and patients who died, a binomial random effect model with logit link function was used to study the relationship between explanatory variables and the binary outcome. A normal random effect for the hospitals was included and should be interpreted as differences in hospital quality/performance. Multiple comparisons of hospital effects were done by constructing 95 % confidence intervals.
Results We studied 8,555 hospitalizations, where 14 % result on death. Model estimation show that all the variables are statistically significant at the 1 % level. Taking into account the hierarchical nature of the data, we concluded that, as expected, the probability of dying is significantly greater for men, older patients, urgent admissions, higher number of procedures and diagnoses, pneumonia, and AIDS being the principal diagnosis. The estimates of hospital random effects show some variations in-hospital lethality since there are three hospitals with statistical significant differences from all the others.

Conclusion Our study suggests that all individual factors considered were important to explain the probability of the in-hospital lethality of HIV/AIDS patients and hospitals quality/performance should not be disregarded.

OC 2.2.2

Tuberculosis control in Portugal and resistances to antibiotics: how to interpret multirresistance prevalences in the context of real testing practices?

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Background Effective population tuberculosis (TB) control demands enough cases detection and treatment success. Among factors influencing success, susceptibility of patients' bacilli to antibiotics is obviously crucial. Resistances are a matter for concern: they mean a threat to control and must be monitored. Understandably, drugs susceptibility tests (DST) may be requested by clinicians according to specific patient's characteristics predicting unsuccess, via an increased resistance probability; this leads to finding non-representative resistances numerator-numbers. Understanding such complex image implies breaking-down the conditional decision-chain ending in DST request, and assuming that resistance can be present in non-tested patients, unsuccessful or not. Who are patients in fact tested, how do they distinguish from non-tested ones, how can this help to get a contextualized view of the global resistances profile? Appropriate answers provide: a picture of practice criteria regarding DST performed, a basis for better resistances proportions interpretation, a useful feedback for decision-makers.
Objectives To characterize similarities/dissimilarities in tendency for DST performance in patients' subgroups, in the period 2000–2009; to create a basis for further studies clearing population resistances profiles, through scenarios techniques.
Methods The approach was quantitative; data source: official tuberculosis database. Two subperiods were considered: until 2006 and thereafter. Response variable: undertaking/not DST; explanatory variables: those liable to influence decision to request DST—age, HIV, district incidence, new-case/retreatment, drug addiction, country of origin. After a statistical description, binary logistic regression odds ratios (crude and adjusted) were calculated; this information supports further scenarios setting.
Results Only 35.6 % from total cases (n = 52,757) were tested for both Isoniazide and Rifampicin; out of tested (n = 16,690), 2.37 % were resistant (0.75 % out of total cases). The end resistance image can be distorted if the denominator used is either total cases or tested cases: each identified resistance comes after a sequence of conditional options, from being a patient to having an identified resistance (through being able to provide a specimen and having a DST requested). Adjusted odds ratios evince that age (35–44 = 1.84), sex(M = 1.6), district incidence, and country of origin (foreign = 1.12) may condition the probability of being tested ($p < 0.05$), and these factors behave differently throughout time.
Conclusions Almost all factors, including subperiods, tended to impact DST undertaking significantly, in distinct, complex manners. Improving this knowledge promotes both a selection of appropriate resistance proportions denominators and suitable global results interpretation scenarios; in disease control, further judgments on resistances must take this issue in due account.

OC 2.2.3

Causes of death among people with AIDS in the city of Sao Paulo, Brazil, 1991–2006

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Background Since the introduction of highly active antiretroviral therapy (HAART) the patterns of morbidity and mortality associated with AIDS changed; however, there are only a few studies assessing this issue in Brazil.
Objective To analyze the underlying and associated causes of death among individuals with AIDS, living in Sao Paulo city, before and after the HAART era (1991–2006), and to investigate possible differences according to the district of residence, from 2000 to 2006.
Methods A descriptive study were performed, including all reported cases of AIDS, residents in Sao Paulo city who died from any cause, in three periods: pre-HAART (1991–1996), early HAART (1997–1999) and late HAART (2000–2006) eras. Data sources: Sao Paulo State STD/AIDS Program, and Sao Paulo State Data Analysis Department (SEADE). Causes of death were coded according to the 9th (1991–1995) and 10th (1996–2006) Revision of the International Classification of Diseases. Age-adjusted mortality rates of the underlying causes of death were estimated and descriptive analysis of the underlying and associated causes of death in the study period was performed. Causes of death were classified in AIDS-defining and non AIDS-defining. Residence districts were classified into four groups of homogeneous areas according to the state of Sao Paulo Social Vulnerability Index. Comparisons of the proportions were performed using appropriated statistics.
Results From pre-HAART to late HAART era, non AIDS-defining causes of death increased from 0.2 to 9.6 % ($p < 0.001$); and as underlying causes of death cardiovascular diseases increases from 0.01 to 1.7 % ($p < 0.001$); pneumonia from 0.01 to 1.6 % ($p < 0.001$) and non-AIDS defining cancers, from 0.03 to 1.5 % ($p < 0.001$). Comparing the first with the late period, the main associated causes of death mentioned in death certificates were: pneumonia (25.8 vs. 35.9 %), septicemia (14.5 vs. 33.5 %), cardiovascular diseases (3.0 vs. 10.1 %) and liver disease (2.2 vs. 8.0 %). In the late HAART era, after AIDS, the leading underlying causes of death, according to the district of residence were: non-AIDS-defining cancers in predominantly rich areas; cardiovascular diseases in predominantly middle class area; and aggressions in predominantly poor areas.
Conclusions HAART not only increased survival of people living with AIDS significantly, but also changed the profile of mortality, possibly reflecting the equally important changes in disease patterns. This process was not homogeneous according to the area of residence. The development of public policies to adjust health services to this new scenario of morbidity and mortality of HIV infection is required.

OC 2.2.4

Inequity in early clinical follow-up of HIV+ persons in Brazil, from 2003 to 2006

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Objective To assess proportion and population annual rates of HIV late entry into care, and to identify its correlates at individual and contextual levels.
Methods Data for the period 2003–2006 were obtained from Brazilian public health records. HIV late entry was defined as a case whose diagnosis was made upon death or whose condition was aggravated by AIDS related diseases or whose T-CD4$^+$ cells/mm^{3}count was $\leq$200. An extended criteria raising cell count to $\leq$350 and a stricter criteria lowering cell count to $\leq$100 were also considered. Estimates of prevalence ratio (PR) assessed effects of correlates.
Results Records of 115,369 HIV-positive adults were retrieved. From these 43.6 % (50,358) met the standard criteria, 58.6 % (67.615) the extended criteria, and 17.0 % (19,631) the stricter criteria. The following individual characteristics were found associated with standard late entry: male gender [(PR = 1.33, 95 % CI (1.30–1.35)], age $\geq$60 years [(PR = 1.91, 95 % CI (1.82–2.01)], as well as the following transmission categories: injection drug user [(PR = 1.18, 95 % CI (1.15–1.22)], heterosexual men [(OR = 1.17, 95 % CI (1.15, −1.19)], blood transfusion [(PR = 1.15, 95 % CI (1.01–1.32)], and homo/bisexual men [(PR = 1.04, 95 % CI (1.02–1.07)]. Contextual characteristics included living in less developed and epidemic increasing regions, [(RP North = 1.33, 95 % CI (1.28–1.39)], living in cities with less than 100,000 inhabitants [(PR = 1.08, 95 % CI (1.05–1.11)], and living in cities with low HIV testing provision [(PR = 1.09, 95 % CI (1.05–1.12)]. The overall population rate of late entry was 9.9 per 100,000 inhabitants. Even though men between 30 and 59 years had lower proportional figures within developed regions, they have shown the worst population rates, and accounted for more than half the cases observed.
Conclusions HIV late entry into care occurs mainly in less developed regions where the epidemic is on the rise. Low HIV testing provision increases the proportion late entry and men aged 30–59 years are at higher risk. Neither the extended nor the stricter definitions did substantially change the correlates between late entry and individual e contextual characteristics.

OC 2.2.5

Delay in diagnosis of pulmonary tuberculosis: its determinants

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Background Early diagnosis and the immediate institution of therapy are essential in a program to control tuberculosis, since they reduce the severity of the disease, mortality and transmission in the community. Country-specific determinants of delay must be studied, clearly identified and addressed in order to improve the quality and effectiveness of the national tuberculosis control programmes.
Objective To determine the delay in the diagnosis of pulmonary tuberculosis and to identify associated factors in subjects with confirmed diagnosis of tuberculosis, who were resident in the municipality of Porto (northern Portugal).
Time interval between the onset of symptoms and demand for health care services (*patient delay*) and the time interval between first consultation and start of treatment (*health care delay*) were quantified. For each time interval, the possible determinants of these delays were analyzed.
Methods A retrospective study was performed including all patients living in the city of Porto, with confirmed pulmonary tuberculosis, between 2007 and 2009, consulting the National Tuberculosis Surveillance System (SVIG-TB).
Time delay in diagnosis was analyzed considering the number of days as a discrete variable and dichotomized into "long delay" vs. "no long delay", defined as: 1) "Long patient delay"—if time interval was longer than 21 days; 2) "Long health care delay" if time interval was longer than 7 days. To identify factors independently associated with patient delay and health care delay, univariable and multivariable logistic regression analyses were carried out, with delay times dichotomized as described above.
Results Median time for patient and health care delay was 33 days and 7 days, respectively. More than half of the patients (63.8 %) presented long patient delay and nearly half (47.7 %) had long health care delay. HIV positive patients presented a significantly lower risk of long patient delay (OR_{adj} = 0.44; 95 % CI: 0.24–0.84). Patients older than 65 years (OR_{adj} = 2.33; 95 % CI: 1.16–4.67) and, with negative microscopy (OR_{adj} = 4.48; 95 % CI: 2.48–8.23) had a statistically significant increased risk of long health care delay.
Conclusion Being HIV negative was a risk factor for long patient delay. On the other hand, being older than 65 years and having a negative microscopy were risk factors for health care delay. In spite of this, it was not possible to identify a specific target group as being associated to each delay. Strategies should be directed to general population.

OC 2.2.6

Contact screening in tuberculosis. Can we identify those with higher risk?

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Introduction Contact tracing is part of the tuberculosis (TB) elimination strategy. For its optimization, maximizing available resources, it is important to know which risk factors are associated with a positive screening.
Objectives To identify risk factors associated with a positive screening.
Materials and methods During 2011, contacts of patients with pulmonary TB (sputum, broncho-alveolar lavage or pleural fluid smear or culture positive), followed for screening in a TB reference centre, were questioned about their exposure to the index case. Positive screening was defined as active TB or latent infection. Contacts with exposure in open spaces, with incomplete characterization of exposure, unfinished screening or a past history of TB were excluded. A binomial logistic model was used to analyze the association between infection and potential risk factors of positive screening.
Results We observed 509 contacts of which 359 (153 men, median age: 32 years) were included in the analysis. 76 had a positive screening. Positive screening was associated with a positive sputum analysis of the index case (OR = 2.62, 95 % CI = 1.33–5.14) and with coinhabitance (OR = 3.42, 95 % CI = 1.66–7.07). Each additional year in age of the contact implied an increase in the odds for infection of 3 % (OR = 1.03, 95 % CI = 1.02–1.05) and each additional day of symptoms by the index case, previous to treatment, implied an increase in the odds for infection among his contacts of 1 % (OR = 1.01, 95 % CI = 1.00–1.02). No significant differences were found regarding size and ventilation of the exposure site.

Conclusions This study shows that there is a significant increase in the risk of TB transmission to contacts for every day that the diagnosis of the index case is delayed. Increased risk was also shown for coinhabitants, contacts of older age and the presence of positive sputum smear or culture of the index case.

Oral Communications Session 2.3. Aging

OC 2.3.1

Burden of disability attributable to vertigo in the aged: results from the KORA-age study

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Background Vertigo can be severely disabling, specifically in old age, e.g. adding to the risk of falls, injuries and fractures. Yet, the burden of disability attributable to the presence of vertigo symptoms in the presence of co-morbidities is not known. Recently, an additive hazards model was proposed that combines prevalence of disease along with its impact on disability and allows investigating the contribution of single health conditions to the societal burden of disability.
Objectives The objective of our study is to estimate specific burden of disability attributable to vertigo in aged persons.
Methods The data originate from the MONICA/KORA study. Disability was assessed with the Health Assessment Questionnaire Disability Index (HAQ-DI). Vertigo was assessed with questions from the NHANES balance section. Additive regression was used to model the hazard of developing disability and to estimate attributable prevalence of disability.
Results We analyzed a total of 4,040 persons (51.2 % female) with a mean age of 73.5 years. Disability prevalence was higher in women than men in all age groups. Vertigo was strongly associated with disability (OR = 2.8) and had the highest impact on prevalence of disability among all health conditions (11 % for women and 12 % for men aged 65–69). Falls had an additional constant impact of 4 % for women and 5 % for men. There was a significant sex-specific difference in background hazards and disease effects. The vertigo-specific attributable risk for disability in men remained constant with increasing age, while it decreased in women.
Conclusions Disability prevalence is insufficiently explained by manifest chronic diseases. We could show that the burden of disability independently attributable to health conditions was highest for vertigo, even when accounting for falls and fractures. Current research often neglects the impact of vertigo as a distinct disease entity on disability, specifically in the aged. This underscores the importance of further research on the epidemiology and burden of vertigo in the general population.

OC 2.3.2

Disability free life expectancy in community-dwelling persons aged 65 and above: results from the German KORA-age study

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Background Disability free life expectancy (DFLE) has been included as a potential structural indicator for the European Union. It is not clear if the current gain in life years is also increasing the number of years lived with activity limitation and participation restriction. Although life expectancy of women exceeds that of men by almost 6 years, women seem to live longer with more limitations. It is thus important to monitor the gap between years lived and years lived without disability and understand potential gender differences.
Objectives The objective of our study is to examine DFLE based on a sample of community-dwelling persons aged 65 and above.
Methods Morbidity data originates from the MONICA/KORA study in the region of Augsburg. Disability was assessed with the Health Assessment Questionnaire Disability Index. DFLE tables were obtained applying the Sullivan method on data from the Bavarian State Office for Statistics and Data Processing. The Sullivan method divides the number of person-years into years lived with and without disability by applying disability prevalences.
Results We analyzed a total of 4,117 persons (51.2 % female) with a mean age of 73.6 years. Prevalence of disability could reasonably be estimated up to an age of 89 years. DFLE varied by sex. For a man aged 65 we estimated a life expectancy of 82.6, therefore an expected 17.6 additional years of life, of which 10.5 are disability free years. For women of the same age we estimated an additional 20.7 years with only 7.9 of those to be without disability.
Conclusions We could confirm the gap between quantity and quality of life in old age which was manifestly pronounced in women. Possible explanations for this phenomenon may include biological factors, differences in lifestyle and health care utilization, but also differences in self perception.

OC 2.3.3

Are high levels of dehydroepiandrosterone (DHEA) necessary for old people to maintain cognitive and mental health? Findings from the KORA-AGE study

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Background Dehydroepiandrosterone (DHEA) is secreted by the zona reticularis of the adrenal cortex and is converted into potent sex steroids in peripheral target cells. However, randomized trials in elderly subjects with an age-dependent decrease in DHEA have provided little or no evidence for enhanced mental and physical performance after long-term administration of DHEA. Thus, the widely perceived performance-enhancing activity of DHEA is still more myth than reality. However, there is evidence that low DHEA serum levels—mainly in relation to insulin-like growth factor 1 (IGF-1)—may be associated with impairments in mental health and cognitive functioning.
Study aim We sought to correlate dehydroepiandrosterone-sulfate (DHEA-s) and insulin-like growth factor 1 (IGF-1) serum levels with cognitive and mental health conditions in older subjects from a population-based setting. Data were derived from the KORA-AGE Study conducted in approximately 5,000 older people (≥65 years) in Augsburg, southern Germany. A clinical investigation was performed in a random subsample of >1,000 participants.
Study design Cross-sectional analyses of dehydroepiandrosterone-sulfate (DHEA-s) and insulin-like growth factor 1 (IGF-1) serum levels were performed in participants of the medical examination of

KORA Age (n = 1,079 age 64–94) and associations with cognitive and mental health status were examined.
Results Both IGF-1 and DHEAs levels diminish with age. Significant sex differences were observed in both DHEAs (levels were higher in men compared to women in participants 85 and under, $p < 0.0001$) and IGF-1 (levels were higher in men age 64–69, $p < 0.01$, and age 70–79, $p < 0.005$). Low DHEAs (1st quartile) were associated with impaired cognition ($p = 0.0043$), Parkinson's symptoms ($p < 0.0001$) and depression ($p = 0.012$). Physical activity in older participants was significantly associated with increased levels of both IGF-1 ($p = 0.0034$) and DHEAs ($p = 0.0006$).
Conclusion Age related decreases in the anabolic hormones DHEAs and IGF-1 are related to diminished cognitive and mental health in the elderly population.

OC 2.3.4

Gender-related differences in older patients' dissatisfaction with health care service. Data based on PolSenior National Survey

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Background Elderly patients as a consumers of health care service usually present health needs based on their chronic conditions as well as on acute symptoms but expectations of older patients focus also on psycho-social support. Social barriers in understanding the expectations between older patients and health care service providers could be responsible for presented by older patients feelings of dissatisfaction.
Objectives The aim of the study was to assess gender-related differences in the level of dissatisfaction with health care service in Polish older people.
Methods National survey was performed in the random sample of older Polish population (65 years and over). Study was performed on face to face interview, based on structured questionnaire specially developed for this purpose.
Results Data were collected from 4,834 older citizen of Poland, 2,498 (51.7 %) males and 2,336 females (48.3 %). Average age was 79.3, SD 8,7. In total 14.6 % of older people have been confirmed dissatisfaction with health care service (15.1 % males and 14.0 % females); the level of dissatisfaction significantly depends on age and place of residence.

Multivariable logistic regression model (adjusted for age and the frequency of medical consultation with GP) showed that significantly higher risk of dissatisfaction with medical care service was presented in males (OR = 2.55, 1.67–3.87) and females (OR 2.10, 1.37–3.22) reporting difficulties with making appointment with primary care doctors, as well as in men (OR 2.71, 1.56–4.70) and females (OR 2.55, 1.50–4.33) who stress to much unnecessary medical examinations ordered by their physicians. Decreased risk of dissatisfaction was significantly influenced in males by such determinants: 24 h access to first contact medical consultation, having GP who seemed to take the problems of patients seriously, ordering all specific examinations necessary for the diagnosis process, good communication with physicians (who presented interest in different dimensions of patient life which could influenced current health conditions). In females near the same factors were responsible for decreasing risk of dissatisfaction but contrary to men the patterns of communication lost significant meaning in assessment the level of satisfaction with health care service.

Conclusions Health care system for senior citizens should fulfilled all needs presented by older adults in the relation with health care providers. Health care providers should understand the medical and psychosocial expectations presented by older consumers of health care service (especially gender-related differences in expectations).
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OC 2.3.5

Elder abuse and mental health

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Background Violence, abuse and neglect of older persons (VAO) is an increasing public health problem. Despite growing evidence of the increasing size of the problem, data on prevalence of past 12 month VAO (PVAO) are still scarce in Europe, and conceptual and methodological differences limit the extent to which comparisons can be made between national studies. We aimed to (1) estimate the scope of PVAO among older persons in 7 cities in 7 countries, (2) assess correlated late life factors of VAO, (3) investigate early life factors and prevalence rates of abuse.
Methods Logistic regression analyses with respective 95 % confidence intervals (CI).
Results N = 4,467 older individuals completed interviews with about N = 650 interviews per city. Mean response rate was 48.8 %. Mean age of participants was 70 years; 42.7 % (N = 1,908) of the sample were male. The overall PVOA prevalence rate of PVAO varied from 12.7 % (95 % CI: 10.2–15.6) in Italy to 30.8 % (95 % CI: 27.2–34.6) in Sweden. The reported most common single form of PVAO was psychological violence with 10.4 % (95 % CI: 8.1–13.0) in Italy and 29.7 % (95 % CI: 26.2–33.5) in Sweden followed by physical violence with 1.0 % (95 % CI: 0.4–2.1) in Italy and 4.0 % (95 % CI: 2.6–5.8) in Sweden. The reported prevalence rate of physical violence with injuries varied from 0.0 % in Italy to 1.5 % (95 % CI: 0.7–2.8) in Lithuania. The reported prevalence rate of financial violence varied from 1.8 % (95 % CI: 0.9–3.2) in Sweden to 7.8 % (95 % CI: 5.8–10.1) in Portugal. The proportion of reported sexual violence varied from 0.3 % in Lithuania and Spain (95 % CI: 0.0–1.1) to 1.5 % (95 % CI: 0.7–2.8) in Greece. Abuse was related to anxiety, but not to depression. The findings will be presented en detail in the session.
Conclusion Influencing factors of mental health of older people need further investigation to understand better diversity of responses to abuse experiences.

OC 2.3.6

The effect of depressive symptoms in the ability of knee pain to identify radiographic osteoarthritis

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Introduction Osteoarthritis (OA) diagnosis and progression is based on radiographic changes and clinical examination. Pain strongly predicts future disability, however is an unspecific symptom and its expression may be dependent of depressive symptomatology.
Objectives To evaluate the discrimination ability of knee pain to identify individuals with radiographic OA according to depressive symptoms.
Methods A cross-sectional study was performed using information from EPIPorto cohort. Data on 663 participants was obtained by interview using a structured questionnaire on social, demographic, behavioural and clinical data. Knee pain was assessed regarding ever having knee pain, pain in the last year, in the last 6 months and in the last month. Using factor analysis for dichotomous variables, participants were classified in a knee pain score according with higher scores representing more severe depressive symptoms with higher scores representing more severe pain symptoms. Depressive symptoms were evaluated with the *Beck Depressive Inventory* and radiographic knee OA was classified using the *Kellgren Lawrence* (*KL*) scale. The sensitivity, specificity and likelihood ratio analysis was performed.
Results Knee pain was reported by 53.2 % of those with radiographic KL $\geq$2 and by 33.2 % of those with radiographic KL <2. The prevalence of depressive symptoms (BDI > 14) was 19.9 % among participants with radiographic KL $\geq$2 and 12.6 % among those with radiographic KL <2. Among participants with BDI $\leq$14 the likelihood ratio to identify patients with radiographic knee OA (KL $\geq$2) increased with increased pain scores: 1.02 for score 1; 2.19 for score 2 and 7.34 when participants reported positively to all pain questions (score 3). Among participants with depressive symptoms (BDI >14) likelihood ratios were 0.51, 1.92, 1.82, respectively. Similar results were found in males and females.
Conclusions A higher discrimination ability to identify participants with radiographic KL $\geq$2 was found within higher knee pain scores in both genders. However, the presence of depressive symptoms impairs the ability of pain complains to identify patients with radiographic OA.

Oral Communications Session 2.4. Pharmacoepidemiology II

OC 2.4.1

Perceptions of teratogenic risk of medications and exposures by pregnant and childbearing age women in Southern Brazil

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Background An erroneous perception of teratogenic risk can lead to the non-use of safe medications and reluctance to or abstaining from pharmacological treatment during pregnancy. Previous studies suggest that the perception of teratogenic risk is overestimated by pregnant women, non-pregnant women and health professionals. Most of these studies were performed in teratogen counseling centers and only used Visual Analogue Scales (VAS) for measuring risk perception.
Objectives To characterize the perception of teratogenic risk by pregnant women and women of childbearing age.
Methods We conducted a study that combined qualitative and quantitative research methods. Public health care users from the city of Porto Alegre, Brazil, participated in the research. In qualitative terms, two focus groups were carried out with pregnant women. The quantitative data was derived from structured interviews with 287 women of childbearing age divided into pregnant and non-pregnant groups. The perception of risk of congenital malformations in the general population and the perception of teratogenic risk through exposure to acetaminophen, metoclopramide, misoprostol and radiation therapy during pregnancy were measured via two techniques: VAS and numerical questions. The agreement between the two measurement techniques was evaluated using Bland–Altman graphic analysis.
Results We did not find an agreement between the measurements obtained through VAS and those obtained through questions for any of the risk perceptions in the study. The medians of the perceptions of teratogenic risk measured by VAS were higher than those obtained by numerical questions, for all variables. For both measurement techniques, the medians of the perceptions of teratogenic risk with acetaminophen and metoclopramide were lower than those for the risk of congenital malformations in the general population. However, the medians of the perceptions of risk with misoprostol and radiation therapy presented the highest values. There were no significant differences in risk perceptions among pregnant and non-pregnant women. The emic logic employed by women in estimating teratogenic risk is the classification of drugs according to *strong* and *weak*. According to this logic, the drugs and exposures perceived by these women as *weak*, do not present risks, while those perceived as *strong* are seen as *hazardous* and should be avoided during pregnancy.
Conclusion The use of VAS leads to the overestimation of teratogenic risk perceptions. Moreover, given the difficulty to engage in probabilistic logic for estimating risk, women engage in their own logic, classifying medications as *strong* or *weak*.

OC 2.4.2

Mother's country of birth and psychotropic drug use in Swedish adolescents: a life-course approach

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Objectives We investigated whether, independent of needs, the socioeconomic characteristics of the mother's country of birth are associated with psychotropic drug use in Swedish-born adolescents.
Background In addition to medical needs, psychotropic drug use in adolescence might be conditioned by the cultural context of the family. This knowledge is relevant for both practical reasons (i.e. for detecting inequities in health care) and for epidemiological reasons (identifying information bias in studies using psychotropic drugs as a proxy for impaired psychological health).
Methods By linking the Swedish Medical Birth Registry to other national registers, we identified all 324,510 singletons born between 1988 and 1990 who were alive and residing in Sweden until the age of 18 (years 2006–2008). We measured their psychotropic drug use in the year they turned 18. Applying a life-course approach, we included both the mother's and the children's characteristics throughout pregnancy, delivery, infancy, childhood and adolescence when calculating a risk score to adjust for needs. We classified the mother's country of birth according to the gross national income (GNI) per capita of each country into five categories: Low-income, Low middle-income, Upper middle-income, High-income and Sweden; the last-named was separated from the high income group and used as reference.
Results Overall, the lower the income of the mother's birth country, the lower was the probability of psychotropic drug use among

children. When adjusting for needs (see Table 1) the association appeared even stronger and became evident in both boys and girls (unadjusted model: evident in girls).

Table 1 Association between maternal birth country and psychotropic drug use at age 18, adjusted associations

Country classification	Boys OR 95 % CI	Girls OR 95 % CI
Sweden	Ref	Ref
High-income	1.01 (0.90–1.13)	1.03 (0.94–1.13)
Upper middle-income	0.80 (0.69–0.94)	0.66 (0.57–0.76)
Lower middle-income	0.78 (0.66–0.94)	0.53 (0.45–0.63)
Low-income	0.57 (0.40–0.82)	0.28 (0.19–0.42)

Values are odds ratios (ORs) and 95 % confidence interval (CIs)

Conclusion Besides medical needs, use of psychotropic drugs by second-generation immigrants seems to be conditioned by the socioeconomic characteristics of the mother's country of birth. These findings might be related to a health illiteracy (i.e., unfamiliarity with the health care system); a situation important to bear in mind for decision-makers. Moreover, the threat of information bias must be considered when psychotropic drug use is employed as a proxy for impaired psychological health in epidemiological observational studies.

OC 2.4.3

Strategies to improve spontaneous ADR report by health professionals in the Northern Region of Portugal

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Background WHO defined Adverse Drug Reactions (ADR) as "*harmful, unintended reactions to medicines that occur at doses normally used for treatment*", and are one of the main death causes worldwide. *Pharmacovigilance* is the detection and prevention of ADRs, pointed as a public health problem, cause of 6.25 % of hospital admissions and between 4th and 6th death cause in USA. Reporting rate of National System of Pharmacovigilance is increasing. Spontaneous report of ADR must involve entire population and cover all medicines and life cycle. It's known ADR reporting doesn't interfere with prescribing habits and allows to identify serious and unexpected ADRs.
Objectives Increase quantity/relevance of spontaneous ADR in physicians and pharmacists of the Northern region of Portugal.
Methods Implementation of a case–control (CC) study in physicians (during 2002) and pharmacists (during 2003) to identify knowledge/attitudes related to ADR underreporting with questionnaires distribution and analysis. Based on attitudes identified in CC, was designed a Randomized Clinical Trial (RCT) with educational intervention directed to health professionals (during 2004). Intervention consisted in group sessions about identified attitudes, support material' and ADR report form' distribution. In 2007 (pharmacists) and 2008 (physicians) was conducted a new RCT (till 2009) with a reinforcement educational intervention consisting in a crossover study with workshops (WS) and phone interview (PI). Health professionals allocated to WS participated in intervention by PI after 1 year, and vice versa.
Results Educational intervention increases quantity and quality of spontaneous report of ADR. Quantity reported by physicians increased fourfold and threefold by pharmacists. Among physicians the effect remains above control group for 16 months, while in pharmacists the effect loses statistical significance after 1 year.

PI intervention presented a participation rate of 7.9 % for physicians and 36 % for pharmacists and for WS presentation of 26.9 and 46 % respectively. Both interventions increased physicians' ADR report rate, however WS was more effective with an increase of 4 times comparing to control. Pharmacists allocated to PI intervention revealed a 12 times higher rate comparing to control and 3 times on PI (1st quarter after intervention).
Conclusions It was concluded that spontaneous ADR report can be enhanced by educational interventions directed to health professionals.

Study results suggest the implementation of a program to initiate in 2012 directed to physicians using workshops and to pharmacists using phone interviews (good results, lower costs).

OC 2.4.4

Adherence to antihypertensive treatment among African migrants and Portuguese natives: results from a primary care-based cohort study in Lisbon, Portugal

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Instituto de Medicina Preventiva da Faculdade de Medicina de Lisboa

Background Nonadherence to antihypertensive drugs may result in less effective blood pressure (BP) control. Because of significant ethnic disparities in BP control, differences in rates of and reasons for medication nonadherence should be assessed.
Objectives To explore the factors associated with antihypertensive medication adherence in African migrants and Portuguese native hypertensive patients and to determine ethnic differences in medication adherence between African migrants and Portuguese natives.
Methods The DIMATCH-HTA project is an observational, stratified population-based cohort study that aims to evaluate BP control and its determinants among medicated hypertensive patients. Two cohorts of African migrant and native subjects aged 40–80 years, were randomly selected from Primary Care Health Centers of the Lisbon Health Region. Face-to-face interviews were conducted at baseline, including data collection of demographic characteristics, disease-related variables, BP values and self-reported adherence to antihypertensive drugs (Portuguese version of the Morisky scale).

Binary logistic regression ($\alpha = 0.05$, SPSSv19) was used to identify factors associated with medication adherence in a multivariate-adjusted model, for each group, that included patient-related factors, therapy and disease related factors, healthcare system, social and economic factors.
Results Of the 787 subjects, 57.1 % (n = 449) were natives and 42.9 % (n = 338) were African migrants with a mean (±SD) age of 64.2 ± 9.1 years and 57.0 ± 10.2 years ($p < 0.001$), respectively. A total of 48.8 % of natives and 33.4 % of African migrants were men ($p < 0.001$). Natives were significantly more likely to adhere to antihypertensive medication than African migrants (52.1 vs. 34.3 %, $p < 0.001$).
After multivariate adjustment, being female, retired and not having difficulties to buy the medication were significantly associated with medication adherence in natives (Table 1). In regard to African migrants, checking BP regularly was positively associated with

adherence, but having help of someone to control hypertension was found to be a predictor of nonadherence (Table 1).

Table 1 Factors associated to adherence to antihypertensive treatment, among Portuguese natives and African migrants

	Variables	Odds ratio (95 % CI)	*p* value
Portuguese natives	Gender—female	1.60 (1.01–2.55)	0.046
	Main occupation		
	Employed	1	0.31
	Unemployed	0.45 (0.18–1.14)	0.09
	Retired	1.36 (0.82–2.25)	0.229
	Other situation	0.35 (0.08–1.53)	0.161
	Financial difficulties in buying the medication		
	Not difficult	1	0.037
	A bit difficult	0.65 (0.33–1.29)	0.222
	Very difficult	0.41 (0.20–0.84)	0.015
African migrants	Have help of someone to control hypertension	0.18 (0.05–0.62)	0.006
	Check BP regularly	2.09 (1.22–3.61)	0.008

Conclusion African migrants reported being adherent to medication less frequently than natives. Factors associated with adherence were different between the two groups. These disparities may reflect patient's social and economical inequalities and differences in therapy and physiopathology of the disease. Future analysis should explore these factors in order to design effective interventions to improve adherence in different ethnic groups.

OC 2.4.5

Long-term effectiveness of HBV vaccination program: a need for a booster dose and its effectiveness

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Introduction The long-term protective effect of compulsive hepatitis B virus (HB) immunization during infancy. The necessity for booster dose among vaccinated children and adolescent remain issues of some debate especially in areas with intermediate HB infection prevalence.
Objective to assess the prevalence of seroprotection, HB infection and the response to HB booster dose among those with nonseroprotective levels of anti-HBs.
Methodology A national community based survey was carried out in 6 governorates, using a probability proportional to size sampling. A total of 3,468 children (1,660 boys/1,808 girls) fully vaccinated during infancy aged from 9 months to 16 years, were enrolled. Anti-HBs titer, total anti-HBc and HBsAg were assessed for all subjects. HBV DNA detection was done for suspected cases. Children with non seroprotective levels of antiHBs were given 5 μg booster dose of monovalant HB vaccine. Anti-HBs titer was reassessed 1 month and 1 year later to detect the immune response.
Results The prevalence of HB infection, chronic HB carrier status, and non-seroprotective group was 0.4, 0.03, and 58.3 %, respectively. The percentage of non seroprotective level of antiHBs increases with increasing their age (5.8 % among infants <2 years and 70.4 % among adolescents aged 15–16 years, $P < 0.0005$). There was no significant difference as regards gender and residence (urban & rural). One month after receiving booster dose, 92 % (646/702) of participants, with non-seroprotective level of antiHBs, developed an anamnestic response (i.e., ≥10 IU/L). About 88.9, 90.7, and 98.5 % of the participants with prebooster anti-HBs level <0.5, 0.5 to 3.3 and 3.4 to <10.0 IU/L respectively, developed an anamnestic response ($P < 0.001$), with no significant difference as regards to age. Results of long-term follow-up (1 year after booster dose) will be available by the time of the congress.
Conclusion Long-term protection is present despite of the decrease in anti-hepatitis B surface antibodies over time. Among children with nonseroprotective level, the postbooster anamnestic response depends on the level of anti-HBs retained after primary vaccination.

OC 2.4.6

Is there a correlation between adherence to long-term (antihypertensive) and short-term (antibiotic) treatments?

Przemyslaw Kardas, Pawel Lewek, Michal Matyjaszczyk, for ABC Project Team

Medical University of Lodz, First Department of Family Medicine

Background Large number of studies has been devoted to patient adherence to long-term treatment in chronic conditions. Evidence shows that adherence to medication in such circumstances is far from perfect. Much less is known about adherence to short-term medication, and especially, to antibiotic treatment. Moreover, a question of correlation between adherence to long-term, and short-term treatment has not been answered in satisfactory way so far.
Objectives The aim of this report was to find out whether there is a correlation between adherence to long-term, and short-term medication.
Methods Data from patient survey conducted in 5 European countries within ABC Project served for the source data for this report. Antiypertensive treatment, and antibiotic treatment have been accepted for model long-term, and short-term treatment, respectively. Adherence to chronic treatment has been assessed with 4-item Morisky Medication Adherence Scale (MMAS). Additional 4 questions assessed adherence to antibiotic treatment. A composite adherence measure for short-term treatment was built from relevant answers to these 4 questions.
Results Data of 1,338 respondents, who answered MMAS, and declared to take antibiotic in the past, were analysed in this report. Approximately half of respondents (47.6 %) admitted non-adherent to chronic treatment, and only 20.8 % to short-term one. No statistically significant correlation between adherence to long-term, and short-term treatment (assessed with composite measure, or any of 4 questions) was found for 4 out of 5 studied countries ($P > 0.05$). The only exception was Wales, in which adherence to antibiotics highly correlated with adherence to antihypertensive ($P < 0.001$). The effect of this country predominated the others: for entire studied population of 5 countries, adherence to short-term treatments correlated with adherence to long-term one ($P < 0.001$).
Conclusions No correlation between adherence to long-term, and short-term treatments was found for most of studied countries. It proves that people adherent to one type of treatment, may be non-adherent to another type. This observation is crucial for design of effective policy to help non-adherence. In the light of these findings, adherence-enhancing strategies should not be limited to only those who prove to be non-adherent to one kind of treatment. Instead, adherence-supporting environment is advocated as a general approach, as most of patients deviate from some of their prescribed treatments in real life conditions.

Time: 17.15–18.15

Oral Communications Session 3.1. Child and adolescent health

OC 3.1.1

Is maternal employment in childhood good or bad for adolescent psychological well-being?

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Objectives Maternal employment has been shown to influence number of child health, cognitive and behavioural outcomes. There is, however, only limited number of UK studies using health measures at adolescence as study outcomes. The aim of this study is to look at influence of maternal employment in three periods of childhood on psychological distress among young adults aged 16–21 years in British Household Panel Survey (BHPS).
Methods Annual BHPS has started in 1991, and data from 18 waves were available for this project. There are 3,779 individuals with at least one measurement of psychological distress at age 16–21 derived from GHQ-12 instrument and maternal employment prior to age 16 years. Other variables, such as gender, maternal age, maternal education and marital status, household income or maternal SRH, maternal psychological distress and maternal smoking were used as covariates. Multilevel logistic regression (using clustering of repeated measurements within individuals) was used for the analysis. Several life-course models were tested to evaluate the role of maternal employment and other social characteristics in different periods of childhood.
Results 23 % of young adults reported psychological distress. 56, 76 and 79 % of mothers worked at preschool (0–4 years), primary school (5–11 years) and secondary school (12–16 years) period of childhood. The results suggest that maternal employment is protective for those from socially advantaged families while it increases risk of psychological distress among those from less advantaged families. The data suggest that accumulation model best describes the relationship between maternal employment and psychological distress in young adulthood. Those from socially advantaged households whose mothers worked in all three periods of childhood were four times less likely to report psychological distress than those whose mothers never worked during childhood (OR = 0.24, p for trend = 0.02). Those from social disadvantaged groups, on the other hand, whose mothers worked in all periods were more likely to be psychologically distressed (OR = 1.75). The interaction between social disadvantage and maternal employment was statistically significant ($p = 0.02$).
Conclusions The association between maternal employment in childhood and young adults' psychological distress differs in different social groups. This is one of the first studies showing such differential effect of maternal employment. Maternal employment might have only a limited role in health and behaviours of young adults, however it is important to further investigate the reasons for its differential role in different social groups.

OC 3.1.2

Child-care attendance and *Helicobacter pylori* infection: systematic review and meta-analysis

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Background The infection with *Helicobacter pylori* is acquired predominantly during childhood. The attendance of child-care institutions promotes interpersonal contact and may be an important determinant of infection.
Objective To quantify the association between the attendance of different types of child-care and *H. pylori* infection, through systematic review and meta-analysis.
Methods Pubmed was searched up to February 2012 to identify studies addressing the association between attendance of child-care institutions and *H. pylori* infection in childhood or adolescence. Odds ratios (OR) and corresponding precision estimates, or the necessary information to calculate them, were extracted. The DerSimonian and Laird method was used to compute summary estimates and 95 % confidence intervals (95 % CI), and heterogeneity was quantified with the I^2 statistic. Stratified analyses and meta-regression were used to explain the heterogeneity of results across studies with different methodological characteristics.
Results We identified 17 studies, which differed substantially regarding the definition of child-care, and most of them did not present results addressing the effect of the characteristics of group-care or duration of exposure. Twelve studies compared subjects attending child-care with those not exposed and were considered for meta-analysis. The remaining did not provide quantitative estimates of the association (n = 3) or only compared children with different levels of exposure to group-care (n = 2). The summary OR was 1.49 (95 % CI: 1.17–1.89, $I^2 = 40.5$ %). The summary estimates were similar regardless the adjustment for potential confounders, and higher when the infection was evaluated in children/adolescents aged over 6 years (OR = 1.57, 95 % CI: 1.22–2.03, $I^2 = 41.3$ %). Studies relying on tests based on urease activity or serum immunology yielded lower OR estimates (OR = 1.37, 95 % CI: 0.52–3.61, $I^2 = 65.5$ % and OR = 1.40, 95 % CI: 1.13 to 1.75, $I^2 = 15.3$ %, respectively) than those based on the detection of stool antigens (OR = 2.65, 95 % CI: 1.24–5.66, $I^2 = 36.4$ %). The results were similar across studies with prevalences of infection up to 30 % among the non-exposed subjects; in the only study with a higher prevalence of infection (57 %) the OR was 0.42. In multivariate meta-regression there was no significant association with any of these variables, but taking them into account contributed to reduce the I^2 to less than 20 %.
Conclusions The attendance of child-care institutions increases the risk of *H. pylori* infection. Nonetheless, most studies did not address the effect of the characteristics of the child-care institutions or the duration or intensity of exposure, leaving an ample scope for improvement of our understanding of the contribution of this modifiable exposure for the occurrence of this infection.

OC 3.1.3

Sexual coercion and risk-taking among Portuguese young adults

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Background Sexual coercion, an intended behavior to compel the partner to engage in unwanted sexual activity, results in immediate suffering and decreases the ability to engage in preventive behaviours.
Objective To assess the impact of intimate partner sexual coercion experience (victimization and perpetration) in sexual risk-taking behaviours by young adults.

Methods The first 606 (308 females and 298 males, currently in a relationship lasting for over 1 month) 21 year-old adults were observed during the third follow-up wave of the EPITeen cohort, assembled in 2003 the adolescents born in 1990 and attending Porto, Portugal public and private schools. Past-year acts of sexual coercion were assessed using the Revised Conflict Tactics Scale (CTS2).
Information was collected on age at the first sexual intercourse, lifetime number of sexual partners, condom use, and drugs and alcohol use before the last sexual intercourse, as part of a general health questionnaire and examination.
Results The prevalence of sexual coercion victimization (past-year) was 29.6 % (30.4 % in females and 28.7 % in males, $p = 0.684$) and that of perpetration was 27.3 % (22.9 % in females and 31.8 % in males, $p = 0.014$). Severe sexual coercion victimization was reported by 1.8 % females and 1.9 % males ($p = 0.953$) and perpetration of such act was reported by 1.2 % females and 1.9 % males ($p = 0.710$). Among females, victims (vs. non-victims) of sexual coercion were more prone to had their first sexual intercourse before the age of 17 (49.5 vs. 34.1 %, $p = 0.014$), to have more lifetime sexual partners [≥5 partners (20.8 vs. 10.3 %, $p = 0.005$)] and to use condom less frequently (consistent use 16.8 vs. 42.2 %, $p < 0.001$). Among males, victims were also more prone to have their first sexual intercourse before the age of 17 (52.2 vs. 37.6 %, $p = 0.026$), to have more lifetime sexual partners [≥5 partners (42.7 vs. 25.5 %, $p = 0.005$)], and less frequently reported consistent use of condoms (18.0 vs. 48.8 %, $p < 0.001$). Male victims of sexual coercion also more frequently had a HIV test (28.2 vs. 43.4 %, $p = 0.034$). No such difference occurred in females (33.2 vs. 31.0 %, $p = 0.872$). The same associations were present when analyzing perpetration.
Conclusion Intimate partner sexual coercion victimization and perpetration is part of a larger cluster of sexual risk taking that poses special prevention challenges.

Oral Communications Session 3.2. Tobacco

OC 3.2.1

The effect of maternal tobacco use before and during early pregnancy on offspring birthweight: a quasi-experimental sibling analysis in Sweden

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Background Previous studies report that tobacco smoking during pregnancy is associated with reduced offspring birthweight. However, this finding are based on conventional analysis that can be confounded, therefore, we apply a quasi-experimental sibling analysis to revisit the reported effect of tobacco on birthweight. We distinguish between smoking and smokeless tobacco use both 3 months before and during the first pregnancy trimester.
Methods Using the Swedish Medical Birth Register data from 2002 to 2009, we identified 823,553 singleton newborns from Swedish mothers, including 78,814 siblings from 36,517 mothers with discrepant tobacco use between pregnancies. We applied conventional and mother-specific multilevel linear regression models.
Finding: According to the conventional analysis, continuously smoking for 3 months prior to pregnancy and during the first trimester reduced birthweight by 181 g. However, this reduction was only 81 g using the sibling design. Snus reduced birthweight by about 15 grams. Quitting tobacco use early in pregnancy increased birthweight by 21–70 g depending on previous consumption.
Discussion: The sibling analysis confirms that smoking during pregnancy reduces birthweight. However, this effect is weaker than calculated using conventional analysis. Snus has a minor impact on birthweight. Furthermore, we observed an unexpected catch-up effect so women who quit smoking during pregnancy have babies up to 70 g than those born after tobacco-free pregnancies. Our findings support public health policies aimed at advising mothers to quit tobacco use in early pregnancy.

OC 3.2.2

The role of smoking bans on cigarettes and alcohol habits in Italy

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Background The introduction of smoking bans in EU was relatively recent, if compared to the US and the issue of whether they have been effective in reducing smoking is still under debate. Different studies on this topic produced mixed conclusions, finding no effects in some countries, Germany, England and Scotland, while other works highlighted positive effects, e.g., Italy. A related literature focused on the effects of such legislation on variables correlated with smoking.
Objectives Our study aims also to evaluate the spillover effects of smoking ban on alcohol consumption, which is generally found as a complementary good to smoking.
Methods We use a regression discontinuity (RD) approach to evaluate the effect of the smoking ban for Italy. We exploit the discontinuity introduced in smoking measures from the Clean Indoor Air Law (CIAL) implemented in Italy as from the 10st January 2005, which prohibits smoking in all public places as well as in pubs and restaurants. We evaluate the impact of CIAL on different groups of the population, testing whether the law was able to reduce smoking and alcohol related habits especially for those individuals with higher mortality rates associated to these habits.
Results We find that the CIAL had a significant impact and was able to reduce the amount of cigarettes smoked by 0.56 units (95 % CI = 0.424–0.696) and the percentage of smokers by 2.48 % (95 % CI = 1.676–3.284). Alcohol consumption showed also negative patterns, especially considering the percentage of people drinking beer, which reduced by 0.86 % (95 % CI = 0.476–1.236) and bitters or spirits, who decreased respectively by 0.72 % (95 % CI = 0.321–1.125) and 0.27 % (95 % CI = 0.067–0.457). The categories which have been affected the most by the reform are those of males, unemployed, low educated, and people living in the North of Italy.
Conclusions The smoking ban had a relevant influence in reducing smoking and alcohol behaviors among Italians. The intervention was especially relevant for sub-categories of the population traditionally associated to higher mortality rates related with alcohol and smoking. This suggests the areas of interventions for policy-makers to obtain gains from anti-smoking policies.

OC 3.2.3

Early initiation of smoking and alcohol drinking as a predictor of lower forearm bone mineral density in late adolescence: a cohort study in girls

Raquel Lucas, Sílvia Fraga, Elisabete Ramos, Henrique Barros

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Background Adolescence is a critical stage for bone accrual. It is also decisive for the establishment of behaviors such as smoking and alcohol drinking.
Objectives To quantify the short- and long-term associations between smoking and drinking initiation and bone mineral density in adolescent girls.
Methods We used prospective data from 731 girls identified in public and private schools in Porto, Portugal. Evaluations were conducted when participants were 13 and 17 years old. Bone mineral density (BMD) was measured at the forearm by dual-energy X-ray absorptiometry and weight, height and fat-free mass were measured. Pubertal development status was estimated using menarche age. Self-administered questionnaires were used to collect data on smoking and alcohol drinking, physical exercise and calcium and vitamin D intakes. BMD in early and late adolescence was analyzed as a continuous or dichotomous (Z-score cutoff: -1.0) variable. Associations were calculated using linear or logistic regression.
Results Over one quarter of these girls had tried smoking by 13 and almost 45 % started drinking between 13 and 17 years old. One-fifth had smoked and drank by 13 years old. Lower mean BMD at 17 years old was observed in girls who had ever smoked by 13, as well as in those who reported drinking at that age. There were no significant cross-sectional associations between experience and frequency of smoking or drinking and BMD at 13 years old. However, we observed significant associations between BMD z-score <-1 in late adolescence and having ever smoked by 13, after adjustment for menarche age and sports practice (OR = 1.92; 95 % CI: 1.21, 3.05) and with ever smoking and drinking in the same period (OR = 2.33; 95 % CI: 1.36, 4.00).
Conclusions Our study adds prospective evidence to the role of early initiation of smoking and alcohol drinking as relevant markers of lower bone mineral density in late adolescence.

OC 3.2.4

Prevention of smoking among adolescents: first year results from the cluster randomised X:IT trial

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Background Uptake of smoking in adolescence is still of major public health concern. Evaluations of school based programs for smoking prevention have shown mixed results, but comprehensive strategies using several widespread components including environmental strategies are generally more effective than information-based interventions.
Objectives To examine the effect of a multi-component school-based program to prevent uptake of smoking among adolescents after the first year of intervention.
Methods We used data from the Danish cluster randomised trial, the X:IT-project. X:IT includes: (1) a strict anti-smoking policy at schools, (2) signing smoke-free contracts between children and parents, (3) a smoke-free curriculum. The intervention runs for 3 years, from year 7 to 9 (September 2010–May 2013). 94 schools were randomised into either control (N = 43) or intervention group (N = 51). At participating schools all year 7 school children were invited to participate. Data were collected among 13-year-olds at baseline (August 2010), n = 4,468, response rate = 93.2 % and at first follow-up (June 2011), n = 4,434, response rate = 85.1 %. 4,041 (90.4 % of 4,468) school children answered the baseline questionnaire and were included in the first follow-up survey. The outcome measure was 'at all' smoking, dichotomised into do not smoke versus daily, weekly, monthly or more seldom. Analyses were adjusted for sex, smoking at baseline and family socioeconomic position (SEP). We performed logistic regression analyses of available cases and intention-to-treat (ITT) analyses, where missing values were imputed by multiple imputation of 20 datasets.
Results At baseline 6.4 % of the 13-year-olds were 'at all' smokers, at first follow-up the prevalence was 7.9 %. 574 school children (14.2 %) did not answer the question on smoking at follow-up. Available case analyses showed crude odds ratios (OR) for smoking at control schools compared to intervention schools at: 1.35 (1.04–1.76) and adjusted for SEP: 1.50 (1.12–2.00). ITT analyses showed crude OR for smoking at control schools compared to intervention schools at: 1.32 (1.02–1.72) and adjusted for SEP: 1.35 (1.04–1.76).
Conclusions In a Danish setting a comprehensive multi-component program to prevent uptake of smoking in adolescence showed positive results at first follow-up, i.a. that 13-year-olds at control schools had a higher risk of smoking than school children at intervention schools. Later follow-up survey will reveal if these differences can be maintained through 3 years of interventions.

Oral Communications Session 3.3. Cancer II

OC 3.3.1

The transition between work, sickness absence and pension in a cohort of Danish colorectal cancer survivors

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Background Colorectal cancer is one of the fastest growing cancer types in the western world and due to improved diagnosis and treatment still more persons will survive the disease and return to normal life including resuming of work. This leads to an increased need to focus on the impact colorectal cancer has on the affiliation to the working market. Return to full time employment among colorectal cancer survivors has been estimated to be in the range of 60–83 % depending on time from diagnosis, severity of the disease and outcome under study. Resuming of work is in competition with states as sickness absence, unemployment and retirement and it is possible that disease related and socioeconomic factors have different impact on these states.
Objectives By use of nationwide, population based administrative registers the aim of this study was to evaluate the impact of both socioeconomic and clinical factors on the transitions between work, sickness absence and retirement in a cohort of Danish colorectal cancer survivors.
Methods Clinical data were linked with population based nationwide health related and socioeconomic registers. Data on work, sickness absence and retirement were obtained from an administrative register (The Register based Evaluation of Marginalization—DREAM—administrated by the Ministry of Employment) covering all citizens in Denmark who have received transfer payments from the state. Transition between the different states was analyzed by use of multi-state models in Cox proportional hazards models.
Results We included 4,343 survivors, who were part of the work force and aged 18–63 years at time of operation, and who were not withdrawn from the working market during the first year after operation. At that time 62 % had resumed work and 58 % continued

working in average 136 weeks until censoring. Socioeconomic factors were found to be associated with retirement but not with sickness absence and return to work. Contrary, previous episodes of unemployment and sickness absence were associated with the risk for sickness absence and resuming of work. Stage of disease, type of operation, ASA score and post-operative complication were all associated with the outcomes under study.
Conclusions Stage of disease, general health state of the individual (ASA score), post-operative complications and the history of sickness absence and unemployment had an impact on the transition between work, sickness absence and pension among survivors of colorectal cancer. This leads to an increased focus on the more vulnerable persons who have a history of work related problems.

OC 3.3.2

Malignant melanoma in the Arkhangelsk region, Russia in 2000–2010: epidemiology and survival

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Background The incidence of malignant melanoma is increasing worldwide. The increase of incidence rates of melanoma in higher latitudes is a complex phenomenon associated with changes in both physical and lifestyle factors.
Objectives To describe incidence, mortality in Arkhangelsk region, Northwest Russia as well as to estimate survival and associated factors using the data from the Arkhangelsk Regional Cancer Registry (ARCR).
Methods Data were extracted from the ARCR. Information on population size was obtained from the Regional Bureau of Statistics. In 97 % of cases diagnosis was histologically confirmed. Mortality and incidence were estimated using all new cases registered in 2000–2010. Age-standardized mortality and incidence rates were calculated using Standard World Population. Stratified Cox Regression analysis was used for estimating survival. The potential predictors were age, sex, setting, site and stage by TNM system.
Results Altogether, 716 new cases of melanoma occurred in 2000–2010. Age of diagnosis ranged from 18 to 87 (mean 56.0) years. Women constituted 66 % and men 34 % of cases. The most common site was trunk (56 %) and legs (19 %) for men and legs (36 %) and trunk (32 %) for women. The stage distribution was: T1 15 %, T2 29 %, T3 26 %, T4 30 %; N1 10 %, N2 8 %, N3 5 % and M1 9 %. Crude incidence rate per 100,000 increased from 4.23 to 4.62 for men, and from 4.67 to 9.40 for women, and standardized incidence rate for both sexes increased from 3.82 to 5.63 from 2000 to 2010. Mortality was probably underestimated as only part of cases before 2010 were included in the registry. Standardized mortality rate increased from 0.57 to 2.23 per 100 000 in 2000–2010. The stratified Cox Regression model included age, setting, and TNM stage (stratified by sex). Significant predictors were urban setting compared to rural (HR = 0.65, 95 % CI = 0.44–0.96), stage T4 compared to T0 (HR = 2.50, 95 % CI = 1.29–4.81), stages N1 (HR = 4.00, 95 % CI = 2.47–6.48), N2 (HR = 2.95, 95 % CI = 1.64–5.30), N3 (HR = 4.31, 95 % CI = 2.03–9.18) compared to N0, and stage M1 (HR = 4.86, 95 % CI = 2.68–8.80) compared to M0.
Conclusions Incidence of malignant melanoma has increased in 2000–2010, particularly among women. Setting and stage by TNM system were significantly associated with survival when adjusted for other variables. Gender and setting differences in survival can possibly been explained by differences in lifestyle warranting further investigation.

OC 3.3.3

Assessment of socioeconomic inequalities in stomach cancer survival in the North Region of Portugal

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Background Cancer survival is known to be associated with socioeconomic factors. Several studies performed in different countries have demonstrated socioeconomic inequalities. They are more evident for cancers that have a better prognosis and for which treatment and possibility of cure exists. Several factors can contribute for explaining those differences in survival. However, information on some of these factors, such as stage or morphology, is commonly, incomplete. Regional cancer registries collect information from many different hospitals and pathology laboratories, which make information recovery difficult.

The aim of this study is to assess socioeconomic inequalities in stomach cancer survival in the North Region of Portugal, adjusted for stage, sex and age and accounting for missing stage information.
Materials and methods All stomach cancer patients registered in the Portuguese Institute of Oncology, diagnosed in the period 2005–2006, aged 15 years or older, were considered for analysis. Various ecological socio-economic measures were allocated to the patients, by matching patient's addresses with information from the National Statistics Office. Up-to-five-year net survival was estimated using a flexible modelling approach enabling to model the effects of sex, age, socio-economic condition and stage. Missing data were handled using multiple imputation procedures.
Results The analysis included 591 patients (60 % male). Tumour stage was missing for less than 20 % of the patients, but this proportion was higher in elderly and in palliative care group. Preliminary results showed that patients coming from areas with the lowest proportion of persons with compulsory education level had a lower survival than the remaining patients. Adjusting for tumour stage attenuated these differences.
Discussion This study represents one of the first attempts to study socio-economic inequalities in cancer survival in Portugal. We used simple socioeconomic indicators, such as education. Further studies using more complete deprivation indices should be considered in the future. The role of stage tumour and treatment on socioeconomic inequalities will be further investigated. Multiple imputation allows the use of all available information, including variables not directly considered in the survival analysis model, resulting in less biased and more precise estimates.

OC 3.3.4

Survival analysis of second primary cancers in North Portugal: a population-based registry evaluation

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Background A dramatic increase in cancer survivorship and in the frequency of second primary cancers (SPC) has been observed in the last decades, urging the investigation of their burden at a population level.

Evaluating the survival of SPC poses methodological challenges, namely to disentangle the contribution of the underlying first primary cancer (FPC) to the prognosis.

Objective To quantify the survival of SPC patients according to the topography of the underlying FPC, using data from a population-based cancer registry from the North Portugal.

Methods We identified the SPC among the incident cases registered in the North Region Cancer Registry (RORENO) in 2000–2003, using the guidelines of the International Association of Cancer Registries (IACR). SPC were classified as synchronous if diagnosed within a 2-month period of a FPC, or metachronous otherwise. We assessed the vital status of the SPC patients in December 2010 (median follow-up: 45 months). For analysis, we grouped the SPC and FPC topographies into high, intermediate or low survival, corresponding to the survival expected in the general population, using the tertiles of the distribution of the latest 5-year relative survival data published by the EUROCARE group as cutoffs. We fitted Cox-regression models, to estimate hazard ratios (HR) and 95 % confidence intervals (95 % CI) adjusted for sex and age at diagnosis of the SPC for the comparison of SPC topographies (high/intermediate/low survival) and FPC topographies (high/intermediate/low survival), stratified by each other and according to synchronicity.

Results The 5-year survival of all SPC was 47.0 %. Among the synchronous SPC, those with low survival FPC had worse prognosis than those with high survival FPC, consistently for the topographies of SPC corresponding to high (HR = 2.55, 95 % CI: 1.32–4.92) and low (HR = 2.22, 95 % CI: 1.17–4.21) survival. There were no significant differences when comparing high versus low survival SPC topographies within strata of FPC with high (HR = 1.17, 95 % CI: 0.57–2.43) and low (HR = 1.05, 95 % CI, 0.60–1.83) survival. Regarding metachronous tumors, the prognosis was similar when comparing high versus low FPC survival groups, both in high (HR = 1.17, 95 % CI: 0.77–1.78) and low (HR = 1.15, 95 % CI: 0.85–1.55) SPC survival groups. The SPC topography (high vs. low survival topographies)) influenced the patients' prognosis, irrespectively of the FPC survival groups (high, HR = 2.74, 95 % CI: 2.01–3.73; low, HR = 2.72, 95 % CI: 1.81–4.10).

Conclusion The topography of the FPC preceding a SPC was an important determinant of the survival of synchronous SPC but had little influence on the survival of metachronous SPC, which was determined essentially by the SPC topography.

Oral Communications Session 3.4. Maternal Health

OC 3.4.1

Patient and maternity unit determinants of hospital length-of-stay after childbirth in France

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Background and objective Hospital length-of-stay (LOS) after childbirth has decreased significantly over the past 20 years in most Western countries. This is a matter of concern for families, medical professionals and health care planners because early discharge, without home support by midwives or others practitioners, is associated with an increased risk of maternal and neonatal morbidity. We aimed to study hospital LOS after childbirth and its determinants among women who had a vaginal delivery in France.

Population and method We studied 10,302 women with vaginal deliveries from the 2010 French National Perinatal Survey, based on a nationally representative sample of births. Data were collected from an interview with the new mother and from medical records in the maternity unit. Maternal, neonatal and maternity unit's characteristics were studied, well as the region of birth. Logistic regression analyses were used to study determinants of short postpartum stays, defined as a LOS $\leq$3 days.

Results 29 % of women had a LOS $\leq$3 days. LOS $\leq$3 days was more common among multiparas (ORa = 2.0 95 % CI (1.8–2.3) for parity 2 and ORa = 2.9 95 % CI (2.5–3.4) for parity $\geq$3 compared to parity 1), women who bottle-fed their newborn and those who delivered in Greater Parisian Region [ORa = 2.8 95 % CI (2.5–3.2)]. There was no clear trend between educational level and LOS. LOS $\leq$3 days was more frequent in large or teaching units than in small or private units, whatever the region. In the Greater Parisian Region, the proportion of LOS $\leq$3 days ranged from 16.6 % in private units <1,000 del/year to 72.9 % in teaching units $\geq$3,000 del/y. Similar associations with maternity unit characteristics were found after adjusting for individual characteristics.

Conclusion LOS varies mainly according to the characteristics of the place of delivery. Postpartum discharge in the 3 days following delivery is currently not common in France, but the trends towards short LOS are likely to continue due to economic pressures and the concentration of births in large public units. In France, few maternity units organize home visits by midwives after discharge. Consequently, there is a need to develop health services to ensure continuity of care between maternity units and home for women discharged early and avoid neonatal and mothers complications.

OC 3.4.2

Cesarean rates and their correlations to infant mortality and women empowerment across nations

Fernando Volpe

Hospital Foundation of Minas Gerais

Background Globally escalating cesarean rates have generated concern on its consequences, and official recommendations ought to be grounded on the available evidence.

Objectives The aims of this study are to correlate international official data on cesarean delivery rates to infant and maternal mortality rates, and to the rate of low weight at birth; and to investigate the association between social determinants regarding women's education and labor and the rates of cesarean births across nations.

Methods Analyses were based on latest official data (2000–2009) from 193 countries. Exponential models were compared to quadratic models to regress infant mortality rates, neonatal mortality rates, maternal mortality rates and rates of low weight at birth to cesarean rates. Separate regressions were performed for countries with cesarean rates over 15.0 %. Adolescent fertility rates, female participation in the labor market, and female/male ratio in primary and secondary education were correlated to cesarean rates. We conducted a multiple regression of the response variable (cesarean rates) as a function of the other three social indicators.

Results Among countries with cesarean rates below 15.0 %, higher cesarean rates were associated to lower infant, neonatal and maternal mortality rates, and to lower rates of low weight at birth. In countries

with cesarean rates over 15.0 %, cesarean rates were not significantly associated with infant or maternal mortality rates. Adolescent fertility rates presented an inverse correlation to cesarean rates (B = −0.06, $P = 0.014$), while the rate of female participation in the labor market and the female/male ratio in primary and secondary education showed positive correlations (B = 0.60 and 0.40, $P = 0.013$ and 0.004 respectively, R2 = 37.8 %, $P < 0.001$).
Conclusions There is an inverse exponential relation between countries' rates of cesarean deliveries and infant or maternal mortality rates. Very low cesarean rates (<15.0 %) are associated to poorer maternal and child outcomes. Cesarean rates over 15.0 % were neither correlated to higher maternal or child mortality, nor to low weight at birth. High rates of adolescent fertility are linked to poor conditions of public health, and therefore limited access to cesarean section when necessary. On the other hand, more equitable access of women to education and work are associated with higher rates of cesarean births in the world. Results indicate that women's empowerment can be a factor related to the choice for cesarean sections.

OC 3.4.3

Social differences in pre-pregnancy body mass index (BMI) and gestational weight gain: an opportunity to reduce long-lasting inequality in maternal and offspring health

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Background Pregnancy is a critical stage for development of female obesity through the excess weight women may gain and retain during and beyond this period. Additionally, both low and high maternal weight has been linked to increased risk for disease in the offspring. The aim of our study was to investigate social patterning of pre-pregnancy body mass index (BMI) and gestational weight gain (GWG) in primiparous women.
Methods In 4,009 women from the 3rd generation Uppsala Birth Cohort Study (UBCoS), we studied social variation and time trends in pre-pregnancy BMI and GWG from 1982 to 2008, using multinomial regression analysis. All women were primiparous and Swedish-born. Results were adjusted for maternal age, family situation (BMI and GWG), and maternal chronic disease and smoking in pregnancy (GWG only). We used the WHO criteria to assess pre-pregnancy BMI and the Institute of Medicine's (IOM) guidelines to assess whether the weight gain in pregnancy was inadequate, appropriate or excessive for a given pre-pregnancy BMI.
Results 67 % of women were of normal pre-pregnancy BMI, 20 % were overweight and 8 % obese. Proportion of women with BMI of 25 + kg/m2 and GWG above recommended range increased over time. Higher pre-pregnancy BMI was associated with higher probability of gaining weight above a range recommended by IOM: the proportion with excessive weight gain increased from 15 % among underweight women to 43 % normal weight, 75 % overweight and 73 % obese women respectively. Compared to university educated, women with elementary education had higher risk of being underweight (fully adjusted OR 1.94, 95 % CI 1.08–3.46), overweight (1.51, 1.11–2.05) or obese (4.49, 2.92–6.92) pre-pregnancy. Independent of pre-pregnancy BMI, lower education was also associated with higher probability of excessive weight gain.
Conclusion Women's education was significantly associated with pre-pregnancy BMI, which itself was strongly associated with gestational weight gain: women of lower education were less likely to start pregnancy with a BMI within normal range and less likely achieve optimal weight gain in pregnancy. Interventions that aim to reduce inequality and promote healthy pregnancy outcomes for mother and child need to target healthy growth and weight management in women in pre-conception period as well as during pregnancy.

OC 3.4.4

Cord blood leptin, maternal weight status and birth outcomes: mother–child cohort (Rhea Study) in Crete, Greece

Polyxeni Karakosta, Vaggelis Georgiou, Eleni Fthenou, Eleni Papadopoulou, Andrew Margioris, Elias Castanas, Marilena Kampa, Manolis Kogevinas, Leda Chatzi

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Background Cord blood leptin levels have been positively associated with birth weight and neonatal fat mass. Maternal obesity can influence metabolic programming of childhood obesity, however, little is know about the effect of maternal weight status on cord blood leptin levels, and their combined effects on fetal growth.
Objective We aimed to evaluate the effect of maternal weight status on cord blood leptin levels and their combined effect on fetal growth.
Methods The analysis included 638 mother–child pairs from the prospective mother–child cohort "Rhea" study in Crete, Greece with singleton pregnancies, providing cord blood serum samples for leptin analysis and complete data on birth outcomes. Multivariable logistic and linear regression models were used adjusting for confounders.
Results A 10 ng/mL increment in cord blood leptin was associated with 151 g increase in birth weight (β-coef: 151.2 [95 % CI: 93.5 to 208.8]), and 1 kg/m3 increase in ponderal index (β-coef: 1.0 [95 % CI: 0.5 to 1.5]), after adjustment for maternal age, maternal education, pre-pregnancy BMI, smoking during pregnancy, weight gain during pregnancy, delivery type, gestational age, and infant sex. Maternal pre-pregnancy overweight/obesity [body mass index (BMI) $\geq$ 25 kg/m^2] was significantly associated with cord blood leptin (β-coef: 1.6 [95 % CI: 0.5 to 2.7]), and almost doubled its effect on birth weight (β-coef: 204.6 [95 % CI: 122.7 to 286.5]) compared to women with normal BMI (β-coef: 113.7 [95 % CI: 33.1 to 194.3]).
Conclusions Higher cord blood leptin levels are associated with increased size at birth and gestational age. Pre-pregnancy maternal BMI and weight gain during pregnancy represent significant indicators of cord blood leptin, while maternal pre-pregnancy overweight/obesity doubles the effect of cord blood leptin on birth weight. These results raise the importance of maternal obesity on developmental programming and the necessity of prevention programs to reduce risks for future generations.

7th September 2012

Time: 8.30–10.00

Oral Communications Session 4.1. Inequalities and health

OC 4.1.1

Contribution of modifiable risk factors to social inequalities in type 2 diabetes incidence. The British Whitehall II Study

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Background The burden of type 2 diabetes (T2D) disproportionally affects the lower socioeconomic groups, but the reasons for its uneven distribution remain unclear. We examined the contribution of unhealthy behaviors and obesity to the socioeconomic gradient in the incidence of T2D, using an innovative assessment procedure of the risk factors which accounts for changes over time and for long term exposure. Further, we evaluate the additional contribution of blood-based risk markers for T2D: systolic blood pressure, triglycerides and HDL-cholesterol levels.
Methods The British Whitehall II study is a prospective cohort study of 10,308 London-based civil servants aged 35–55 years in 1985–1988. Analyses are based on 7,055 non-diabetic participants followed up for T2D from 1991–1993 (baseline) to 2007–2009, with medical screenings every 5 years including oral glucose tolerance test, other blood tests and repeated questionnaire surveys. Diagnosis of diabetes was ascertained by oral glucose tolerance test, use of diabetes medications, or physician diagnosis.
Results Over the mean follow-up of 17.7 years, 818 incident diabetes cases were identified. Participants in the lowest occupational category had an 86 % (Hazard Ratio = 1.86, 95 % CI = 1.48–2.32) increased risk of developing diabetes relative to those in the highest occupational category. Health behaviors (smoking, diet, alcohol intake and physical activity) and body mass index explained up to one-third of this socioeconomic differential when assessed at study baseline (percent attenuation: 33 %, −1;78 %), 36 % (22;66 %) when assessed repeatedly over the follow-up, and 45 % (28;75 %) when accounting for long-term exposure over the follow-up. With additional adjustment for dyslipidemia and high blood pressure, a total of 53 % (29;88 %) of the socioeconomic status-T2D association was explained.
Conclusions Health behaviors and BMI explain almost half of the association between socioeconomic status and incidence of T2D. Adverse blood lipids, which might be an intervention target for diabetes prevention in the future, also contributed to explain the social inequalities associated with T2D. Given the increasing burden of T2D and the observed increase in social inequalities in T2D prevalence, further efforts to tackle these public health issues are urgently needed.

OC 4.1.2

Social inequalities in BMI trajectories in Rio de Janeiro, Brazil: 8-year follow-up of the Pró-Saúde Study cohort

Dóra Chor, Valeska Andreozzi, Maria de Jesus M Fonseca, Letícia O Cardoso, Eduardo Faerstein, Claudia S Lopes, Sherman A James

National School of Public Health/Oswaldo Cruz Foundation; Centre of Statistics and Applications/Lisbon University; Institute of Social Medicine/State University of Rio de Janeiro; Sanford School of Public Policy/Duke University

Background Prevalence of overweight and obesity is growing in all socioeconomic, age and sex categories in Brazil.
Objective To investigate the association between education and body mass index (BMI) trajectory, and whether skin color/race (i.e., white/brown/black) plays a modifier role.
Methods Census-type cohort (Pró-Saúde Study) of Rio de Janeiro State government employees. Of the 4,030 participants in Phase 1 (1999), 3,253 (81 %) participated in Phase 2 (2003) and 3,058 (76 %) in Phase 3 (2006). The BMI trajectories were modeled using linear mixed-effects models and likelihood ratio tests were used to select fixed and random effects.
Results Crude analysis by education strata revealed larger increases in BMI among men and women with junior high education than among university graduates. However, at every data collection stage, differences between mean BMI values by education strata were larger for women than men. In both sexes, the greatest increase in BMI occurred among blacks with the lowest level of education; the smallest increase occurred among whites with university education. In covariate-adjusted models, simultaneous comparisons by education and color/race revealed that, among women, BMI increased most among those who had completed junior high or high school (means of 1.70 and 1.57 kg/m^2, respectively), as compared to university graduates. The next largest increases occurred among brown and black women (means of 0.81 and 0.68 kg/m^2, respectively), as compared with white women. Similarly, among men, increases in BMI were greatest among those with junior high education, as compared with university graduates, and varied by year of data collection (1.07, 0.83 and 0.56 kg/m^2 in 1999, 2001 and 2006, respectively). Hence, the speed of weight gain diminished among men with junior high education, the group that had been displaying the worst weight gain trajectory. No interaction was observed between education and color/race.
Conclusion Lower education was associated with greater weight gain, especially among women. Color/race was significantly associated with increased BMI among women; the effect of education varied over time among men with less schooling. Considering the complex relationships among indicators of social position and excess weight, and the limited effectiveness of weight control strategies, worldwide, longitudinal studies of weight gain in Brazil offer a unique contribution to both scientific understanding and the development of policies to address the global obesity epidemic.

OC 4.1.3

Gender differences in outcome of acute myocardial infarction. Data from the EurHoBOP project

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Background Evidence regarding the role of gender on in-hospital mortality after Acute Myocardial Infarction (AMI) is controversial and does not allow for a conclusive evaluation to date. On the other hand, gender differences in access to optimal care were observed in several studies, showing that women have lower probability of admittance to specialized wards and invasive strategies. The large database collected within the EurHoBOP project (EURopean HOspital Benchmarking by Outcomes in acute coronary syndrome Processes) offers the unique opportunity to investigate the potential gender differences in AMI outcomes in different geographical settings.
Objectives To compare in-hospital mortality and access to Percutaneous Coronary Intervention (PCI) by gender in patients with AMI.
Methods The EurHoBOP project started on 01/09/2009. About 70 hospitals in 7 European countries were requested to provide data of 200 consecutive patients with discharge diagnosis of acute coronary syndrome, retrospectively recruited. All patients discharged for AMI were included in the analyses. A multilevel approach was applied in order to take into account the resemblance between patients (first level) treated in the same hospital (second level) and between hospitals belonging to the same country (third level). Analyses on access to PCI were restricted to the Italian database, waiting for completion of data collection.
Results With respect to in-hospital mortality, most of the variability is placed at the patient level (87 %). Approximately 9 and 4 % of the total variability is located at the hospital and country level,

respectively. The unadjusted analysis showed that women are at higher risk (Odds Ratio: 1.62; 95 % CI: 1.38–1.90) however, after adjusting for patient-level confounders, gender differences disappear (the Odds Ratio drops to 1.00; 95 % CI: 0.83–1.21). The negligible effect of gender is homogenous between hospitals and between countries. Hospital characteristics seem to have no effect on in-hospital mortality, except for a slightly significant protective effect of intensive care unit. According to the Italian sub-analysis, females were less likely to be treated with PCI within 48 h (adjusted Odds Ratio: 0.67; 95 % CI: 0.53–0.85). No significant effect of gender was observed when analyzing PCI within 6 or 12 h.
Conclusions After adjustment, no in-hospital mortality differences between males and females were observed, strengthening recent findings according to which higher mortality among women might be explained by different age and risk factors distribution. However, when access to optimal care was studied in the Italian subset, gender differences were still evident. Further investigations are needed.

OC 4.1.4

Neighborhood deprivation effects on waist circumference in an urban Portuguese population

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Background The burden of obesity is high in developed countries. Although several strategies have been implemented to prevent or treat this condition, they have fundamentally failed to modify its increasing trend at the population level. There is evidence supporting that living in deprived neighborhoods increases the odds of being obese independently of individual characteristics.
Objectives We quantified the cross-sectional association between neighborhood deprivation and waist circumference in a representative sample of community dwellers in an urban Portuguese population. Furthermore, we searched for interactions between individual socioeconomic characteristics and neighborhood deprivation regarding waist circumference.
Methods Between 1999 and 2003, we assembled a representative sample of community dwellers of Porto, the second largest Portuguese city. We collected data on sociodemographic and behavioral characteristics, including diet, alcohol consumption and physical activity, in face-to-face interviews. Waist circumferences were measured using a standardized technique. Self-reported addresses linked individuals to specific neighborhoods. The socioeconomic characterization of neighborhoods was based on data from the 2001 National Census. We used latent class analysis to model a set of eleven socioeconomic indicators related to age and education/occupation of residents and housing characteristics, and identified three discrete deprivation neighborhood classes. Random effects models with a random intercept at the neighborhood level were used to quantify the association between neighborhood class and waist circumference, adjusting for individual age, marital status, education, dietary intake, alcohol consumption, sedentariness and smoking status. Interactions between individual sociodemographic characteristics and neighborhood class were tested.
Results The effect of neighborhood class on waist circumference varied with individual education among women but not among men (p for interaction between most deprived neighborhood * education: 0.020 and 0.824, respectively). Among women with less than 12 years of education, those living in the most deprived neighborhoods presented higher adjusted mean waist circumferences [most deprived vs. least deprived: $\beta = 5.72$ cm, 95 % confidence interval (CI): 3.26 to 8.17]. Among women with 12 years or more of education, no association between neighborhood class and waist circumference was found (most deprived vs. least deprived: $\beta = -0.28$ cm, 95 % CI: -4.13 to 3.58). Among men, no significant associations were found between neighborhood class and waist circumference (most deprived vs. least deprived: $\beta = 0.41$ cm, 95 % CI: -1.87 to 2.69).
Conclusions Living in deprived neighborhoods was associated with a significant increase in waist circumference only among less educated women. Educational attainment seems to protect women against deleterious effects of neighborhood deprivation on waist circumference.

OC 4.1.5

Association of unemployment and hospital admission: an analysis in a cross sectional and cohort approach

Gabriele Berg-Beckhoff, Carsten Kronborg Bak, Pernille Tanggaard Andersen, Gabriel Gulis

Unit for Health Promotion Research, University of Southern Denmark, Esbjerg; Danish Centre for Rural Research, University of Southern Denmark, Esbjerg, Denmark

Background Up to now the association between unemployment and hospital admission is approved, but the causal relationship is still under discussion.
Objective The aim of the present analysis is to compare results of a cross sectional and a cohort approach considering overall hospital admission and hospital admission due to cancer, circulatory disease, and musculoskeletal disorders.
Method Register based data was analyzed for the period 2006–2009. Hospital admission was measured as a first inpatient hospital admission. Exposure of interest was the individual unemployment situation separated in different compensation strategies in the year 2006. In the cross sectional analysis, a multiple logistic regression model was conducted based on the year 2006 (n = 114,373). Cohort information from the same year up to 2009 was available. In the cohort analysis a follow up of healthy individuals aimed to look on the effect of unemployment on health; unhealthy individuals were excluded, leading in total to n = 89,764 persons. A Cox regression model was used considering the first relevant hospital admission time dependently.
Result In the cross sectional population 12.5 % of the Esbjerg's inhabitants had at least 1 day hospital admission in 2006. Social welfare compensated unemployment and hospital admission was statistically significant associated in the cross sectional analysis. The cohort approach suggests for circulatory disease that social welfare compensated unemployment might lead to hospital admission due to the disease (HR: 1.63; 95 % CI: 1.32–1.81). For hospital admission due to cancer or muscle skeletal disorders no such an effect was seen. Persons having voluntary insured unemployment compensation had increased hospital admission neither in the cross sectional nor in the cohort approach.
Discussion Hospital admission due to circulatory disease shows a causal relationship from social welfare compensated unemployment to the disease. However, for hospital admission due to cancer or muscle skeletal disorders, the results suggest that the disease cause joblessness and finally social welfare compensated unemployment and not vice versa. However, with regard to salary insured unemployment no effect on hospital admission was seen. Different results were visible considering different study designs. This should be recommended in further analysis of social inequality.

OC 4.1.6

Spatial distribution of tuberculosis and the socioeconomic context in Rio de Janeiro, Brazil

Alessandra Gonçalves Lisbôa Pereira, Luiz Ivan Ortiz Valencia, Claudia Caminha Escosteguy, Roberto de Andrade Medronho

Instituto de Estudos em Saúde Coletiva da Universidade Federal do Rio de Janeiro; Hospital Federal dos Servidores do Estado, Ministério da Saúde

Background Tuberculosis is a serious public health problem and many studies have associated incidence of tuberculosis to a poor socioeconomic condition.
Objectives This study aimed to identify areas of risk of tuberculosis and the association between the disease and socioeconomic indicators in Rio de Janeiro, Brazil.
Methods The authors conducted an ecologic study in the city of Rio de Janeiro to evaluate the association between the average incidence rate of tuberculosis from 2004 to 2006 and socioeconomic indicators of the Census of 2000, using the district of residence as the unit of analysis. The average incidence rate of tuberculosis was standardized by sex and age and smoothed by empirical Bayesian method. The spatial autocorrelation was assessed by Moran's index. The authors used a Conditionally Auto-Regressive (CAR) model to evaluate the association between average incidence rate of tuberculosis and socioeconomic indicators.
Results It was observed a high incidence of tuberculosis in some districts of the Port Area, the Northern Area, and the slums of Rocinha and Vidigal. Significant spatial autocorrelation was found for incidence rate of tuberculosis ($I = 0.218$; $p < 0.007$) and several independent variables, among them: percentage of households with individual residents ($I = 0.72$, $p < 0.002$); per capita income ($I = 0.63$, $p < 0.002$); percentage of households whose householder monthly income was USD 235.00–390.00 ($I = 0.51$, $p < 0.002$); Human Development Index (0.50, $p < 0.002$); Life Expectancy at Birth ($I = 0.43$, $p < 0.001$); percentage of households with adequate water supply ($I = 0.36$, $p < 0.003$); and percentage of households with a density greater than two persons per bedroom ($I = 0.33$, $p < 0.002$). The final CAR model identified a positive association between the variables: percentage of households whose householder monthly income was USD 235.00–390.00; percentage of households with individual residents; and percentage of households with a density greater than two persons per bedroom.
Conclusions The spatial analysis identified areas of risk of tuberculosis in the districts of the municipality of Rio de Janeiro and the final model corroborated the association between incidence of tuberculosis to a poor socioeconomic condition.

Oral Communications Session 4.2. Occupational health

OC 4.2.1

Mortality in nurses, compared to other health professionals and other professionals between June and September 2003 in Portugal

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Background Studies mention that nurses have an excess mortality due to cancer, leukaemia, and pancreatic cancer and have an excess of suicide.
Objectives To understand if there is an excess mortality from specific causes in nurses who died between June and September 2003, in Portugal, compared to other healthcare professionals (OHP) and other professionals (OP).
Methods We studied all deaths in Portugal between 1st July and 30th September 2003 using the death certificate database.
We used multiple correspondence analysis to define mortality profiles. PM and PMR were computed to compare proportions of expected and observed deaths by occupational group.
Results There was an excess of deaths among female nurses compared to male nurses. Nurses and OHP died later than OP.
Healthcare professionals and OP were not different in terms of the two main causes of death. However, the third cause of death varied by occupational group: in healthcare professionals (nurses and OHP) was diseases of the respiratory system, in nurses diseases of nervous system and in OP diseases of circulatory system, neoplasms, and symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified.

Multiple correspondence analysis identified four mortality profiles: two determined by the type of death, age group and cause of death and the others by age group, cause of death, civil status and occupation.

Healthcare professionals compared to OP had an excess mortality due to diseases of the nervous system and a deficit of mortality due to diseases of the genitourinary system.

Nurses compared to OP, had an excess of mortality due to diseases of the nervous system but a deficit of mortality due to diseases of the respiratory system and symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified.

There was an excess mortality due to certain infectious and parasitic diseases, endocrine, nutritional and metabolic diseases, diseases of the nervous system, and external causes of morbidity and mortality in nurses when compared to OHP. There was a deficit of mortality due to diseases of the respiratory system.

OHP compared to OP had an excess of mortality due to diseases of the nervous system and diseases of the respiratory system and a deficit of mortality due to external causes of morbidity and mortality.
Conclusions Healthcare professionals, including nurses, died later than OP, had an excess mortality from diseases of the nervous system, and a deficit of mortality due to diseases of the genitourinary system.

OC 4.2.2

Exposure to metal-working fluids in the automobile industry and the risk of male germ cell tumors

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Introduction In a previous analysis of a case–control study of testicular cancer nested in a cohort of automobile workers, we observed an increased risk for testicular cancer among workers who had ever been involved in occupational metal-cutting tasks. We investigated whether this risk increase was due to exposure to metal-working fluids (MWF).
Methods Occupational exposure to MWF was assessed in detail using a job-specific questionnaire for metal-cutting work. We calculated ORs and associated 95 % CIs by conditional logistic regression individually matched for age (±2 years) and adjusted for a history of cryptorchidism.
Results The prevalence of exposure to MWF was 39.8 % among cases and 40.1 % among controls. For total germ cell tumours and

seminomas we did not observe risk increases for occupational exposure to MWF (OR 0.88; 95 % CI 0.58–1.35). However, dermal exposure to oil-based MWF was associated with an increased risk for non-seminomatous testicular cancer. Dermal exposure to oil-based MWF for more than 5,000 working-hours showed the highest risk estimates (OR 4.72; 95 % CI 1.48–15.09).
Discussion Long-term dermal exposure to oil-based MWF was a risk factor for the development of non-seminomatous testicular germ cell cancer. Possible measures to reduce exposure include the introduction of engineering control measures such as venting or enclosing of machines, and enforcing the use of personal protective equipment during metal cutting.

OC 4.2.3

Health associates of different employment arrangements: a typological approach to employment security

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Background During the past decades, the traditional employment relationship has undergone fundamental changes. As part of a larger shift from a Fordist to a Post-Fordist mode of socio-economic regulation and the resulting emphasis on flexibility, there has been a decline of the so-called "standard employment relationship" in favour of several non-standard employment arrangements. With the standard employment relationship we intent to describe the unique combination of full-time working hours, stability of employment *and* attached social rights and protections that was typical for the post second world war period in Europe and the US. This transformation of the employment relationship in the last decades is compelling the need for incorporating health risks related to employment conditions and employment relations in the study of the association between work and health.
Objectives The objective of our contribution is to relate a multidimensional indicator of employment security, combining different aspects of employment (employment stability; sustainability of income; opportunities for training and development; entitlement to workers' rights and benefits; working time arrangements, formal collective bargaining and negotiation procedures; and informal employment relations), to a selection of health outcomes in a sample of European wage-earners.
Methods Data from the EUROFOUND 2010 European Working Conditions Survey are used. This cross-sectional dataset contains information on more than 40,000 wage-earners from all EU27 countries as well as Norway, Croatia, the former Yugoslav Republic of Macedonia, Turkey, Albania, Montenegro and Kosovo. Latent Class Clustering techniques are performed to construct a typology of employment security. Multilevel analyses relate the typology to three different health outcomes: self-perceived general health, mental well-being and physical complaints.
Results The results of the cluster analysis show five types of employment arrangements: (1) "standard employment-like jobs"; (2) "instrumental jobs"; (3) "precarious intensive jobs"; (4) "precarious unsustainable jobs" and (5) "portfolio jobs". The results show a clear relationship between the typology and the three selected health outcomes, even when controlled for other characteristics of the quality of work.
Conclusion This multidimensional approach provides innovative insights into the structuring of contemporary employment arrangements among wage-earners and its relationship with health. The results are in line with previous research on the association between non-standard employment arrangements and adverse outcomes in terms of health. The results of this study will raise awareness to public health consequences of employment flexibility.

OC 4.2.4

Predictors for the incidence of upper limb pain and associated disability in a cohort of Spanish workers: findings from the CUPID study

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Background In Spain, as in many other countries, upper limb pain (ULP) is a major cause of morbidity and sickness absence.
Objective To assess the importance of biological, lifestyle, occupational and psychological and culturally-influenced risk factors for incident ULP and disabling ULP in a cohort of Spanish workers.
Methods As part of the international CUPID study, 1,105 Spanish nurses and office workers, aged 20–59 years, were asked at baseline about pain in the past month at six anatomical sites in the upper limb (left and right shoulder, elbow and wrist/hand), associated disability, demographic characteristics, lifestyle, occupational and psychological and culturally-influenced risk factors. At follow up, 12 months later, pain in the past month and associated disability were again ascertained. Pain was defined as disabling if it had made it difficult or impossible to carry out any of a list of specified everyday activities. Analysis was based on anatomical sites clustered by person, and was restricted to sites that had been free from pain in the month before baseline. Associations with development of ULP and disabling ULP at follow-up were assessed by multilevel logistic regression models, and characterised by odds ratios (ORs) with associated 95 % confidence intervals (CIs).
Results 971 participants (87.9 %) completed follow-up. Among 5,234 anatomical sites free from pain in the past month at baseline, new pain and new disabling pain had developed at follow-up in 355 (6.8 %) and 195 (3.7 %) respectively. For new ULP and new disabling ULP, risk was higher in women (ORs 1.8, 95 % CI 1.1–3.0, and 2.7, 95 % CI 1.2–6.5 respectively) and increased significantly with age. After adjustment for sex, age and occupation, both outcomes were associated with job dissatisfaction (ORs 1.7, 95 % CI 1.1–2.7 and 2.8, 95 % CI 1.5–5.3 respectively) and somatising tendency (ORs 2.3, 95 % CI 1.6–3.3 and 3.3, 95 % CI 1.8–5.9 respectively). Also, being a nurse (OR 1.8, 95 % CI 1.1–2.9) and having strong adverse beliefs about the work-relatedness of upper limb pain (OR 1.9, 95 % CI 1.1–3.3) were found to be significant risk factors for new disabling UPL.
Conclusion Demographic characteristics and occupational and psychological and culturally-influenced risk factors appear to have an important role in the incidence of ULP. Our results support the case for a more holistic approach to prevention.

OC 4.2.5

Night work, weight gain and gender among Brazilian nurses

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Summary justification of the topic relevance Cardiovascular risks associated to night work have been increasingly dealt with by international literature. Working at night breaks the natural sleep-wakefulness cycle, exposes the organism to artificial light at in unusual biological time, provokes an irregular pattern of food consumption and interferes with routine social and family life. Changes in behavior and lifestyle due to unusual work hours, including changes related to nutrition, smoking, alcohol consumption and exercise, can provide a route to greater risk of obesity.
Background The incidence of obesity and other metabolic syndrome symptoms are increased in night and shift workers. This may be due to a misalignment between the internal circadian rhythms and the behavioral rhythm.
Objective To investigate the relationship between night work and weight gain among registered nurses, considering possible gender differences.
Methods Cross-sectional study was performed comprising 3,229 registered nurses (83 % of those eligible) workers of public hospitals in Rio de Janeiro, Brazil. They completed a comprehensive questionnaire with data related to sociodemographics, professional work, as well as health habits and lifestyles. Workers were classified into day workers with no experience on night work (reference group), former night workers, nurses who have worked nights for up to 5 years, and nurses who have worked nights for more than 5 years. They were tested in relation to the association with reported weight gain, defined as the gain of more than 8 kg since they were 20 years old up to data collection. The analyses were stratified by sex. The logistic regression analysis considered a conceptual model based on distal (socioeconomic status), intermediate (occupational characteristics) and proximal (lifestyle characteristics) determinants.
Results Women comprised 87.3 % of the sample; mean age was 39.9 (SD = 10.0) years old. Most participants (87.2 %) were engaged on 2 or 3 jobs; 61 % were night workers. Weight gain was more frequent among men than among women (74 vs. 65 %). Among women, working at night for more than 5 years was associated with higher chances of reporting weight gain (OR = 1.37; IC = 1.01–1.91) in the final model. However, no significant association was found among men.
Conclusion Findings suggest that night work may play a role in weight among women. Prevention strategies should be based on specific information and educational programs aimed at dealing with lifestyle challenges associated with night work. Further studies are needed to understand biological mechanisms involved and the complex behavioral and social adaptations experienced by night-shift workers.

OC 4.2.6

Low coworker social-support increases days of sickness-absenteeism and it operates as an effect modifier in south Brazilian hospital workers

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Background Sickness-absenteeism consequences impacts on worker and family, employer organization, governmental and citizens contributors. Sickness-absenteeism sets a serious problem for health care workers in a variety of countries. Hospital workers of Santa Catarina's State Department of Health (SES/SC), in south Brazil, presents this issue, named as Health Treatment Licences (HTL). They are civil servants.
Objectives To identify the contribution of Job Demand-Control (JDC) and social support for sickness-absenteeism duration of HTL in hospital workers of SES/SC.
Methods This is a case–control study nested in a cohort of hospital workers followed up between 07/01/2008 and 06/01/2009. Workers with HTL in this period were selected as cases and controls were those without it. They were matched by the variables sex, age and working sector in a case–control group, with at least one case and one or more controls. Two eligibility criteria were used for both cases and controls. First, participant had to start working in a SES/SC hospital unit at most 07/01/2005, to increase the probability of being acculturated in the institution. Second, the last HTL most have finished until 07/01/2007, to reduce the probability of HTL study being influenced by a previous one. HTL duration in days was the outcome, JDC as well as supervisor and coworker social support were the exposure variables, and these associations were adjusted by socioeconomics and occupational variables. Exposure variables were collected using a questionnaire applied between March and August 2010, others variables were collected using secondary data. Regression analysis was performed by count models and zero-inflated negative binomial fitted better.
Results One hospital was excluded because it had not controls for match case, 13 hospitals units participated in the study. The data bank used for analysis included 425 participants (144 cases; 281 controls). Low coworker social-support added 2,04 (95 % CI: 1,05–3,93) HTL days, and it modified the effect of low job strain to 2,68 (95 % CI: 1,37–5,27) HTL days and high job strain 78 % (95 % CI: 1.02–3.12) HTL days, both more than any JDC category combined with high coworker support.
Conclusion Hospital workers adapted to high strain tasks, typical of this kind of institution, shows unbear the workload when they are submitted to low coworker support, and increase the sickness-absenteeism days. Results suggest the same about the low strain tasks, although it are unusually in hospitals. A program planned to intervene at social-support among these hospital workers could use the HTL as an indicator to assess it success.

Oral Communications Session 4.3. Nutrition and health promotion

OC 4.3.1

We are family: parents, siblings and eating disorders. Results from the Stockholm Youth Cohort

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Background Eating disorders (ED) are an important cause of morbidity, especially in young women. This study aimed to explore role of parental characteristics and other aspects of family background in the development of ED in adolescent males and females.
Methods *The Stockholm Youth Cohort* is a prospective total-population cohort study that comprises all children and adolescents resident in Stockholm County during the period 2001–2007, plus their parents and siblings. We followed up all individuals aged 12 or over (N = 249,884), using record linkage to identify cases of ED from outpatient care.

Analysis We investigated associations of parental social characteristics and history of psychiatric disease, family type, and number of siblings and half-siblings with the incidence of eating disorders at age 12–23 years.
Results A total of 3,251 cases of ED (2,971 females and 280 males) were recorded among 249,884 study subjects. Cox regression modelling indicated that there was an increased risk of ED in female offspring of parents who had higher education (e.g. fully-adjusted HR 1.72, 95 % CI 1.44, 2.05 for degree-level vs. elementary-level education) but not in males (HR 0.74 95 % CI 0.42, 1.30 for degree-level vs. no education, $p < 0.001$ for sex interaction). In females, increasing number of full siblings had a protective effect (e.g. fully adjusted HR 0.91, 95 % CI 0.87–0.96, per sibling) while increasing number of half-siblings appeared to increase risk of eating disorders.
Conclusions There is a significant difference in how parental education affects risk of eating disorders among males compared to females, possibly through high demands or a perceived pressure. The association between half-siblings and increased risk of ED could represent underlying conflicts in the family.

OC 4.3.2

Evaluation of a curricular component in a school-based intervention to increase fruit and vegetable consumption among Danish adolescents: The Boost study

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Background Large proportions of school children do not reach the international recommendations of eating at least 400 gram fruit and vegetables (FV) per day. The Boost study is a multi-component school- and community-based intervention designed to increase 13-year-old's (7th grade) intake of FV. The Boost curricular component consisted of a teaching material which addressed important and changeable determinants for FV intake among adolescents such as awareness and attitude. The Boost intervention including the curricular component was implemented in 7th grade by teachers in the school year 2010/2011 and tested in a cluster-randomized controlled trial.
Objectives To measure the effect of the curricular component in the Boost intervention on the students' intake of FV at the end of the intervention (1st follow up).
Methods A random sample of 40 schools (N = 2.335) from 10 randomly selected municipalities in Denmark were randomized into 20 intervention- and 20 control schools. The effect analyses of the curriculum included baseline- and 1st follow-up data from students in intervention schools only (N = 860), their parents (N = 798), and 7th grade teachers (N = 114). The association between curriculum dose (mean number of Boost assignments delivered by the teachers at each school, trichotomised into high, medium and low dose) and students' daily intake of FV (24-h recall) at 1st follow up was analysed by multi-level analyses (controlled for i.a. FV intake at baseline). Analyses were stratified by gender and socioeconomic status (SES) measured by parental education and occupation.
Results Multi-level analyses showed a non-graded association between dose of Boost assignments delivered and the students' FV intake at the end of the intervention. Students in schools with high dose of Boost assignments ate 37 gram more FV at the end of the intervention compared to students who received low dose. Students in schools with medium dose of Boost assignments ate 88 gram more FV than students in schools with low dose. The association between dose and intake did not differ significantly by gender or SES, although stratified analyses revealed a tendency towards a greater effect among boys.
Conclusions Preliminary analyses in this study indicate that a curricular component targeting FV is effective to increase students' FV intake. Further analyses will examine the mechanisms behind the non-graded association between dose of assignments and FV intake. 'Boost' will provide valuable insights on the effect of a curricular component in multi-component interventions on adolescents' FV intake as well as on the specific determinants addressed by the assignments.

OC 4.3.3

Tracking of fruit and vegetable intake from age 15 to 27

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Background Tracking of health behaviours from adolescence to adulthood is often highlighted as a rationale for conducting health promoting interventions in childhood and adolescence. Few studies have examined tracking of fruit and vegetable (FV) intake.
Objectives To examine tracking of FV intake from age 15 to 19 to 27.
Methods The population was a national cohort of Danish 15-year-olds (baseline 1990, response rate 86 %, n = 847) with a first follow-up 4 years later (response rate 85 %, n = 729) and a second follow-up 12 years later (response rate 81 %, n = 614). FV intake was measured by food frequency questionnaire at all three time points with four response categories: Every day, several times a week, once a week, seldom/never. The outcome measures (FV intake at age 19 and 27) were dichotomized into daily FV intake versus less than daily. The determinant (FV intake at age 15) was trichotomised into (1) every day, (2) several times a week, and (3) once a week/seldom/never (reference category). We used logistic regression analyses to analyze whether FV intake at age 15 predicted FV intake at the following two time points. The analyses included 614 respondents with responses at all three data points (72 % of the respondents with baseline data).
Results Among 15-year-olds 43.1 % ate fruit and 32.7 % ate vegetables daily, among 19-year-olds 30.0 % ate fruit and 24.6 % vegetables daily, among 27 year-olds 32.7 % ate fruit and 32.0 % ate vegetables daily. The odds for eating fruit daily at age 19 increased by increasing frequency of intake at age 15 (from 5.38 [1.63–17.83] for eating fruit several times a week to 16.08 [4.90–52.73] for eating fruit daily). The same pattern was observed for daily fruit intake at age 27 (from 3.99 [1.66–9.61] for eating several times a week to 7.69 [3.21–18.43] for eating fruit daily). Similarly, the odds for eating vegetables daily at age 19 increased by increasing frequency of intake at age 15 (from 2.90 [1.3–6.35] for eating vegetables several times a week to 10.87 [5.00–23.62] for eating vegetables daily). The same pattern was observed for daily vegetable intake at age 27 (from 1.70 [1.01–2.88] for eating several times a week to 3.77 [2.21–6.42] for eating vegetables daily).
Conclusion Teenagers' FV habits tracked into adulthood, especially fruit intake patterns remained stable. This confirms the importance of supporting children and adolescents in developing healthy eating habits.
Funding sources TrygFonden, the Nordea foundation, the Danish Cancer Society.

OC 4.3.4

Effect of parental child-feeding practices on fruit and vegetable intake of pre-school children

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Background Parents are key elements on the acquisition of children's food habits. The complex nature of the concept of parenting feeding control contributes to the described inconsistencies on the effect of parental control practices on children's food consumption, namely of fruit and vegetables intake. In particular, the insufficiency of literature on the expanded concept of overt and covert control warrants further research.
Objectives To evaluate the association between maternal feeding practices and fruit and vegetable intake in pre-school children.
Methods This study involved mothers and children aged 4–5 years ($n = 4{,}437$), enrolled on the Portuguese birth cohort—Generation XXI. Children's dietary intake (Food Frequency Questionnaire) and other child and parent's characteristics were collected by trained interviewers using a structured questionnaire. Children and mothers' weight and height were measured using standardized procedures. Mothers completed the Child Feeding Questionnaire for evaluating dimensions such as concerns about weight, perceived responsibility, restriction, pressure and monitoring plus the overt and covert control scale. Logistic regression models were used to estimate the association between parental feeding practices (dimension score categorized into quartiles) and children's fruit and vegetable intake (<5 vs. ≥5 daily portions).
Results After adjustment for maternal (age, BMI, education) and child's (weight for gestational age, BMI, living with siblings) characteristics, a lower intake of fruit and vegetables (<5 daily portions) was inversely associated with higher score in perceived responsibility (4th vs. 1st Q, OR = 0.65; 95 % CI: 0.53; 0.80, p trend < 0.001), concern about child's weight (4th vs. 1st Q, OR = 0.71; 95 % CI: 0.59; 0.87, p trend = 0.007), restriction (4th vs. 1st Q, OR = 0.73; 95 % CI: 0.60; 0.88, p trend < 0.001), monitoring (4th vs. 1st Q, OR: 0.67; 95 % CI: 0.55; 0.81, p trend < 0,001), overt control (4th vs. 1st Q, OR: 0.58; 95 % CI: 0.49; 0.69, p trend < 0.001) and covert control (4th vs. 1st Q, OR: 0.63; 95 % CI: 0.52; 0.75, p trend < 0,001). In contrast, a positive association was observed for 'pressure to eat' but only significant for boys in the third quartile of intake (3th vs. 1st Q, OR: 1.57; 95 % CI: 1.21; 2.04).
Conclusions A higher parental perceived responsibility, parental concern about child's weight and also parental control feeding practices (restriction, monitoring, overt and covert control) were associated with less probability of inadequate fruit and vegetable intake in 4 years old children.
Funding Fundação Calouste Gulbenkian and FCT [PTDC/SAU-ESA/108577/2008].

OC 4.3.5

Influence of high energy-dense foods consumption at 2 years of age on diet at 4 years of age

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Background The consumption of unhealthy food at early ages could have long-term unfavorable health effects, but could a higher consumption of unhealthy foods early in life predict a worst diet few years later?
Objective To evaluate the association between the consumption of high energy-dense foods at 2 years of age with patterns of consumption at 4 years of age.
Methods As part of the population-based birth cohort Generation XXI, which recruited newborns during 2005–2006 at Porto, a sample of 789 children was revaluated at 2 and 4 years of age. Data on demographic, socioeconomic conditions and lifestyles of both children and mothers were collected. Maternal and children's BMI was obtained from weight and height measured by trained professionals. Based on food frequency questionnaires (FFQ), 5 food groups were defined: soft drinks (carbonated and non-carbonated), crisps, fast food (pizza and burger), cakes and sweets (chocolate and candies). Food items were categorized considering a weekly consumption at 2 years, and using as cutoff the median of consumption at 4 years. With information of the 4-year-FFQ, a healthy eating index was also constructed to evaluate the adherence to the World Health Organization dietary recommendations for children (2006). Quartiles of consumption were obtained from food groups of interest, scoring from 1 to 4 (4 was assigned to the upper or lower quartile of healthy or unhealthy food consumption, respectively). The associations were evaluate through unconditional logistic regression models [*odds ratio* (OR) and 95 % confidence Intervals (95 % CI)], adjusted for maternal age and education level, caregiver, siblings, and child's sex and BMI.
Results In multivariate analysis, the consumption of crisps at 2 years was inversely associated with crisps' consumption at 4 years of age (OR = 0.20, 95 % CI 0.12–0.33). In contrary, a positive association was found for sweets (OR = 1.48, 95 % CI 1.08–2.03) and fast-food (OR = 3.16, 95 % CI 1.16–8.59). An inverse association between cakes intake at 2 years of age and meat and meat products intake at 4 years was found (OR = 0.67, 95 % CI 0.47–0.95) and also between fast-food and fruit and vegetables (OR = 0.43, 95 % CI 0.19–0.99). No significant association was found between the consumption at 2 years of age and the healthy eating index at 4 years.
Conclusions The consumption of unhealthy foods at 2 years of age predicted the consumption of some food groups at 4 years of age, nevertheless it did not determinate the adherence to a healthy dietary pattern later in life.
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Oral Communications Session 4.4. Cardiovascular diseases

OC 4.4.1

Serum ferritin and the risk of incident type 2 diabetes in middle-aged men

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Background Iron is a pro-oxidant catalyst and in excess accumulates in the liver and the pancreas, some of the key organs in glucose homeostasis regulation.
Objectives To determine the association between body iron, assessed by serum ferritin concentration, and the risk of incident type 2 diabetes mellitus.
Methods In a prospective cohort of 1,614 men free of type 2 diabetes at baseline examinations, aged 42–60 years at entry, serum ferritin concentration was used to predict incident type 2 diabetes, assessed by self-administered questionnaires (reported physician-set diagnosis of type 2 diabetes) and by fasting and 2-h oral glucose tolerance test (OGTT) blood glucose measurements (fasting plasma glucose ≥7.0 mmol/l or 2-h OGTT plasma glucose ≥11.1 mmol/l) at re-examination rounds 4, 11, and 20 years after the baseline. Statistical analysis was step-in logistic regression with P in <0.01. Two-sided $P < 0.05$ was taken statistically significant.

Results There were 331 new cases of incident type 2 diabetes during the mean follow-up of 6,138 days. In baseline serum ferritin thirds, lowest to highest, the cases distributed as 86 in 535, 108 in 539), and 135 in 540 subjects. Multivariate-adjusted odds ratio, adjusted for body mass index, systolic blood pressure, medication for hypertension, medication for dyslipidemia, serum HDL concentration and alcohol intake, per 100 ng/ml increase in serum ferritin concentration, was 1.16 (95 % CI 1.07–1.27, $P = 0.001$). Serum ferritin had a borderline statistical interaction with body mass index ($P = 0.06$), serum ferritin—type 2 diabetes association being more pronounced in those with higher body mass index.
Conclusions Body iron as assessed by serum ferritin concentration is associated with the risk of incident type 2 diabetes in middle aged men.

OC 4.4.2

Prevalence and mortality of congenital heart defects in Tuscany Region: a population based study

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Background Congenital heart defects (CHDs) are the most frequent group of congenital anomalies and the main cause of mortality in newborns. Estimation of the prevalence of CHDs according their severity is crucial to plan health care services and to set up specific preventive actions.
Objective The aim of the study is to estimate the prevalence and mortality of All CHDs and Nonchromosomal CHDs (NCHRCHD), in Tuscany from 1992 to 2009, and to compare two sub-periods.
Methods Data collected by the population-based EUROCAT Registry of Birth Defects of Tuscany, were used. They regarded live births (LBs), fetal deaths (FDs), terminations of pregnancy for fetal anomaly (TOPFA), prenatal diagnosis (PD), perinatal and neonatal mortality, out of 488,890 births surveyed from 1992 to 2009. All cases were coded according to the ICD9-BPA or ICD-10. The NCHRCHD cases were classified in three severity classes: SI, SII, SIII (according to decreasing perinatal mortality). The NCHRCHD cases were classified into isolated or associated according to the presence or absence of an additional major non-cardiac anomaly.
Results 3,653 CHD cases were identified for an overall prevalence of 7.47 per 1,000. LBs prevalence decreased significantly from 1992–2000 to 2001–2009 (Rate Ratio, RR = 0.81 95 % CI: 0.76–0.87), while TOPFA prevalence increased more than twofold (RR = 2.56 95 % CI: 1.80–3.71). The rate of perinatal and neonatal mortality significantly reduced (RR = 0.38 95 % CI: 0.23–0.60; RR = 0.34 95 % CI: 0.22–0.51). The PD cases increased more than twofold (RR = 2.13 95 % CI: 1.75–2.61). 3,465 NCHRCHD cases were ascertained with a prevalence of 7.09 per 1,000. The LBs prevalence decreased significantly (RR = 0.82 95 % CI: 0.77–0.88). TOPFA prevalence increased by almost threefold (RR = 2.63 95 % CI: 1.75–4.05), PD cases doubled (RR = 2.29 95 % CI: 1.84–2.88). Neonatal mortality was slightly lower than the perinatal (RR = 0.29 95 % CI: 0.18–0.46; RR = 0.37 95 % CI: 0.22–0.61). SI and SII CHDs combined were approximately a quarter (N = 765; 22.1 %) of the total cases, with a stable total prevalence over time (RR = 0.98 95 % CI: 0.84–1.13), and a 17 % significantly decreasing of LBs prevalence. LBs with CHDs (more than 90 % isolated) were 72 % in SI, 92 % in SII, 99 % in SIII. Overall, more than 90 % of TOPFA occurred in SI and SII classes. Only 10 % of TOPFA cases had an associated anomaly in SI, almost 50 % in SII.
Conclusion This study provides the measure of the prevalence of the CHDs in Tuscany region. These estimates can be used to evaluate variations across population over time. Notwithstanding the decreasing of LBs prevalence of more severe CHDs, their impact remains relevant and interventions strategies should take it into account.

OC 4.4.3

Congenital heart disease and pregnancy: effects on the mother

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University of Southern Denmark; University of Copenhagen; Rigshospitalet, University Hospital of Copenhagen

Background Congenital heart disease (CHD) represents the most common group of congenital malformations with an incidence of 5–10 per 1,000 live births. Formerly many of these children died early, but as a result of advances in diagnosis and treatment, most are now surviving to adulthood. Accordingly there is an increasing prevalence of adult with CHD, and a corresponding increase in the number of women with CHD, who wish to become pregnant. In Denmark there are about 15,000 adults with CHD, and about 400 women with heart disease become pregnant each year.
During pregnancy and childbirth the demands on the cardiovascular system increase to accommodate the requirements of the growing fetus. If the woman has a heart disease, these changes may be poorly tolerated and may have deleterious effects on the health of both the mother and the child.
Objectives To examine whether the development of three birth outcomes (age at first birth, augmentation during labor and bleeding postpartum) differs between women with CHD compared to women without CDH during the period 1973–2008.
Methods The study is a cohort study using national registers. The primary data source is the Danish Register of Congenital Heart Disease (DRCHD), which holds data on patients diagnosed with CHD disease since 1963. The register includes a general population reference group of 10 individuals per patient matched on sex and year of birth. The study cohort consists of 14,824 women with CHD, and 139,561 women without CDH. Linkage between the women in DRCHD and the Danish Medical Birth Register resulted in data about all births in these cohorts since 1973.
Descriptive statistics is represented by means of frequencies (N, %) and mean SD for women with and without CHD. Differences between the two groups are evaluated. In each analysis, CHD (yes/no) and birth decades of the women, as well as the interaction between them are included as fixed effects. Age at first delivery is evaluated using an analysis of variance, while augmentation and bleeding are analyzed using logistic regression.
Results and conclusions The analysis showed a significant increase in age at first birth during the period for both women with and without CHD, but no significant difference between the two groups. The same was true for the augmentation. The analysis of bleeding after the delivery showed a significant increase in both groups during the period and a significant higher risk of bleeding in the CHD-group in all birth decades.

OC 4.4.4

Rehabilitation outcome of hypoxic ischemic encephalopathy survivors with prolonged disorders of consciousness

Kaitlen Howell*, Andreas Bender*, Eva Grill

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Background Up to 80 % of cardiac arrest survivors are affected by hypoxic ischemic encephalopathy (HIE). Clinical consequences of HIE range from slight neurological deficits to severe disorders of consciousness (DOC) including the minimally conscious state (MCS), vegetative state (VS), and coma. While multiple prognostic factors for emergence from VS/MCS such as the presence of cortical somatosensory evoked potentials (SSEP) have been reported, there is hardly any long-term data on outcomes. Nevertheless, clinicians are willing to withdraw or limit life-sustaining therapy in patients presenting with unfavorable prognostic markers. Validity of this prognostication remains unclear.
Objectives The purpose of this study was to build upon established knowledge of prognosis for patients with DOC following HIE and to examine predictors of outcome following HIE in a large sample size.
Methods This is a retrospective cohort study of 135 consecutive patients who arrived at one German in-patient neurorehabilitation center with severe DOC following HIE over an approximately 6-year period. Electroencephalographic (EEG) findings, SSEP and auditory evoked potentials (AEP) were extracted from charts of included patients. Outcome was improved functioning at discharge from rehabilitation as measured with the Functional Independence Measure (FIM). EEG, SSEP, and AEP results were entered into logistic regression models which were adjusted for age, sex and length of rehabilitation stay.
Results A total of 132 (26 % female, mean age 52.5 years [SD 19.6, range 3–92]) were included. This sample included many HIE patients transferred to neurorehabilitation despite supposedly 100 % specific indicators of poor prognosis. Mean initial FIM score was 18 (range 18–19); mean discharge FIM score was 26.2 (range 18–103). FIM increased in 25 % of patients; 11 % had a discharge FIM of 50 or above. Improved final FIM score was significantly associated with lack of general changes in all rehabilitation EEGs (0.23 [0.07, 0.72]) and normal AEP results in the initial rehabilitation exam (3.81 [1.21, 12.0]). SSEP results from the first rehabilitation exam were significant when considering final FIM $\geq$50 as the outcome parameter. Length of stay in the rehabilitation facilities and events leading to the HIE not requiring CPR were significant predictors in all models.
Conclusions Even among a group of severely affected patients arriving at a neurological rehabilitation center in a coma, VS, or MCS, there remains potential for improvement. For many of these patients, the improvement followed more than 3 months after the date of HIE. Established markers of prognosis should be reexamined to avoid self-fulfilling prophecies.
*Both authors contributed equally.

OC 4.4.5

Validity of the Seattle Heart Failure Model for prognosis in patients with chronic heart failure from a population at low coronary heart disease risk

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Background Generalizability is a main concern in prognosis. The Seattle Heart Failure Model (SHFM) uses easily obtainable risk predictors and incorporates the effect of therapy. It was developed in a clinical trial database (PRAISE).
Objectives To assess the validity (discrimination and calibration) of the SHFM to predict risk of death in chronic HF patients from an outpatient clinic of a university hospital in Porto, Portugal.
Methods Retrospective cohort of patients with HF and left ventricular systolic dysfunction (LVSD), consecutively referred after 2000, excluding uncorrected primary valvular disease. We used the Kaplan–Meier method to estimate the cumulative risk of death and assigned a SHFM score to each patient, according to individual characteristics at referral and after 6 months. We compared the observed risk of death at 1, 3 and 5 years with that predicted by the SHFM, in the whole sample (550 patients at referral; 425 at 6 months) and the subgroup strictly respecting the inclusion/exclusion criteria of PRAISE (385 at referral; 345 at 6 months). At referral the whole sample included 68.6 % men, the mean (SD) age was 67(14) years, 67.7 % had severe LVSD and 61.3 % were in NYHA class II.
Results At referral, the observed absolute risk of death was 10.5, 24.3 and 37.7 % at 1, 3 and 5 years, respectively, in the whole cohort and 11.0, 24.6 and 36.9 %, respectively, in the restricted sample. The observed risk of death increased progressively with SHFM score, showing good discrimination (area under the ROC curve (95 % CI): 0.73 (0.66–0.80), 0.74 (0.69–0.80) and 0.70 (0.64–0.77) at 1, 3 and 5 years, for the whole cohort). The ratio between observed and predicted risk of death was 1.52, 1.25 and 1.25, over time.

When departing from the 6-month visit, the observed risk of death was 4.1, 17.9 and 31.0 % at 1, 3 and 5 years, in the whole cohort and 3.0, 15.5 and 29.8 %, respectively, in restricted sample. The area under the ROC curve (95 % CI) was 0.78 (0.65–0.91), 0.79 (0.73–0.86) and 0.75 (0.68–0.82) and the ratio between observed and predicted risk of death was 0.89, 1.36 and 1.48.

The results in the restricted sample were very similar.
Conclusions The SHFM showed good discrimination for prediction of death, both before and after therapy optimization, but it needs recalibration for this elderly population with chronic HF. In contrast, it was not sensitive to more or less strict respect for the criteria for inclusion in the derivation cohort.

Time: 11.30–13.00

Oral Communications Session 5.1. Young epidemiologists session

OC 5.1.1

The psychological health at adolescent age in children born with an orofacial cleft: a life course study

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Objectives Adopting a life course approach, we decided to assess the effect of suffering from an orofacial cleft (OFC) on psychological health in adolescence.
Background Being born with an OFC is a traumatic event that affects both the involved children and their families. Notably, suffering from OFC might disturb the sensitive psychological attachment process, and, thereby, impair psychological well-being later in life. Several self-report studies have addressed this question; however to our knowledge no large epidemiological studies have been conducted. Furthermore, no studies have treated the three subgroups Cleft Lip

(CL), Cleft Lip and Palate (CLP) and Cleft Palate Only (CPO) separately, despite possible different etiologies and different impacts.
Methods Linking the Swedish Medical Birth Registry to other national registries, we identified all (n = 621,250) children born in Sweden to native mothers 1987–1993, alive and residing in Sweden until 1st of January 2008. As a proxy for psychological health, we measured dispensed psychotropic drugs in open health care from 1st of July 2005 to 31st of December 2008. After identifying possible confounders and mediators, we analyzed the association between psychotropic drug use and CL, CLP and CPO separately, using a multiple logistic regressions in relation to an OFC. We created three different models; one unadjusted, one adjusted for confounders and one adjusted for confounders and mediators.
Results After adjustment for potential confounding factors suffering from CL (OR = 1.61, 95 % CI: 1.07–2.43) or CPO (OR = 1.60, 95 % CI: 1.22–2.09) increases the risk of psychotropic drug use. These associations decreased after adjustment for mediating factors, and CLP emerged as protective (OR = 0.64, 95 % CI: 0.47–0.87).
Conclusion The impact of an OFC on the psychological health in adolescence seems to be mediated via children's and mother's hospitalizations. The subgroups differed: children with a CL have a higher risk for an impaired psychological health, while the CLP subgroup seem to have a less impaired psychological health than children without OFC when adjusting for both confounders and mediators. This can be related to the fact that CLP is a more severe condition than CL, thus these children possibly receive more attention from the parents, while the aesthetical problem for the latter group might be taken too lightly. Furthermore, since we could see that mothers to children with CLP and CPO spent more time in hospital, these mothers might suffer somatically and/or psychologically from the traumatic event of having a child with an OFC.

OC 5.1.2

Lifecourse socioeconomic position and cognitive function in mid and later life in Central and Eastern Europe: findings from the HAPIEE study

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Background The positive association between socioeconomic position (SEP) across the lifecourse and cognitive function in later life observed in Western populations highlights the public health importance of inequalities in old age. It is not known whether similar associations exist in populations with different social histories with apparently smaller income inequalities, and how early life SEP relates to later life cognition in these societies.
Objectives We aim to investigate the association between measures of SEP across the lifecourse and cognitive function in mid and later life in four Central and Eastern European populations.
Methods Cross-sectional analysis of random population samples of 36,001 men and women aged 45–73 years at cognitive assessment from the Health, Alcohol and Psychosocial factors in Eastern Europe (HAPIEE) study recruited in Novosibirsk (Russia), Krakow (Poland), Kaunas (Lithuania) and six Czech towns. Associations between measures of SEP across the lifecourse and cognition were estimated using structural equation models. Self-reported childhood socioeconomic conditions (maternal education, ownership of household amenities at age 10), own education and current material circumstances were employed as measures of SEP across the lifecourse. Cognitive function was modelled as a latent construct, composed of verbal memory (10-word recall), verbal fluency (naming animals) and letter search speed. The models were age-adjusted.
Results In all countries, SEP measures over the lifecourse contributed similarly to cognition. Own education had the strongest effect on cognition (standardized path coefficients ranged from 0.45 and 0.54 ($p < 0.001$) in Czech men and women to 0.24 and 0.21 ($p < 0.001$) in Russian men and women), followed by current material circumstances (no association was found in Czech women). Although statistically significant, the direct effect of maternal education on cognition was small. The influence of childhood SEP measures on cognition was largely indirect and mediated by education and, to a lesser degree, current material circumstances. The effect of education on cognition was mostly direct, with a small indirect contribution through its influence on current material circumstances.
Conclusions The results show that in these Eastern European populations differences in cognitive functioning in mid and later life reflect socioeconomic position across the lifecourse. The influence of childhood SEP measures on cognition is largely indirect and mediated through later measures of SEP. This suggests that individual socioeconomic trajectories throughout the lifecourse may be particularly important for cognition in later life. With long-term follow-up of this and other Eastern European cohorts future research may benefit from the lifecourse approach to cognitive ageing.

OC 5.1.3

Cancer incidence in type 2 diabetes patients

Anne Sophie Geier, Hiltraud Kajueter, Oliver Heidinger, Hans-Werner Hense

Institute of Epidemiology and Social Medicine;University Muenster; Epidemiological Cancer Registry NRW

Background There is growing evidence that certain types of cancer are more frequent among type 2 diabetes mellitus patients. Besides several hypothesized biological mechanisms for this relationship, numerous observational studies have linked cancer outcomes with diabetes drug exposure. The majority of publications suggest a protective effect of Metformin on cancer risk and a potential increased cancer risk associated with exogenous Insulin and Insulin analogues treatment. Recently, the 'first generation' studies have been criticized for severe study design flaws and researchers postulated preferred features for second generation study designs such as site- and sex-specific cancer endpoints, time-varying analysis of exposure and multiple sensitivity analyses around dosage to improve the methodology.
Objectives The D2C cohort study was set up with the aim of investigating the risk of cancer incidence in type 2 diabetes patients taking into account many of these requirements. The ultimate objective is identification of the impact of anti-diabetic treatment on cancer occurrence including time-and dose-dependent relationships.
Methods We followed the D2C participants, a cohort of 49.433 patients from a Disease Management Program for type 2 diabetes conducted by a statutory health insurance company (AOKNordWest). First-ever invasive cancer cases were identified in this cohort linking data with the epidemiological cancer registry of the state of North-rhine-Westphalia using probabilistic record linkage procedures. The detailed medication history of each individual including DDD is provided by AOK. Here we report on the baseline characteristics and crude incidence rates observed in the cohort between mid 2003 and

the end of 2009. Standardized incidence ratios were computed using the sex-age-specific incidence rates in the county general population to calculate expected numbers of cancer cases.
Results We identified 1,411 incident cancer cases (18.1 per 1000 py) among male patients with a total follow-up time of 77.976 person-years (py) and 1,103 first cancer events (12.9 per 1000 py) among female patients with a total follow-up time of 85.762 py. The SIR for any type of cancer was raised (SIR = 1.11; 99 % CI(1.06–1.17]),in particular for cancer of the liver (SIR = 1.64[1.12–2.32]).The risk of prostate cancer for men was decreased (SIR = 0.65[0.55–0.76]) as well as the risk of breast cancer for women (SIR = 0.84[0.71–0.99]) while the risks of pancreas cancer (SIR = 1.25[0.92–1.66]and colorectal cancer (SIR = 0.94[0.82–1.08]were not significantly increased.
Conclusions The SIR indicate that general cancer risk was significantly raised in this cohort of diabetic patients by about 10 percent. Next, we will employ detailed drug exposure information to more specifically elucidate the associations between treatment of diabetes type 2 and risk for different cancer entities.

OC 5.1.4

Alcohol intake and the development of depression: the PREDIMED study

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Background Excessive alcohol intake, Alcohol Use Disorders (Alcohol abuse and Alcohol Dependence), and problematic alcohol intake have been widely related to depression. However, longitudinal studies on populations with low average levels of alcohol intake are scarce and with methodological limitations. Moreover, no Mediterranean cohort has reported results on this issue.
Objectives We aimed to prospectively assess the association of alcohol intake with incident depression. Secondly, to assess the association between changes in alcohol intake and incident depression, independently of alcohol intake at baseline. Thirdly, since most of the previous studies are cross-sectional, we aimed to assess how a cross-sectional analysis of alcohol intake and prevalent depression at baseline differs from the results obtained in the longitudinal incident analysis.
Methods We assessed 5,567 participants from a Spanish trial (the PREDIMED Project), initially free of depression. They were annually followed-up during up to 7 years (median follow-up: 5.2 years). At baseline, a 137-item validated food frequency questionnaire administered by a dietician was used to assess alcohol intake. Changes in alcohol intake were considered from the baseline questionnaire to the questionnaire prior to the diagnosis of depression for incident cases, and to the last questionnaire for the rest. Participants were classified as incident cases of depression if they reported a new clinical diagnosis of depression, and/or initiated the use of antidepressant drugs, and/or a score of 5 or more in the Geriatric Depression Scale (Yesavage). Cox regression analyses were performed over 28,145 person-years using as exposure both alcohol intake and changes in alcohol intake.
Results While the crude and the sex and age adjusted models revealed an inverse association between alcohol intake and incident depression, this association disappeared in the multivariable model. However, the cross-sectional analysis showed an inverse association even in the multivariable model. Since some types of antidepressants may interact with alcohol, we hypothesize that the association found could be explained by reverse causation related to a likely medical advice to avoid alcohol intake while on antidepressant treatment. An alternative explanation is that depression may reduce the habit of social drinking, frequent in Mediterranean populations. Finally, among men decreasing alcohol consumption was inversely associated with depression incidence [HR (95 % CI) = 0.49 (0.30–0.80)].
Conclusions Alcohol intake was not longitudinally associated with depression. Among men, a decrease in alcohol intake may be related with lower incidence of depression. Reverse causation bias could explain the inverse association sometimes found in cross-sectional studies.

OC 5.1.5

Fetal sex modifies the effect of gestational hypertensive disorders on blood pressure of mothers and children at 4 years

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Background A putative association between gestational hypertensive disorders and later higher blood pressure in mothers and offspring is of concern, but the pathophysiology of this effect is not completely understood. An association with chronic hypertension shortly after delivery would argue in favour of the continuous nature of the pathological process.
Objective To assess the extent to which gestational hypertensive disorders lead to higher blood pressure in women and their offspring as early as 4 years after birth, and to assess the effect of fetal sex on these consequences in a prospectively followed birth cohort.
Methods A birth cohort was assembled at public maternities of Porto, Portugal in 2005–2006 and reevaluated an average of 4 years after delivery. In the current analysis, 2,877 primiparous women with singletons and no previous chronic hypertension, and 2,460 children were included. Gestational hypertensive disorders included gestational hypertension and preeclampsia/eclampsia. At follow-up, systolic and diastolic blood pressure were measured. To estimate adjusted mean differences in systolic and diastolic blood pressure, according to gestational hypertensive disorders, multiple linear regression was used, excluding participants under anti-hypertensive drug therapy. Crude and adjusted incidence rate ratios and respective 95 % confidence intervals were estimated using Poisson regression.
Results After adjustment for age, family history of hypertension, BMI and smoking, gestational hypertensive disorders were associated with significant increases of 11 and 6 mmHg on systolic and 8 and 5 mmHg on diastolic blood pressure, for women who delivered a female and a male newborn, respectively. The 4-year risk of hypertension in women affected by gestational hypertensive disorders was almost 6 times higher among mothers who delivered a girl, and 3 times higher among those who delivered a boy. Systolic and diastolic blood pressure at 4 years were 2.3 and 3.1 mmHg significantly higher in boys born of mothers with hypertensive disorders of pregnancy, while no effect was detected among girls.

Conclusions The differential effects observed by child's sex support the hypothesis of heterogeneous causes of hypertension in pregnancy: pregnancy-induced transient hypertension and uncovering of background risk. Women's and children's outcomes suggest the first type is more frequent with boys, who are more vulnerable to consequences of gestational hypertensive complications; in contrast, the effect of such events would be more transient for the mother. The high blood pressure in women and offspring as early as 4 years after birth emphasizes the short period after delivery as critical to promote preventive strategies.

Oral Communications Session 5.2. Respiratory diseases

OC 5.2.1

Contribution of obstructive lung disease to explain dyspnoea and fatigue in the general population

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Background Dyspnoea and fatigue are disabling and frequent symptoms experienced by patients with obstructive lung disease (OLD). We aimed to assess the proportional contribution of OLD to explain these symptoms in the general population.
Methods At a follow-up evaluation of a cohort of urban Portuguese adults, 1,136 subjects aged $\geq$45 years were assessed. Socio-demographic, clinical and behavioural data were collected through personal interview. Weight and height were measured and body mass index calculated. Participants underwent a spirometry according to American Thoracic Society standards and an echocardiogram for assessment of systolic and diastolic function. OLD was defined by history of chronic bronchitis or a diagnosis of obstruction (FEV1/FVC $<$0.7). Dyspnoea was self-reported and severe fatigue was considered as a score above 4 on Krupp's Fatigue Severity Scale. Logistic regression was performed to quantify the association of OLD with dyspnoea and severe fatigue, adjusting for age, education, obesity and cardiac dysfunction. Population attributable fractions were derived using the formula $AF = 1 - (p/OR + (1 - p)/1)$ based on adjusted odds ratios (OR) and the prevalence of OLD among symptomatic cases (p).
Results Dyspnoea was reported by 28.3 % of women and 15.0 % of men, $p < 0.001$. OLD was strongly and independently associated with dyspnoea both among men [OR = 4.58, 95 % confidence interval (95 % CI): 2.27–9.23] and women (OR = 2.36, 95 % CI: 1.09–5.12). The multivariate-adjusted fraction of dyspnoea attributable to OLD was 22.5 % (95 % CI: 10.0–35.0) in men and 5.0 % (95 % CI: 0.2–10.0) in women. Severe fatigue was present in half of women and one-third of men, being significantly associated with OLD only in women (OR = 3.14, 95 % CI 1.11–8.86). The proportion of women whose fatigue was attributable to OLD was 4.4 % (95 % CI: 0.7–8.0).
Conclusion OLD was uncommon among symptomatic subjects, having a modest impact on dyspnoea and fatigue. Among women, OLD had a similar impact on dyspnoea and fatigue highlighting their lower discrimination between symptoms. Alternative conditions with greater impact on symptoms should be sought using a diagnostic work up strategy that must include spirometry.

OC 5.2.2

Serum vitamin D and the risk of pneumonia in an aging general population

Alex Aregbesola, Sari Voutilainen, Tarja Nurmi, Jyrki Virtanen, Kimmo Ronkainen, Tomi-Pekka Tuomainen

Institute of Public Health and Clinical Nutrition, University of Eastern Finland

Background Vitamin D has been suggested to have a role in immune system and infection defense. The seasonal variation both in respiratory tract infection frequency and serum vitamin D concentration has been documented.
Objectives The association between serum $25(OH)D_3$ and the risk of pneumonia was investigated in an aging general population in eastern Finland.
Methods The study population included 723 men and 698 women, aged 53–73 years who were free of pneumonia and other pulmonary diseases at the baseline in 1998–2001, from the prospective, population-based Kuopio Ischaemic Heart Disease Risk Factor (KIHD) study. Baseline diagnoses of the diseases and subjects' smoking status were collected by interviewer-checked self-administered questionnaire. The follow-up diagnoses of pneumonia episodes leading to hospitalization were collected by record linkage to the national hospital discharge register, using the Finnish personal identification code. The serum vitamin D concentration of the subjects was assayed as $25(OH)D_3$ and $25(OH)D_2$ from a stored fasting blood sample, by high performance liquid chromatography (HPLC). The result for serum $25(OH)D_2$ was either not detected or below quantification limits, hence, serum $25(OH)D_3$ result was used in this analysis. Cox proportional hazards regression models were used to analyze the association between serum $25(OH)D_3$ and the risk of pneumonia.
Results The mean serum $25(OH)D_3$ concentration was 43.5 nmol/l (SD 17.8), with a strong seasonal variation. There were 75 subjects who had at least one hospitalization episode due to pneumonia during an average follow-up of 9.8 years. There was no loss to follow up. After adjusting for age, gender, date of examination, smoking, season for vitamin D and the kind of work, the subjects in the lowest serum $25(OH)D_3$ third had 2.5 times (95 % CI 1.2–5.0) higher risk to develop pneumonia, as compared with the subjects in the highest third.
Conclusion These data suggest an inverse association between serum vitamin D concentration and pneumonia incidence in the general aging population. Further emphasis on vitamin D sufficiency in the aging population could prove useful.

OC 5.2.3

COPD: gender and residency variations in Albania

Sonela Xinxo

Institute of Public Health

Background Actually chronic obstructive pulmonary disease (COPD) is considered by WHO as one of the most prevalent long term condition in the world. The patients with COPD constitute a substantial burden to health care system. Analyzing the official data offers an essential information on the development of health polices to ensure the prevention and management of COPD.

Objective To explore variation in COPD hospitalization rate in total, by gender and residence among the Albanian population during the last years.
Methods Data were extracted from the national official data. The trend over time for the COPD hospitalization rate in total, by gender and residence were analyzed (2005–2010). Hospitalization rate for COPD is estimated for 100,000 admissions.
Results In 2010 the overall hospitalization rate of COPD is 730, which is a slightly higher, not significant, compare to the rate in 2005 of 707 (d = 23 95 % CI = −24–71 $p > 0.1$). The male COPD rate is significant increased from 779 in 2005 to 906 in 2010 (d = 123 95 % CI = 6–192, $p < 0.05$) meanwhile the female COPD rate is significant decreased from 608 in 2005 to 500 in 2010 (d = 108, 95 % CI = 4–168, $p < 0.05$). The COPD rate of patient from rural area is significant increased from to 377 in 2005 to 946 in 2010 (d = 569, 95 % CI = 498–683, $p < 0.05$) and COPD rate of patient living in urban area is significant decreased from 947 in 2005 to 601 in 2010 (d = 345, 95 % CI = 284–406, $p < 0.05$). During the 2010, the male COPD rate is 906 and female COPD rate is 500 with significant difference (d = 400, 95 % CI = 343–468, $p < 0.001$). Regarding the residence, the COPD rate of patient from the rural area is 946 and from urban area is 602 with a significant difference (d = 345, 95 % CI = 274–415 $p < 0.001$).
Conclusion In Albania, even the overall hospitalization rate of COPD has not changed significantly during the last years, there is a transition in the pattern of COPD rate with a significant increasing of male rate and the patient living in rural area rate. There is residence and gender variation in hospitalization COPD rates with predominance of male and of patients living in rural.

OC 5.2.4

Adiposity and lung function throughout adolescence: evidences from the 1993 Pelotas (Brazil) Birth Cohort

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Background cross-sectional studies have shown an inverse relationship between waist circumference (WC) and lung function in adults and elderly. The long term effects of such association, as well as its relation to adolescence are not yet established.
Objectives to evaluate the effects of WC and percentage of fat mass on lung function parameters in adolescence.
Methods a longitudinal study of the 1993 Birth Cohort, in Pelotas, Brazil, at the 18 years old follow-up. WC was evaluated using the difference, in standard deviation, between 15 and 18 years old, adjusted for height in both periods. Percentage of fat mass was evaluated using air-displacement pletismography. Spirometry was performed to obtain Forced Expiratory Volume in 1 s (FEV1) and Forced Vital Capacity (FVC). Multivariate Linear regression models were performed.
Results out of 5,249 original members, 4,129 were evaluated at 18 years old. Spirometry was performed in 3,859 individuals. There was a statistically significant inverse relationship between the WC difference and FEV1 and among men, both for absolute values ($\beta = -0.028$ [IC 95 % −0.053; −0.003]) and for predicted values ($\beta = -0.646$ [IC 95 % −1.247; −0.046]). An inverse relationship between percentage of fat and FEV1 and CVF was also statistically significant for both sexes.
Conclusion WC difference and percentage of fat mass were negatively associated with lung function. However, the actual body fat mass seems to be a more important determinant for lung function than WC difference.

OC 5.2.5

Vitamin D and pulmonary function in an ageing general population

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Background Vitamin D insufficiency has been suggested to associate with impaired lung function and an increased risk of pulmonary diseases, but lung function data in free living adults are scarce.
Objectives The objective of the study was to assess the association between serum vitamin D and lung function in an ageing general population.
Methods The study was conducted in the 1,527 men and women of the 11-year re-examination cohort in the Kuopio Ischaemic Heart Disease Risk Factor Study (KIHD) in eastern Finland. Serum vitamin D concentration was assayed as $25(OH)D_3$ from a stored fasting sample by high performance liquid chromatography and lung function by spirometry. No bronchodilator challenge was performed. Subjects, in serum vitamin D concentration thirds, were compared by analysis of variance, adjusted for age, gender, height, body mass index, current smoking, smoking history, vitamin supplement use, and blood drawing season.
Results The mean age of the subjects was 62.3 years in men and 63.1 years in women, with respective mean serum vitamin D concentrations of 42.4 and 44.9 nmol/L. In the multivariate adjusted analysis of variance, increasing serum vitamin D thirds were associated statistically significantly with increasing forced vital capacity (FVC) and forced expiratory volume one second predicted (FEV_1 %pred) in men (4.0, 4.0 and 4.2 L [$P = 0.01$], and 90, 90 and 94 % [$P = 0.04$], respectively) and with increasing forced vital capacity one second (FEV_1) and FEV_1/FVC in women (3.2, 3.2 and 3.3 L [$P = 0.04$], and 81, 82 and 82 % [$P = 0.01$], respectively). In addition, FEV_1 in men and FEV_1 %pred in women reached borderline significance.
Conclusions We conclude that vitamin D is associated with pulmonary function in an ageing general population.

OC 5.2.6

Vitamin D concentrations amongst active asthmatics and healthy adolescents in Cyprus

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Background Emerging evidence suggests that Vitamin D might be implicated in the pathophysiology of several chronic diseases, including asthma and allergies.
Objectives To ascertain the level of vitamin D deficiency in Cyprus and investigate differences in serum levels of 25(OH)D between asthmatic and healthy adolescents.

Methods Using a case–control approach, participants were selected from a cohort of 5,384 16–17 year old adolescents who completed the ISAAC questionnaire. Those who reported wheezing in the past 12 months were eligible to participate and further grouped into active asthmatics (AA), if also reporting a diagnosis of asthma, and current wheezers only (CW). The healthy controls were sampled amongst Never Wheezers/Never Asthmatics (NWNA). All participants had serum levels of 25(OH)D measured between Nov 2007 and May 2008. Multivariable regression analysis was performed in order to investigate differences in levels of 25(OH)D between the three groups after adjusting for age, sex, BMI status, self-reported sun exposure and season of blood sampling.
Results A total of 190 cases (of whom 69 AA) and 671 controls participated in the study (around 65 % response rate). Predictors of levels of 25(OH)D were female gender, BMI status and sun exposure during the winter (but not in summer) season while no association was observed with parental education or use of sun protection. Unadjusted mean serum levels of 25(OH)D were 22.90 (SD 6.41) 23.96 (SD 6.32)and 21.15 (SD 5.59) ng/mL in NWNA, CW, AA respectively ($p = 0.014$). Even after adjusting for potential confounders, mean vitamin D levels were significantly lower amongst AA compared to both NWNA (adjusted beta -1.68, 95 % CI $= -3.24$, -0.13, $p < 0.001$) and CW (adjusted beta -2.71, 95 % CI $= -4.56$, -0.86, $p < 0.001$). Interestingly, in a sunny place like Cyprus as many as 80 % of children had insufficient levels of vitamin D (defined as <30 ng/mL) while the percentage of vitamin D deficiency (<20 ng/mL) ranged from 34.7 % in healthy adolescents (NWNA) to 40.6 % in active asthmatics.
Conclusions Against a background of high prevalence of vitamin D deficiency in a sunny place like Cyprus, active asthmatics have significantly lower mean levels of vitamin D compared to healthy adolescents.

Oral Communications Session 5.3. Lifestyles

OC 5.3.1

Dietary minerals and colorectal cancer in central Europe: possible effect modification

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Background Unfavorable increasing trends of colorectal cancer across modern societies are observed. Dietary factors were revealed to be responsible for up to 60 % of the disease burden. Among many dietary items the role of calcium and phosphorus were investigated, however results were inconsistent.
Objectives The objectives of the study were to evaluate the role of dietary calcium and phosphorus in the development of colorectal cancer and to investigate possible effect modification.
Methods The hospital based case–control study of 1,511 patients (637 histologically confirmed incident cases and 874 controls) was done in 2000–2011. The 148-item FFQ with portion sizes to assess quantity of consumption was used. Moreover data regarding numerous confounders were collected.
Results After adjustment increase consumption of calcium was associated with decrease of colorectal cancer risk (reference $\leq$1,250 mg/d; $OR_{up\ to\ 1,500mg/d} = 0.55$, 95 % CI: 0.31–0.98; $OR_{up\ to\ 2,000mg/d} = 0.47$, 95 % CI: 0.24–0.93; $OR_{>2,000\ mg/d} = 0.26$, 95 % CI: 0.07–0.92). Similar results were observed for intake of phosphorus (reference $\leq$1,500 mg/d; $OR_{up\ to\ 2,000\ mg/d} = 0.99$, 95 % CI: 0.75–1.30; $OR_{up\ to\ 3,000\ mg/d} = 0.65$, 95 % CI: 0.45–0.93; $OR_{>3,000\ mg/d} = 0.23$, 95 % CI: 0.11–0.47). Every increase by 100 mg of calcium intake was associated with 5 % decrease of colorectal cancer risk (OR = 0.95; 95 % CI: 0.92–0.99), and for increase by 100 mg of phosphorus 7 % decrease in risk was noticed (OR = 0.93; 95 % CI: 0.91–0.96). Subsequently, possible effect modification of calcium and phosphorus in the relationship between fiber consumption and colorectal cancer was investigated. Both, calcium (OR for interaction = 0.44; 95 % CI: 0.32–0.62) and phosphorus (OR for interaction = 0.52; 95 % CI: 0.39–0.68) intake showed significant interaction with consumption of fiber.
Conclusions The study confirmed beneficial effect of calcium consumption in the protection of colorectal cancer and suggest similar effect of phosphorus. Moreover, our study suggest that consumption of calcium and phosphorus may be also an effect modifier in the relationship between fiber consumption and the development of colorectal cancer.
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OC 5.3.2

Association between adherence to the Mediterranean diet and blood pressure: 4-year follow-up in the PREDIMED trial

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Background Blood pressure (BP) has been suggested as a potential mechanism through which the Mediterranean diet (MedDiet) could exert a beneficial effect on cardiovascular disease. Nevertheless, evidence from long-term interventional studies addressing the association between adherence to the MedDiet and changes in BP is lacking.
Objective To study the effect of a dietary intervention aimed at increasing adherence to the MedDiet and 4-year changes in BP.
Design The PREDIMED trial is a randomized controlled trial in which 7,447 participants were allocated to a MedDiet supplemented with extra-virgin olive oil (MedDiet + EVOO), to a Mediterranean diet supplemented with tree nuts (MedDiet + nuts) or to a control (low-fat diet) group. The main end-point is incident cardiovascular disease. Participants are men aged 55–80 years and women aged 60–80 years at high cardiovascular risk (presence of type 2 diabetes or $\geq$3 cardiovascular risk factors), but without cardiovascular disease. The lifestyle intervention was provided by study trained dietitians and participants in the MedDiet groups received key food items for free (1 l EVOO/week or 30 g/day of nuts, respectively). BP was measured at baseline and in yearly follow-up visits by trained nurses according to the study protocol. We analyzed changes in systolic (SBP) and diastolic BP (DBP) during 4 years of follow-up with generalized estimating equations. To account for regression to the mean, we used autoregressive models. An interaction term between intervention group and time was tested to ascertain differences in BP changes across groups during follow-up. Mean SBP and DBP across groups at year 4 were compared.

Results A reduction in both SBP and DBP was observed in the three groups. Mean changes over 4 years in SBP were −2.5 (95 % CI: −3.4 to −1.5) for the MedDiet + EVOO group, −5.2 (−6.2 to −4.1) for the MedDiet + nuts group and −6.0 (−7.3 to −4.8) for the control group; and in DBP −5.3 (−5.8 to −4.8) for the MedDiet + EVOO group, −5.7 (−6.3 to −5.2) for the MeDiet + nuts group, and −6.2 (−6.8 to −5.5) for the control group. There were no statistically significant differences between groups in BP changes over time (p for interaction 0.89 for SBP and 0.41 for DBP). A decrease in mean BP levels was observed for the three groups. Mean reductions SBP and DBP levels were not statistically different between groups at year 4 (p for SBP: 0.06; p for DBP: 0.39).
Conclusions Significant reductions in BP levels over 4 years in the PREDIMED trial were obtained with both a Mediterranean diet and a low-fat diet.

OC 5.3.3

A longitudinal assessment of alcohol intake and incident depression: The SUN Project

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Background Longitudinal studies assessing the long-term association between alcohol intake and depression are scarce. The type of beverage may also play a role.
Objectives Therefore we aim to prospectively evaluate the influence of alcohol intake on incident depression in a Mediterranean cohort.
Methods We assessed 13,619 university graduates (mean age: 38 years, 42 % men) participating in a Spanish prospective epidemiological cohort (the SUN Project), initially free of depression. They were biennially followed-up during 1999–2010. At baseline, a 136-item validated food frequency questionnaire was used to assess alcohol intake. Wine was the preferred beverage. Participants were classified as incident cases of depression if they reported a new clinical diagnosis of depression by a physician and/or initiated the use of antidepressant drugs.

Cox regression and restricted cubic splines analyses were performed over 82,926 person-years.
Results Only among women, an U-shaped relationship between total alcohol intake and depression risk was found ($P = 0.01$). Moderate alcohol intake (5–15 g/day) was associated with lower risk (Hazard Ratio: 0.62; 95 % Confidence Interval: 0.43–0.89). No association was apparent for higher intakes of alcohol or for any specific type of alcoholic beverage.
Conclusions Moderate alcohol intake (5–15 g/day) might protect against depression among women. Further confirmatory studies are needed.

OC 5.3.4

Drunkenness among adolescents: a multilevel study of the association with adult drinking at the community level

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Background Excessive alcohol use causes illness and death worldwide and is a public health problem among adolescents. The wide variation in the prevalence of alcohol users across schools suggest that adolescents' alcohol use may be influenced by school- and community-related factors. This issue has received little attention in alcohol research.
Objectives The objective is to examine the variation in adolescents' alcohol use across school classes and to analyze how adolescents' drunkenness is associated with class level variables and adult drinking patterns at the community level.
Methods We performed multilevel logistic regression analyses with data from three levels, individuals, school classes, and municipalities. We derived data about adolescents' drunkenness from the nationally representative 2010 Health Behaviour in School-aged Children survey which included 186 school classes and 3,080 students aged 13—15 years within 50 municipalities in Denmark. We aggregated data from the students to calculate the school class drinking pattern. Finally, we derived data about drinking patterns in the general population (i.e., percentages of adults with a high risk intake) in each of these municipalities from the nationwide representative Danish Health Profile 2010 which included 178.000 participants.
Results Overall, 21 % of the students have been drunk twice or more. We found substantial variation in rates of drunkenness across school classes. Students within a particular school class were more similar with regard to their alcohol use compared to other students within the total population [intra-class-correlation = 9.7 %, median odds ratio = 1.77 ($p < 0.05$)]. The school variation remained significant even after adjustment for individual level characteristics such as age, sex, and migration status, which suggested that school class variation in drunkenness were not solely a result of differences in the socio-demographic composition of students. Class-level alcohol experience and community-level adult consumption were significantly associated with adolescents' drunkenness. In the adjusted models adolescents who lived in municipalities with a high level of adult drinking had an increased risk of drunkenness (OR = 1.59, 95 % CI: 1.14; 2.22) compared to adolescents who lived in low-drinking municipalities.
Conclusion Adolescents' drunkenness seems to be associated with drinking patterns in school class and community. The study contributes to the investigation of school class and community effects on adolescents' alcohol use by examining variations in drunkenness, and the relationship to alcohol culture in school class and community, using multilevel models, and controlling for a number of individual characteristics.

OC 5.3.5

Bone mineral density according to the impact of sports practiced through adolescence in non-athletes

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Introduction Bone development during adolescence is considered essential to prevent osteoporosis and related fractures later in life. Sports training characterized by high impacts or weight-bearing activity is known to induce osteogenic effects on the skeleton. However, most of this knowledge was based on athletes with intense training and less is known about the potential effects on bone mineral density (BMD) of leisure sports activities.
Aim This research aimed to estimate, among non-athletes, the effect of sports practice according to categories of impact on BMD throughout adolescence.

Methods We evaluated 1,137 adolescents, at 13 and 17 years old, as part of a population-based cohort study (EPITeen). The median (P25–P75) time of participants' follow-up was 38.4 (35.0–42.0) months. BMD (g/cm^2) was measured at the ultradistal and proximal radius of the non-dominant forearm by dual-energy X-ray absorptiometry (DXA) using a Lunar® Peripheral Instantaneous X-ray Image (PIXI) device. To quantify usual practice of sports, adolescents were asked to indicate the name of organized or unorganized sports practiced. Considering the sports reported, three categories were defined: without sports practice, practice of sports with high impact and practice of sports with low impact. Linear regression coefficients (β) and respective 95 % confidence intervals (95 % CI) were used to estimate the association between sports practice categories at 13 years old and both BMD at 17 years old and BMD gain between 13 and 17 years old.
Results From 13 to 17 years old, 66.2 % of girls and 67.4 % of boys maintained their sports practice. No statistically significant association between sports practice at 13 years and BMD at 17 years old was found in girls: 0.436 (0.052) g/cm^2 in girls without sports practice, 0.431 (0.061) g/cm^2 among those who practiced sports with low impact and 0.434 (0.047) g/cm^2 among those who practiced sports with high impact ($p = 0.710$). In boys, the higher BMD average (standard deviation) was found in those who practiced sports with high impact with 0.460 (0.0758) g/cm^2, followed by boys who did not practice any sports with 0.446 (0.0752) g/cm^2 and boys who practiced sports with low impact presented the lower BMD with 0.434 (0.0569) g/cm^2. This association remained statistically significant after adjustment for height and weight ($\beta = 0.017$; 95 % CI 0.005; 0.029).
Conclusion In girls, practice of sports showed no significant impact on BMD. However, in boys, the practice of sports with high impact at 13 years old was significantly associated with higher BMD at 17.

OC 5.3.6

Depressive symptoms and bone mineral density in a cohort of Portuguese adolescents: no association

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Background Depression in adults has been related to the reduction of bone mineral density (BMD) and, consequently, to the increase of the risk of fracture. Depressive symptoms may also increase the risk of a suboptimal bone mineral accrual in adolescence, but this association is scarcely explored.
Objective To quantify the association between depressive symptoms and BMD throughout adolescence.
Methods The EPITeen cohort was assembled during the 2003/2004 school year in public and private schools of the city of Porto (n = 2,160). The follow-up evaluation of the cohort took place in the 2007/2008 school year (n = 1,716). In both evaluations, depressive symptoms were assessed by the Beck Depression Inventory-II (BDI-II). Participants were classified according to the final score obtained in BDI-II (without (BDI-II $\leq$ 13) and with (BDI-II $>$ 13) relevant depressive symptoms). In order to longitudinally assess depressive symptoms status during adolescence, participants were classified as never depressed, depressed only at the age of 13, only depressed at 17 and depressed at 13 and 17 years of age. Forearm BMD (g/cm^2) was measured at the ultradistal and proximal radius of the non-dominant forearm by dual-energy X-ray absorptiometry (DXA) using a Lunar® Peripheral Instantaneous X-ray Image (PIXI) device. The annual mean variation of BMD was also calculated. The mean values of BMD at 13 and 17 years of age, the annual variation of BMD between 13 and 17 years of age and the corresponding 95 % confidence intervals were calculated using ANOVA. The mean values of BMD and the annual variation of BMD were stratified by sex and adjusted for body mass index (BMI) and, additionally, for menarche age in girls (13 and 17 years old).
Results Cross-sectionally, there were no significant differences in the mean scores of BMD between participants with and without relevant depressive symptoms at 13 years old ($BMD_{Boys13} = 0.348$ vs. $BMD_{Boys13} = 0.347$, $p = 0.877$; $BMD_{Girls13} = 0.371$ vs. $BMD_{Girls13} = 0.375$, $p = 0.398$) or at 17 years old ($BMD_{Boys17} = 0.453$ vs. $BMD_{Boys17} = 0.457$, $p = 0.668$; $BMD_{Girls17} = 0.440$ vs. $BMD_{Girls17} = 0.444$, $p = 0.497$). Moreover, there were no significant differences in the mean variation of BMD throughout adolescence in boys ($BMD_{Boys_NeverDepressed} = 0.034$, $BMD_{Boys_Depressed13} = 0.032$, $BMD_{Boys_Depressed17} = 0.032$ and $BMD_{Boys_Depressed13\&17} = 0.030$, $p = 0.806$) or girls ($BMD_{Girls_NeverDepressed} = 0.021$, $BMD_{Girls_Depressed13} = 0.021$, $BMD_{Girls_Depressed17} = 0.021$ and $BMD_{Girls_Depressed13\&17} = 0.025$, $p = 0.497$) regarding their depressive symptoms status from 13 to 17 years old.
Conclusions Depressive symptoms were not associated with BMD accrual from 13 to 17 years old. The mechanisms explaining the relationship between depression and BMD are not largely known, but they may be not present at this period of life.

Oral Communications Session 5.4. Perinatal and child health II

OC 5.4.1

Cross-national comparisons of perinatal mortality rates: should inclusion thresholds be based on birth weight or gestational age?

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Background Perinatal mortality is an essential indicator of population health, but variability in recording of births and deaths at the limit of viability makes cross-national comparisons difficult.
Objectives The World Health Organization recommends comparing perinatal mortality rates after exclusion of births and deaths with a birth weight (BW) less than 1,000 grams, but many analyses of perinatal outcomes are based on gestational age (GA). We explored how the use of a 1,000 g BW versus a 28-week GA threshold affects reported rates of fetal and neonatal mortality in Europe.
Methods Aggregated data on births and deaths by BW and GA from 29 countries/regions participating in the Euro-Peristat project were used to compute fetal and neonatal mortality rates using cut-offs of 1,000 g and 28-weeks, respectively. Differences in rates between and within countries were tested using the Wilcoxon ranked test and 95 % confidence intervals, respectively.
Results For fetal deaths, rates based on GA were significantly higher than those based on BW ($p = 0.001$ for differences between countries), although differences were variable across countries. In contrast, the choice of a cut-off made little difference for assessments of neonatal mortality rates; most countries having minimal differences in rates (< 0.1).
Conclusions Using a 1,000 g threshold for comparisons of rates of stillbirths underestimates third trimester fetal deaths, which is probably due to the exclusion of growth-restricted fetuses when a BW cut-off is used.

OC 5.4.2

Do home births affect risk of perinatal mortality? Evidence from The Netherlands

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Background Shares of births taking place at home have increased in recent years in countries such as the UK and USA (1,2). The Netherlands is particularly suited to study home births since it is the western country with the highest home births rate: about a quarter of recent births were home births. It is also among the European countries with the highest perinatal mortality rates (3). In The Netherlands, only deliveries after increased-risk pregnancies are supervised by gynecologists. Other deliveries are supervised by midwives and women choose between policlinical and home births. Benefits and risks of home births have been a continuous source of debate (4–6). A central complicating issue is that women with fewer expected complications are more likely to choose home births, which may confound results.
Objectives To assess whether home births increase perinatal mortality risk.
Methods We use the subsample from the 2000–2008 Dutch perinatal registry of all 350,000 low-risk home and policlinical births of primiparae. Analogous to previous research (5), we demonstrate that before adjustment for confounders, home births are associated with decreased perinatal mortality. This difference disappears after adjustment for an extensive set of maternal characteristics. However, the adjustment might still not have gone far enough. I.e. women have more knowledge on their risks than any researcher can possibly have and this knowledge influences their delivery place choice. Therefore, any available set of covariates might be insufficient to adjust for differences between both groups of women. A hypothetically perfect adjustment might have shown worse outcomes among home births. To solve this issue, we resort to the econometric technique of instrumental variables, in which we predict place of delivery from a variable that is itself unrelated to birth outcomes: distance from home to hospital. We then use only variation in place of delivery induced by this distance-variable to examine effects of place of delivery on perinatal mortality. If the unrelatedness assumption holds, this technique bypasses the problem of unmeasured confounders, enabling causal estimation of place of birth effects (7).
Results Our instrumental variables estimates demonstrate that home births are associated with increased perinatal mortality. This implies that traditional regression approaches underadjusted for relevant background characteristics.
Conclusion Home births are likely to increase the risk of perinatal mortality.

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OC 5.4.3

Risk factors for congenital anomalies in The Netherlands

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Background Congenital anomalies are associated with high perinatal morbidity and mortality.
Objectives To determine the relation between several potential risk factors and the risk of having a newborn with one or more congenital anomalies.
Methods Data on 1,972,058 registered newborns from the Netherlands Perinatal Registry database were analyzed. Logistic regression models were applied to estimate the risk of having a newborn with one or more congenital anomalies.
Results All studied risk factors were significantly related to the risk of having a newborn with one or more congenital anomalies. The highest adjusted risks were observed for pre-existing maternal diabetes [OR = 2.0] and maternal epilepsy [OR = 2.1]. For maternal diabetes the risk was especially elevated in the cardiovascular system and for maternal epilepsy in the central nervous system. High maternal age, IVF/ICSI pregnancy, male gender and plurality were also strongly related to the risk of having a newborn with one or more congenital anomalies. The PARs were especially high for male gender, primiparity, high maternal age and non-Western ethnicity (respectively 18.4, 5.0, 2.5 and 1.7). The PARs for maternal diabetes, epilepsy and IVF/ICSI were very small as the prevalence of these risk factors in the general population is very low. In total 30 % of the registered congenital anomalies could be ascribed to the studied risk factors.
Conclusions Strategies for primary prevention of congenital anomalies should focus on different risk factors depending on the approach used. For a high-risk group approach existing maternal morbidity such as diabetes and epilepsy are important factors. For a public health approach, however, factors such as high maternal age, primiparity and ethnicity are more important to focus on, for example in preconception counselling.

OC 5.4.4

Trends in occurrence of dizygotic and monozygotic twins in Poland: an indicator of the frequency of assisted reproductive technology treatments?

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Background Multiple pregnancies are at increased risk of preterm delivery, lower birth weight and intrauterine growth retardation. A rising trend of multiple pregnancies in Poland and other European countries over past decades as a consequence of increasing mother age and use of assisted reproductive technologies (ART) is observed. During ART, to maximize birth rate, a transfer of multiple embryos is often performed. This can result in a multiple birth with a likelihood, which varies by woman age and quality of embryos. Twins derived from ART are mainly dizygotic (DZ) as an effect of a transfer of two embryos in contrast to naturally conceived twins which can be dizygotic or monozygotic (MZ). In Poland ARTs are not refunded by the budget. No policy limiting the number of embryos transferred exists however in Polish fertility clinics most often two embryos are placed into the uterus. Data about frequency of ART treatment and multiple pregnancies due to ARTs in Poland are fragmentary so impact of these techniques on overall increase of multiple births is unknown.
Objective The objective of our study was to analyze trends of twin birth rates by zygosity as an indicator of multiple pregnancies caused by transfer more than one embryo transferred during ARTs.
Methods Rates of MZ and DZ twins were based on Polish birth certificates for the period 1995–2009 and stratified by mother's age.

Zygosity was estimated by the Hardy–Weinberg formula. Trend analysis and multivariate linear regression were applied.
Results Among over 5 million of newborns 124,578 of twins were born between 1995 and 2009 years. The rate of twin births increased from 1.98 % in 1995 to 2.48 % in 2009. The annual rise of DZ twins births was higher (0.028 % per year) than rise of MZ twin births (0.008 % per year, both $p < 0.001$). When analyzed by age groups, increase in the rate of DZ twins born by older mothers (aged 30 years or more) was the highest (0.034 % per year, $p < 0.001$). Among DZ twins the yearly average rate of change was higher in newborns born by older mothers versus newborns born by younger mothers ($\beta = 0.87$; $p < 0.001$). The slope of trends among MZ twins born by older versus younger mothers did not differ significantly ($\beta = 0.03$).
Conclusions The results confirm higher increase of DZ twin births, especially among older women. This may be partly attributed to growing frequency of ARTs in Poland, despite a lack of financing from the budget.

OC 5.4.5

May family size be determined by previous birth experiences?

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Introduction In the last decades developed countries have been experiencing an accentuated decrease in fertility rates. Having more than one child is becoming rarer which has been attributable to secondary infertility, changing attitudes toward family size and adverse obstetric experiences. The role of the mode of delivery in the ability/desire to further conceive has been questioned but with no consensual results.
Objective This study aimed to evaluate which perinatal characteristics in the occurrence of a subsequent pregnancy in primipara Portuguese women enrolled in a birth cohort study.
Methods In 2005/2006, women delivering in level III public maternity units were invited to be part of Generation XXI, a population-based birth cohort study in the North of Portugal. Face-to-face structured interviews were performed immediately after delivery to 8,495 women. Socio-demographic, obstetric and pregnancy-related data were collected. Medical records were used to retrieve data related to the birth characteristics (onset and duration of labour, mode of delivery, type of anesthesia, episiotomy, perineal tears and placental removal). Four to five years after delivery the pair mother–child (86 % of the entire sample) was re-evaluated and data related to further pregnancies was collected. The current analysis considered 3,497 primipara who delivered a single fetus and were re-evaluated after birth. Multivariate logistic regression models were fitted to estimate the effect of first birth experiences in the occurrence of subsequent pregnancies, independently of other maternal characteristics.
Results Overall, 29.1 % women experienced a subsequent pregnancy [median time 30 months (IQR: 18–42)]. A posterior pregnancy occurred more often within younger women (<20 years: 43.8 % vs. ≥40: 6.4 %), more educated (>12 schooling years: 38.1 % vs. <12:25.5 %), more often housewives (41.2 vs. 29.0 %), thinner (normal: 31.0 % vs. overweigh/obese: 23.7 %), who had not planned the conception (31.8 vs. 28.6 %) but the proportion was similar in terms of marital status, history of infertility and smoking habits. Independently of age and education (which remained statistically associated) and the mode of delivery, experiencing more than 9 h of labour increased the risk of having only one child (vs. <9 h: OR = 1.39; 95 %CI: 1.10–1.75). The use of anesthesia, episiotomy, perineal laceration and mode of delivery were no longer associated with this outcome.
Conclusion Having a second pregnancy is age and economically driven but, independently of these determinants experiencing a longer labour period may contribute to limit family size. This emphasizes the need for a better prenatal and birth counseling and care.

OC 5.4.6

Surveillance of cerebral palsy in Portugal among 5-years-old children born in 2001–2003

Daniel Virella, Maria da Graça Andrada, Teresa Folha, Rosa Gouveia, Ana Cadete, Joaquim Alvarelhão, Eulália Calado, National Surveillance of Cerebral Palsy in Portugal

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Background The surveillance of cerebral palsy (CP) is very important to evaluate health and social care needs and the quality of perinatal care. Portuguese surveillance of CP among 5-years-old children began in 2006.
Aim: Surveillance among 5-years-old children, to asses CP prevalence in Portugal.
Methods Active, systematic, voluntary surveillance based on the Portuguese Paediatric Surveillance Unit system (paediatricians, neuropaediatricians, and paediatric surgeons), complemented with reporting by physiatrists, identified and collected data on children with CP. SCPE definitions and reporting tools were applied. Additional data were collected from the Special Education Needs Secretariat (SEND) for ascertainment and from death certificates.
Results In the cohort born in 2001–2003, 553 cases were identified. National coverage was achieved. Cases were reported by 37 health professionals from 6 professional areas. 20 cases were only identified through the SEND (3.6 %). 30 cases deceased before 5 years of age were identified, 13 only through death certificates (43.3 %). Missing information in most core variables was up to 15 %, for some perinatal variables up to 35 %, for present somatometry it topped 55–60 %. Incidence rate at 5 years-of-age reduced from 2.02 ‰ livebirths in 2001 to 1.41 ‰ in 2003, disappearing the higher incidence in males. Prevalence rate among children 5 years-old reduced from 1.98 ‰ in 2001 to 1.33 ‰ in 2003, also disappearing the higher prevalence in males. Spastic CP was the most common clinical type (79 %; bilateral 55.9 %), dyskinetic CP amounts to 10.3 %. Severe functional impairments were found in 46.1 % of the cases for cognition (IQ), 40.1 % (BMFM) and 33.3 % (MACS) for bimanual motricity, 44.5 % for gross motor function, 10.3 % for sight, 4.2 % for hearing, 37.9 % for language, 31.6 % for feeding and 21.5 % for drooling control. Epilepsy was registered in 44.5 % of the children. Weight was under 5th percentile in 39.8 %. Educational inclusion was complete or almost complete in 71.9 % of the children. Higher incidence rates were registered with prematurity and twinning. Epilepsy was the main predictor of non-inclusive education. Early neonatal seizures were the main predictor of epilepsy.
Conclusions The trend of lowering the prevalence of CP is consistent with the improvement in other Portuguese perinatal health indicators and is also being reported by other partner SCPE centres. Epilepsy is a strong indicator of disability in CP children. These data help to

understand the burden of CP in Portuguese society and monitor needs, quality of care and intervention.

Time: 17.15–18.15

Oral Communications Session 6.1. Methods in epidemiology and statistical analysis

OC 6.1.1

Capability for reporting height and weight in a questionnaire survey: a cross-sectional study of 11–15 year olds

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Background It is often most feasible to collect data about height and weight by means of self-reports rather than by clinically measured data. However, self-reported data on height and weight are vitiated by information bias. It is therefore important to get more insight into reasons for this information bias, e.g. to separate unwillingness to report correctly and lack of capability for reporting correctly.
Objective To estimate the prevalence of students with high and low response capability for self-reported weight and height in a self-administrated questionnaire survey and to estimate the association between response capability and socio-demographic factors.
Study design: A school-based cross-sectional questionnaire survey conducted in the city of Århus, Denmark, in a strategic sample of students aged 11, 13 and 15 years (n = 2,100). Measurement of response capability was based on students' reports of measuring/weighing history and perceived recall ability.
Results Approximately one-third of the students had low response capability for weight. Low response capability for weight was associated with being a boy, of young age and living in single parent families. Approximately one-third of the students had low response capability for height. This was associated with being of younger age and living in low SEP families. Every second student had low response capability for at least one of the components in the calculation of body mass index (BMI), height and/or weight. Low response capability for at least one of these components (and therefore for calculation of BMI) was associated with living in low SEP families.
Conclusion The results illustrate a mean to improve the validity of analytical studies based on self-reported data on weight and height. By integrating items on response capability in survey instruments, students with low capabilities can be identified and characterised whereby analyses and conclusions can be adjusted and evaluated accordingly.

OC 6.1.2

Assessment of medical radiation exposure in a large national prospective cohort: is it feasible and does it make sense?

Hajo Zeeb, Florence Samkange-Zeeb, Hiltrud Merzenich, Anye Ningo, Nadia Obi, Joachim Breckow

BIPS-Institute for Epidemiology and Prevention Research; IMBEI, University Medical Center, Mainz University; TM Hessen, University of Applied Sciences; University Cancer Center, UKE Hamburg

Background Exposure to medical radiation continues to be among the main sources of population exposure to ionizing radiation. Particularly through the growing uses of CT, the average individual annual dose has been increasing in many countries. These data are generally derived from radiation protection assessments. In principle, the planned German national cohort study offers an opportunity to assess medical radiation exposure of cohort members together with information on health outcomes. We conducted a feasibility study to investigate the feasibility of a retrospective as well as a prospective medical radiation exposure assessment.
Methods In a first phase, a survey tool for the exposure assessment was developed based on a systematic review of existing instruments. Following pilot testing, this questionnaire was used for personal interviewing of 199 randomly selected adult participants of the German National cohort feasibility study in Bremen and Hamburg. For prospective assessment, an X-ray passport was issued to 100 participants. Interview data was used to estimate organ doses, based on estimates of incident dose and standard conversion factors for conventional X-rays, and the CT-Expo software for CT examinations.
Results The questionnaire was generally easy to administer, and took a median of 12 min (range 2–40 min). All of the 199 participants (average age 48.5 years) had had medical X-rays, mainly dental X-rays (n = 191), and lower extremity (n = 121) as well as chest/mammographic (n = 117) investigations. 45.2 % (n = 90) had ever had a CT (mainly head) examination. Dental examinations yielded rather low organ doses. Chest exams yielded average lung doses of 0.11 mSv, and Head CTs an average of 52.9 mSv, with 16.9 mSv to the brain and 22.2 mSv to the eye lens. Prospective data from the X-ray passport have not yet been evaluated, but it seems that medical providers cannot routinely provide technical details such as information on dose-length or dose-area product.
Discussion The retrospective assessment of ionizing radiation doses of cohort participants yielded results that underline the substantial contribution of medical radiation exposure to overall exposure. The validity of the retrospective assessment is difficult to verify; an attempt to use insurance claims data for validation will be made. The way to prospectively collect data is still somewhat unclear. Information on medical radiation exposure may not only be interesting as a risk factor for e.g. cancer, but also for the study of interactions between various risk factors in the development of adverse health outcomes among future cohort members.

OC 6.1.3

Modelling the impact of changes in population alcohol consumption levels to find the theoretical optimum level for prevention of chronic disease

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British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford, United Kingdom; Population Health Strategic Research Centre, Deakin University, Geelong, Australia

Background The overall effects of long term alcohol consumption on chronic disease risk in the whole population remains unclear, due to alcohol consumption at various levels increasing risk for some chronic disease outcomes (e.g. liver cirrhosis and cancer), yet decreasing risks of others (e.g. cardiovascular disease and diabetes). The UK government recommends that men should drink no more than three to four units per day (24–32 g/d of pure alcohol) and women should drink no more than two to three units per day (16–24 g/d). Substantial research has examined the effects of alcohol consumption on various chronic diseases; however there has been little integration of the findings across disease outcomes, resulting in confusion about the overall public health message.

Aim To estimate the impact of achieving alternative average population alcohol consumption levels on chronic disease mortality in England.
Methods A macro-simulation model (PRIME-Alcohol) was built to simultaneously estimate the number of deaths from coronary heart disease, stroke, hypertensive disease, diabetes, liver cirrhosis, epilepsy and five cancers that would be averted or delayed annually as result of changes in alcohol consumption among English adults. Counterfactual scenarios assessed the impact on alcohol-related mortalities of changing a) the median alcohol consumption of drinkers; b) the percentage of non-drinkers.
Results The optimum median consumption level for drinkers in the model was 5 g/d (about half a unit), which would avert or delay 4,579 (2,544–6,590) deaths per year. Approximately equal numbers of deaths from cancers and liver disease would be delayed or averted ($\sim$2,800 for each), while there was a small increase in cardiovascular mortality. The model showed no benefit in terms of reduced mortality when the proportion of non-drinkers in the population was increased.
Conclusions The level of alcohol consumption likely to minimise chronic disease risk for the English population is well below both current consumption levels and government recommendations. Public health targets should aim for a reduction in population alcohol consumption in order to reduce chronic disease mortality.

OC 6.1.4

Timing of birth and mode of delivery after spontaneous labour onset

Cristina Teixeira, Rita Gaio, Joaquim Costa, Henrique Barros

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Background High caesarean rates are a matter of concern and the influence of hospital functioning in such rates has been debated.
Objectives To understand the hourly pattern of deliveries after spontaneous labour onset, and to compare the trajectories of the mean number of deliveries on working days with those on weekends, according to the mode of delivery.
Methods Between April/2005 and August/2006, women (n = 8,495) delivering a live birth in public hospitals (level III) were consecutively recruited during the procedure of assembling a birth-cohort in the North of Portugal. For this purpose we selected those with a singleton pregnancy and admitted with spontaneous labour (n = 4,087). For eligible subjects, date, hour and mode of delivery were collected from medical records. Statistical modeling used unidimensional cubic splines with hour, ranging from 0 to 23, as predictor and the mean number of vaginal and caesarean deliveries as dependent variables. These splines are functions defined on the domain of the independent variable and that consist of a finite junction of local cubic polynomial regressions. Fitting and selection of the models was assessed through the percentage of explained deviance, generalized cross-validation score and residuals inspection. Comparison of curves was based on the 95 % pointwise prediction confidence intervals.
Results The percentage of explained deviance in the models was 85 and 68 % for vaginal and 90 and 51 % for caesarean deliveries, on working days and weekends, respectively. On working days, a pattern of relative deficit of nocturnal deliveries with a minimum between 5 a.m. and 6 a.m. was observed for both vaginal and caesarean deliveries. The hourly variation in diurnal births was different according to the mode of delivery. Vaginal deliveries steadily increased from 6 a.m. onwards, reaching a peak at 6 p.m. Caesarean deliveries presented two diurnal peaks; the first at 11 a.m. and the second in the late afternoon, between 6 p.m. and 7 p.m. The hourly pattern of vaginal deliveries on weekends and working days was quite similar, but a significant difference in the mean number of vaginal deliveries was observed between 10 p.m. and 11 p.m., which is lower on weekends. The peaks for caesarean deliveries on working days disappeared on weekends, the only pattern similarity being the decrease observed overnight.
Conclusion There was no evidence of the weekend effect in the mean number of caesarean deliveries. Nonetheless, the differences observed in the hourly pattern of vaginal and caesarean deliveries on working days suggest the influence of hospital functioning in the time when caesarean is performed.

OC 6.1.5

Analysis of data collected by RDS among female sex workers in 10 Brazilian cities, 2009: Estimation of HIV prevalence and associated risk factors*

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Background Respondent-driven sampling (RDS) is a chain-referral method that is being widely used to recruit most at risk populations. Since the method is respondent-driven, observations are dependent.
Objectives In this paper, we propose a method for analyzing RDS data. The method was applied to a female sex workers (FSW) study carried out in 10 Brazilian cities in 2009.
Methods The proposed method for estimating the variance of the HIV prevalence rate was based on the Markov transition probabilities and within recruitment cluster variation. The approach lends itself to logistic regression, permitting multivariate models. Both the inverse of network size and the size of the city were considered in the estimation of overall sampling weights. The study included a behavior questionnaire and rapid tests for HIV and syphilis. Variables included sociodemographic characteristics, access to condoms, sexual behavior, health care and STI signs, discrimination and violence, and the use of alcohol and drugs. Multivariate logistic regression models were used, taking into account the dependency structure of observations.
Results 2,523 interviews were conducted successfully, excluding the seeds. Results show a positive homophily between recruits for those HIV+: HIV- recruiters selected HIV+ recruits 4 % of the time; HIV+ recruiters selected other HIV+ recruits 19.6% of the time, about 5 times higher. The prevalence rate was estimated at 4.8 % (95 % CI 3.4–6.), with a design effect of 2.63. As to multivariate analysis results, the longest period of prostitution (OR = 1.040), the lowest price charged for sex (OR = 0.713), other STI such as syphilis (OR = 2.186) and the possibility of not using condom on client's request (OR = 3.735) were the most important associated risk factors to HIV infection among FSW. Purchase of condoms (OR = 0.503) was a relevant preventive factor.
Conclusions Using statistical methods for complex sample designs, it was possible to estimate HIV prevalence, standard error and the design effect analytically. The stratification in cities has proved suitable for reducing the effect of design and can be adopted in other RDS studies, provided the weights of the strata are known. Additionally, the use of RDS proved to be appropriate for multivariate analyses, as long as the statistical analysis takes into account the dependency structure of observations. The HIV infection predictors here depicted can support public health policies focused on this population group in Brazil.

* To be presented at Thematic Session 2.2.

Oral Communications Session 6.2. Sleep and health

OC 6.2.1

Sleep duration and blood pressure: a longitudinal analysis from early to late adolescence

Inês Paciência, Joana Araújo, Elisabete Ramos

Institute of Public Health, University of Porto; Department of Clinical Epidemiology, Predictive Medicine and Public Health, University of Porto Medical School; Cardiovascular Research & Development Unit, University of Porto Medical School

Background Sleep duration has been associated to high blood pressure (BP) in children and adults. However, in adolescence, the association between sleep duration and BP is still unclear, and few longitudinal studies have addressed this relationship. The purpose of this study was to evaluate the association between sleep duration at early and late adolescence and BP at 17 years old, using a cross-sectional and a longitudinal approach.
Methods We evaluated, as part of a Portuguese urban population-based cohort (EPITeen), 1,403 adolescents at both 13 and 17 years of age. Sleep duration was estimated by the difference between self-reported usual bedtimes and wake-up times at weekdays. BP was measured with a mercury sphygmomanometer using the auscultatory method. To evaluate the association between sleep duration and BP, regression coefficients (β) and respective 95 % confidence intervals (95 % CI) were computed, using linear regression models adjusted for practice of sports and body mass index (BMI) at 17 years old. Data was analyzed by gender.
Results The mean (SD) of sleep duration at 13 years old was 9.0 (0.76) hours per day and it decreased on average 46 min up to 17 years old. Both, systolic blood pressure (SBP) and diastolic blood pressure (DBP) were significantly higher in males. The median (25th–75th) of SBP was 110.0 (103.5–119.0) mmHg in females and 114.0 (106.0–122.0) mmHg in males ($p < 0.001$); for DBP the values were 66.0 (60.0–71.0) mmHg and 69.0 (62.0–75.0) mmHg, respectively ($p < 0.001$). In cross-sectional analysis, at 17 years, after adjustment, a positive association was found between sleep duration and BP, significant only for SBP among females [$\beta = 0.67$ (0.01; 1.33)]. Using the longitudinal approach, no significant association was found between sleep duration at 13 years and BP in girls [$\beta = 0.21$ (-0.63; 1.25) for SBP and $\beta = 0.08$ (-0.70; 0.86) for DBP]. In contrast, in males, we found an inverse association: $\beta = -1.76$ (-2.96; -0.56) regarding SBP and $\beta = -0.04$ (-1.03; 0.95) for DBP.
Conclusion In the cross-sectional analysis at 17 years, sleep duration was positively associated with BP among females. In the longitudinal approach, no association was found in girls, but an inverse association between sleep duration at 13 years and BP at 17 years was found among males.

OC 6.2.2

Impact of financial strain on sleep quality and sleep duration

Yu Sun Bin, Robert Meadows, Sara Arber

Centre for Integrated Research & Understanding of Sleep (CIRUS), University of Sydney; Centre for Research on Ageing and Gender (CRAG), Department of Sociology, University of Surrey

Background Sleep is fundamental to health and well-being, with poor sleep increasingly shown to impact on mortality, cardiovascular risk factors and diabetes. Financial strain is routinely cited by the public as a major cause of poor sleep and a source of psychosocial stress. However there have been no systematic evaluations of the impact of financial strain on sleep in population representative samples.
Objectives To determine if subjective financial strain is associated with poor sleep quality and short sleep duration, independently of socioeconomic status.
Methods We analysed data from Wave 1 of the Understanding Society Survey conducted in 2009/2010. This was a cross-sectional dataset with nationally representative survey data from community-based participants in the United Kingdom. There were forty-thousand (40,513) respondents aged 16 years and over. Subjective financial strain was indicated by self-rated current financial situation and satisfaction with household income. Poor self-reported sleep quality and reported habitual sleep duration of less than 5.5 h nightly were the main outcomes of interest. Separate nested logistic regression models were used to predict the two sleep measures: Model 1 included age, gender, financial strain; Model 2 added marital status, children, education, employment status, occupational class; Model 3 included self-rated physical health, mental health, limiting long-standing illness; and Model 4 added household income, personal, and financial hardship.
Results Robust linear relationships are found between financial strain and both poor sleep and short sleep, after full adjustment for education, employment status, occupational class, and income variables. Respondents "finding it very difficult" financially were significantly more likely to have both poor sleep (AOR 2.05; 95 % CI 1.77–2.37) and short sleep duration (2.70; 2.30–3.17). Similarly, dissatisfaction with household income independently predicted poor sleep quality (1.89; 1.56–2.29) and short sleep durations (1.78; 1.44–2.19). Both subjective physical and psychological health are also significantly related to problematic sleep.
Conclusions Since both financial difficulties and disadvantaged socio-economic characteristics are strongly associated with sleep problems, problematic sleep and financial strain may be a mechanism through which low SES is linked to poor health.

OC 6.2.3

Sleeping hours and siesta associated with the risk of obesity in a Mediterranean cohort: The SUN Project

Carmen Sayon-Orea, Maira Bes-Rastrollo, Silvia Carlos, Juan Jose Beunza, Francisco Javier Basterra-Gortari, Miguel Angel Martinez-Gonzalez

Dept. of Preventive Medicine and Public Health, University of Navarra, Pamplona, Spain; Dept. of Internal Medicine (Endocrinology), Hospital Reina Sofia, Tudela, Spain

Background and Aims In the past decades epidemiological studies have identified a positive association between short sleep duration and obesity. In addition, siesta is a common practice in many Mediterranean countries, and no previous studies have assessed the association between siesta and obesity. The aim of this study was to investigate the association between sleeping hours/siesta and the incidence of obesity in a large Mediterranean cohort.
Methods After a median of 6.5 years of follow-up we included 10,532 and 12,045 participants for sleeping hours and siesta respectively, all of them without chronic disease or obesity at baseline. Data of sleeping hours and siesta were collected at baseline. Weight was recorded at baseline, and every 2 years during the follow-up. The outcome was the incidence of obesity during follow-up.
Results Sleeping hours: During follow-up we observed 446 new cases of obesity. Sleeping less than 5 h per day was associated with a higher risk of becoming obese compared to those who slept between 7 to 8 h [HR = 1.94; 95 % CI: 1.19 to 3.18) P for quadratic trend = 0.06], after adjusting for potential confounders.

Siesta During the follow-up period, we observed 506 incident cases of obesity.

Those who took 30 min siesta per day had a 33 % lower risk of becoming obese [HR 0.67(0.47–0.95) P for quadratic trend = 0.14] compared to those who did not take siesta.

Conclusion Less sleeping hours appear to be a novel, independent, and modifiable risk factor for obesity. Additionally, the possibility that siesta might be a protective factor for obesity, deserves further assessments.

OC 6.2.4

Insomnia and sleepiness among adolescents

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CI&DETS. Polytechnic Institute of Viseu. FCT. Portugal; National School of Public Health, UNL. FCT. Portugal

Background Insomnia is a major public health concern affecting high proportion of adolescents, associated with excessive daytime sleepiness.

Objectives The aim of this study was to quantify the prevalence of insomnia and relate with the daytime sleepiness in a community sample of adolescents.

Methods In a cross-sectional approach we evaluated students from the 7th to the 12th grades from twenty-six secondary public schools of the district of Viseu, Portugal. The data was collected using a self-administered questionnaire. Of the 8,570 questionnaires sent, we received 7,136 (83.3 %), 6,919 were completed (53.2 % female). Insomnia was defined based on the DSM-IV criteria, as the presence of one or more symptoms: (1) difficulty initiating sleep, (2) difficulty maintaining sleep, (3) early morning awakening and difficulty getting back to sleep, (4) non-restorative sleep. Symptoms were classified as present when they occurred at least three nights per week during at least 1 month. Daytime sleepiness was measured by the Epworth Sleepiness Scale. The cut-off point to classify excessive daytime sleepiness was 10. The prevalence were expressed in proportions with 95 % confidence intervals (CI) and the magnitude of association between variables was detailed using odds ratio (OR).

Results The prevalence of symptoms of insomnia was 21.4 %, higher in female sex (25.6 vs. 15.8 %, $p < 0{,}01$). The prevalence of difficulty initiating sleep, difficulty maintaining sleep, early morning awakening with difficulty getting back to sleep and non-restorative sleep was 8.9 6.1, 8.3 and 5.7 %, respectively. The prevalence of insomnia symptoms and dissatisfaction with their sleep was 9.9 %, higher in female sex (12.0 vs. 9.0 %, $p < 0.01$). Overall, 8.3 % of the adolescents reported at least one insomnia symptom with daily consequences, higher in female sex (10.1 vs. 5.9 %, $p < 0.01$).The prevalence of excessive daytime sleepiness was 33.1 %, higher in female sex (36.6 vs. 29.1 %, $p < 0.01$). Symptoms of insomnia was associated with gender (female, OR = 1.83, 95 % CI = 1.56–2.13), age (≥16 years OR = 1.18, 95 % CI = 1.02–1.37), residence area (urban OR = 1.35, 95 % CI = 1.08–1.68), parental education (>9 years OR = 1.16, 95 % CI = 1.00–1.35), father's marital status (married OR = 0.83 95 % CI 0.68–1.00), coffee consumption (OR = 1.38 95 % CI 1.19–1.60), alcohol consumption (OR = 1.20 95 % CI 1.03–1.38), going out at night (OR = 1.27 95 % CI 1.00–1.62), depressive symptoms (OR = 3.84 95 % CI 3.26–4.51) and excessive daytime sleepiness (OR = 1.50 95 % CI 1.29–1.74).

Conclusion We found a high prevalence of insomnia in Portuguese adolescents. Insomnia was associated with socio-economic variables and related with daily consequences, namely daytime sleepiness.

Oral Communications Session 6.3. Migration and health

OC 6.3.1

Reproductive and perinatal health among migrants to England and Wales

Alison Macfarlane, Preeti Datta-Nemdharry, Nirupa Dattani

City University London

Background Around a quarter of births in England and Wales are now to mothers born outside the UK. Past research and analyses of routine data have shown that some migrant women and some minority ethnic groups have particularly high risks of adverse outcomes for both mothers and babies.

Objectives To describe trends and variations in reproductive outcome among migrants to England and Wales and critique the measures used.

Methods Review and analysis of routinely collected data, including analysis of linked birth and maternity care data.

Results Published data show that rates of maternal mortality are particularly high for African and Caribbean women. Raised infant mortality rates have been found for babies of Caribbean and Pakistani ethnicity. The increasing use of the concept of ethnicity makes it difficult to assess possible differences between migrant and UK-born groups and some of the categories, notably Black African are extremely broad. The linkage of data recorded at birth registration by parents to data recorded when births are notified by professionals when a unique identifier, the NHS Number, is allocated to a newborn baby has enhanced the data available at a national level and enabled new analyses. Analyses of birthweight and gestational age by babies' ethnicity and by mothers' country of birth have shown that in babies of African and Caribbean ethnicity, rates of low birthweight and preterm birth varied by mothers' country of birth. Further linkage of birth registration and NN4B linked data to hospital records has enabled examination of differences in onset of labour and method of delivery according to ethnicity and country of birth. These have shown associations between caesarean rates for women from high and middle income countries and those in their countries of origin and shown and high rates for women born in Africa but considerable variations between African regions and countries.

Conclusions Despite their limitations, analyses by country of birth and ethnicity are useful have enabled identification of high rates of adverse outcome in England and Wales for women of Caribbean and West African origin.

OC 6.3.2

Migrant disparity in access to prenatal care for very preterm birth. An area-based study in central Italy

Domenico Di Lallo, Francesco Franco, Sara Farchi, Gabriella Guasticchi, on Behalf of Lazio Neonatal Network

Agency for Public Health, Lazio Region, Rome-Italy; Lazio Neonatal Network

Background Women migration to Italy from other countries is a recent phenomenon compared to other European countries. In the Lazio region, central Italy, between 1980 and 2010, the percentage of births to Foreign-Born mothers increased from 0.4 to 21 %. Immigrant women could be at risk for sub-optimal access to prenatal care, mainly among high risk pregnancies.

Objectives To compare the Antenatal Steroid (AS) treatment for Very Preterm Babies among Foreign-Born (FBm) and Italian-Born (IBm) mothers.

Methods The study was carried out in the Lazio Region, which has about 55.000 births per year. All Very Preterm Births with a gestational age between 24 and 31 weeks (N = 2,072) admitted to the 13 Neonatal Intensive Care Units of the Region during 2007–2010 were analyzed. The source of data was a standardized prospective collection of a selected number of perinatal data. AS treatment was defined as the administration of at least one dose 24 h or more before delivery. Odds ratios (OR) and 95 % Confidence Intervals (95 % CIs) from logistic regression model (IBm as reference) were calculated to study the association between maternal place of birth and exposure to AS treatment. Maternal age and education, parity, gestational age (24–27 and 28–31 weeks) and inborn/outborn were considered as confounders.
Results Very Preterm Babies to FBm were 26.6 %; compared to IBm, FBm had a higher proportion of babies at lower gestational age between 24 and 27 weeks (31.5 vs. 26 %, *p* value 0.015). The lack of AS treatment was significantly higher among FBm than among IBm (18 vs. 30 %, *p* value 0.000). The adjusted analysis showed similar results for Foreign Born mothers (OR for no AS 1.67; CIs 95 % 1.30–2.15). Among the others confounders, the strongest associations for none AS treatment was observed for Outborn status (OR 2.51; 95 % CIs 1.92–3.29).
Conclusions Our area-based study shows the presence of inequalities in the access to an evidence-based treatment for the prevention of neonatal morbidity and mortality among very preterm babies. These results should be taken into consideration when making policies for the promotion of mother and child health in the immigrant population.

OC 6.3.3

Suicide attempts of women of Turkish descent in emergency units in Berlin: preliminary results

Marion Aichberger, Amanda Heredia Montesinos, Zohra Bromand, Rahsan Yesil, Selver Temur-Erman, Michael Rapp, Andreas Heinz, Meryam Schouler-Ocak

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Background In recent years higher rates for suicide attempts (e.g. Bhugra et al. 1999, van Bergen et al. 2008, 2010, Burger et al. 2009, Cooper et al. 2006, 2010, Yilmaz et al. 2008) have been reported in different countries for young women from various ethnic minority and immigrant groups. Elevated suicide attempt rates of girls and young women of Turkish origin have been found in studies in the Netherland and Switzerland. In Germany a similar pattern was suggested by Razum and Zeeb (2004), who found in an analysis of death registration data an almost twofold relative risk for suicide rates in girls and young women of Turkish origin in (West) Germany in comparison to their German peers. For the development of effective (indicated) prevention of suicide in immigrant groups, such as women of Turkish origin in Germany, patterns of suicidal behaviour need to be understood.
Objective Therefore the aim was to estimate the incidence of suicide attempts in women of Turkish origin aged 18 years or older residing in Berlin, Germany. This investigation was part of a large-scale multimodal intervention study aiming to increase help-seeking behaviour in suicidal crisis (ISRCTN96382348).
Methods The incidence of suicides and suicide attempts were estimated analogous to the WHO/EURO suicide prevention study. All suicide attempts among women of Turkish origin who presented in a hospital based emergency unit in Berlin (N = 42) were included in the analyses. Basic socio-demographic characteristics, method used, psychiatric diagnosis (if applicable), follow-up treatment and motifs were collected. Suicide attempt rates were calculated per 100,000 population per year. The study was conducted from 2009 to 2011.
Results During the study (2005/2009–2009/2011) a total of N = 163 suicide attempts of women of Turkish origin aged 18 years or older were reported at all the emergency departments in Berlin. The mean age was 30.8 years (range: 18–66 years). The highest fraction was in the age-group 18–35 years. 52.2 % (N = 85) were women belonging to the second generation. Rates declined in the youngest age stratum over the time of the study. The most common psychiatric diagnosis was adjustment disorder (ICD-10:F43.2) with 49.7 % (N = 81). The majority of cases was reported in the inner-city districts of Mitte, Kreuzberg-Friedrichshain, and Neukölln, the districts with the highest density of immigrants of Turkish origin.
Conclusion Our findings show that particularly young second generation women of Turkish origin present at emergency department after suicide attempts. This might indicate an increased risk for suicide attempts in this group.

OC 6.3.4

Ethnic differences in prescription of anti-asthmatics for children and adolescents: a multilevel analysis

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Background Ethnic differences in asthma treatment among children and adolescents have been documented but the role of community-level contextual explanatory factors is still an understudied issue. We hypotheses that children living in the same area of residence may be more similar to each other than children living in other areas, because they may share area of residence specific social factors, life style and health care availability, which may have a collective influence over and above individual factors. The objectives of this study were: (i) to analyse whether there are ethnic differences in filling a prescription for anti-asthma medication among children and adolescents living in Denmark in 2008, and (ii) whether the neighbourhood context could be a source of producing ethnic disparities in asthma treatment.
Methods We retrieved all prescriptions claimed for anti-asthmatics (ATC: R03) for the year 2008 from the Danish National Prescription Register. We used multivariable multilevel logistic analyses with ethnic background as the independent variable and prescription of anti-asthmatics (attack and preventive medications) as the outcome measure. The analysis had a two-level hierarchical structure with child/adolescent at first level and neighbourhood at second. We performed three different analyses. In the first analysis (model i) we analyzed the association between ethnic background and anti-asthma medication adjusted only for individual factors (age, sex, household income and number of children per household). In the second model (model ii) we analyzed the association between ethnic background and anti-asthma medication with neighbourhood as a fixed effect. In the third (model iii) we examined whether neighbourhood had a contextual effect on individual purchase of anti-asthmatics medication as we wanted to establish whether children living in the same neighbourhood shared a similar probability of filling a prescription for asthma medication. This contextual phenomenon was measured by the intraclass correlation coefficient (ICC).
Results Significantly fewer descendant and migrant children and adolescents filled a prescription for anti-asthma medication in 2008 compared to ethnic Danes [ORdescendants = 0.9 (95 % CI 0.78–0.97) and ORmigrants 0.59 (0.69–0.55)]. Differences were greater for the

preventing medication than for the attack treatment. This in turn might be a sign of suboptimal disease management. Ethnic differences persist after adjusting for the clustering effect of neighbourhood.
Conclusions Descendant and migrant children and adolescents compared to the majority population showed a lower used of anti-asthmatic medication (both preventive and relief).

Oral Communications Session 6.4. Health services

OC 6.4.1

High bed occupancy rates not linked to elevated hospital mortality or infection rates

Fernando Volpe

Hospital Foundation of Minas Gerais

Background The adoption of upper limits for hospital bed occupancy rates (BOR) has been repeatedly advocated, with the allegation that values above 85 % would involve increased risks for patients. More specifically, high BOR were presented as potential risk factors for nosocomial infection and mortality. Recently, the logic of this assumption has been challenged, warranting studies based on actual information rather than in simulations. The context of health services, especially Brazilian's public health, presents a specific combination of persistent unmet demand for admissions and high cost of increasing the number of hospital beds. Therefore, in a national scenario of contained demand, the primary objective of a hospital should be to assist the highest number of patients in a given period of time, optimizing available resources, while safeguarding quality and safety criteria.
Objective To correlate bed occupancy rates with hospital patient safety indicators (rates of nosocomial infection and of institutional mortality).
Methods Data from nine medium to large scale public hospitals, all pertaining Hospital Foundation of Minas Gerais, Brazil, were gathered for the period January 2007 to June 2011. Indicators were aggregated by month, resulting in 486 observations (months). Bivariate linear regressions were performed, aiming to estimate the effect of BOR on each response variable (hospital infection rates and institutional mortality). For all analysis, a significance level of 95 % ($p < 0.05$) was set.
Results Overall, bed occupancy rates showed an inverse correlation to mortality rates ($b = -0.191$, $F = 79.94$, $p < 0.001$, $R2 = 14.0$ %), and presented no significant correlation to the nosocomial infection rates ($p = 0.94$).
Conclusions The increase in patient load was associated to reduced institutional mortality, and did not alter the risk of nosocomial infection. Based on those indicators of patient's safety, the inconvenience of keeping vacant beds in the context of unmet demands in public health does not seem justifiable.

OC 6.4.2

The impact of pay for performance system on orthopaedic indicators by type of hospitals ownership: experience from Lazio region (Italy)

Paola Colais, Luigi Pinnarelli, Carlo Alberto Perucci, Mario Braga, Marina Davoli, Danilo Fusco

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Background Tariff modulation mechanism has been introduced in some Italian regions with the aim of reducing inappropriate admission and improving quality of care. In particular, a regional law linked the reimbursement rate for Lazio providers to hospitals performances on hip fracture, as in a pay-for-performance model. From 2010 the full reimbursement rate has been paid only for elderly patients with hip fracture undergone a surgical treatment within 48 h from admission, while rates for interventions performed over 48 h from admission has been proportionally reduced on the basis of the time to surgery. We evaluate the impact of regional law on interventions performed within 48 h by different types of hospitals ownership.
Methods Using Hospital Information System, we identified elderly patients hospitalised for hip fracture in two periods: period 1 (from 01/07/2008 to 30/06/2009) and period 2 (from 01/07/2010 to 30/06/2011), respectively before and after the introduction of regional law. Hospitals were classified in 4 types of hospital ownership: 1—Local health unit hospitals, 2—Public hospital corporations and teaching hospitals, 3—Religious hospitals, 4—Private hospitals.

Risk adjusted proportion of elderly patients operated for hip fractures within 48 h by types of hospitals ownership in period 1 and period 2 were calculated. Relative risk by types of hospitals ownership were estimated to compare the proportions of intervention within 48 h between period 1 and period 2.
Results We selected 12,433 admissions for hip fracture in Lazio region: 6,043 in period 1 and 6,390 in period 2. Type 2 hospitals were significantly associated with a higher probability of undergoing intervention within 48 h (adjusted $RR = 1.93$; $p < 0.001$) in period 1. In period 2 we observed a higher probability of undergoing intervention within 48 h in type 2, type 3 and type 4 hospitals compared to type 1 hospitals (type 2: adjusted $RR = 1.33$, $p < 0.001$; type 3: adjusted $RR = 1.20$, $p = 0.020$; type 4: adjusted $RR = 1.28$, $p = 0.001$). The probability of undergoing intervention within 48 h was higher in period 2 than in period 1 by all types of hospitals ownership (type 1: adjusted $RR = 2.07$, $p < 0.001$; type 2: adjusted $RR = 1.42$, $p < 0.001$; type 3: adjusted $RR = 2.00$, $p < 0.001$; type 4: adjusted $RR = 2.80$, $p < 0.001$).
Conclusions The introduction of pay for performance system improved the proportion of surgery performed within 48 h regardless of hospital ownership. However private providers showed the largest improvement.

OC 6.4.3

Does geographic access to obstetric care reduce early neonatal mortality in Malawi and Zambia?

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Background While child mortality is decreasing, neonatal mortality remains high, particularly in Sub-Saharan Africa. Every year, an estimated 3 million neonates die in the first week of life (early neonatal mortality), often related to intra-partum complications. Access to adequate care at birth is needed to reduce these deaths as well as maternal deaths. Very few studies so far have investigated the influence of distance and level of care on neonatal mortality, partly due to a lack of appropriate data.
Objectives We investigated the effects of distance to delivery care and of level of care on early neonatal mortality in rural Zambia and Malawi, studied the effect of distance (and level of care) on facility delivery, and the effect of facility delivery on early neonatal mortality.
Methods National Health Facility Censuses were used to classify the level of obstetric care for 1,131 Zambian and 446 Malawian delivery

facilities. Straight-line distances to facilities were calculated for 3,771 newborns in the 2007 Zambia DHS and 8,842 newborns in the 2004 Malawi DHS. We built multivariable logistic regression models adjusting for a wide range of confounders, using robust standard errors to take account of clustering.

Results Early neonatal mortality was 2.2 % in rural Malawi and 2.6 % in rural Zambia. Facility delivery was 52 % in rural Malawi and 33 % in rural Zambia. There was no association between distance to care and early neonatal mortality in Malawi (OR 0.97, 95 % CI 0.58–1.60), while in Zambia, increasing distance (per 10 km) was associated with lower mortality (OR 0.55, 95 % CI 0.35–0.87). The level of care provided in the closest facility showed no association with early neonatal mortality in either Malawi (OR 1.02, 95 % CI 0.90–1.16) or Zambia (OR 1.02, 95 % CI 0.82–1.26). In both countries, distance to care (per 10 km) was however strongly associated with facility use for delivery (Malawi: OR 0.35, 95 % CI 0.26–0.46; Zambia OR 0.73, 95 % CI 0.57–0.94). Early neonatal mortality did not differ by frequency of facility delivery in the cluster.

Conclusions An increase in facility deliveries with better geographic access and higher level of care does not necessarily translate into reduced early neonatal mortality. This could be due to low quality of care for newborns at health facilities, but differential underreporting of early neonatal deaths in the DHS is an alternative explanation. Improved data sources are needed to monitor progress in the provision of obstetric and newborn care and its impact on mortality.

OC 6.4.4

Emotional competence in healthcare professionals: correlational and comparative research

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Introdution The relevance of this first empirical research (to our knowledge) in Continued Care National Network (RCNN) context, emerge to understand the role of emotions in workplace (Austin, Dore & Donovan, 2008; Liu et al. 2008; Barsade, Ramarajan, Burack, 2008), here, with ill people and great physical and psychological weakness. Recent scientific literature expose a significantly negative correlations between Emotional Intelligence (EI) and emotional exhaution (Geng; Li; Zhou, 2011), and the development of Emotional Competence skills in workplace context (Veiga-Branco, 2007).

Aim To study the Emotional Competence's (EC) profile and the differences between capacities levels profiles in health professionals: physiotherapists and social workers in Portuguese RNCC.

Method This quantitative, comparative, descriptive and correlational study, was performed in two independents probabilistics samples including 91 health professionals, 58 physiotherapists—9 male and 49 female—and 33 social workers—3 male and 30 female. Was applied "*Escala Veiga de Competência Emocional*" (*EVCE*), developed by Veiga-Branco (2009); and data was descriptive, correlational study (SPSS 17) and multiple regression.

Results/Discussion In global sample, five competencies were identified, with significantly positive correlations between EC and the 5 capacities, and the ranking of the correlations was: Self-conscience (rho = 0.770; $p < 0.01$), Emotions Management in Group (rho = 0.767; $p < 0.01$), Self-motivation (rho = 0.680; $p < 0.01$), Emotions Management (rho = 0.653; $p < 0.01$), and Empathy (rho = 0.259; $p < 0.05$), according the protective effort of trait EI in occupational stress (Miklolajczak, Menil, & Luminet, 2007). Results show that EC profiles have—in these samples—some differences on capacities: the EC profile is significantly different between physiotherapists and social workers, proving that workplace can be a moderate variable as follows: social workers present a superior level (x = 4.195) in EC profile, than physiotherapists (x = 4.705); and the estimated regression model includes for the physiotherapists sample, the five capacities, but not as theoretical model (Caruso, & Salovey, 2004): Emotion Management, Emotions Management in Group, Self-Motivation, Empaty, and finally Self-conscience, representing 98.4 % of the variance in EC. Social workers sample, presents a completely different model: only Self-conscience, and Emotions Management in Group entered in the model, representing 81.3 % of the variance, excluding the remaining capacities.

Conclusions Results clearly demonstrating the relationships of the EC with five capacities of the construct, but EC scores and EC profiles for **social workers** were significantly higher those for **physiotherapists r**ecognizing the relationship between emotional competence and workplace emotional skills, according with Karim, J.; Weisz, R. (2010) and Veiga-Branco (2010).

8th September 2012

Time: 8.30–10.00

Oral Communications Session 7.1. Infectious diseases

OC 7.1.1

A survey on needlestick injuries among veterinary professionals

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Background Needlestick injuries are today considered a substantial occupational health & safety hazard in contemporary health care practice and while the physical trauma is usually minor, these injuries are of major concern because of the potential exposure to infectious agents. Alarm is substantial in human medicine, where much effort has been devoted to reducing the incidence of these events but, for various reasons, the same aggressive approach has not been used in veterinary medicine. Overall, it is apparent that needlestick injuries are relatively common in veterinary practice. However, to date there has been minimal study of needle handling practices, risk factors and needlestick injuries reporting practices and rates.

Objectives To evaluate needlestick injuries in veterinary professionals and potential risk factors associated with blood-contaminated needlestick episodes.

Methods Participants of a 2011 Veterinary Meeting in Portugal were asked to complete a questionnaire-based needlestick injury survey. Flyers and 1-page posters were distributed in the participants' conference bag, to give information about the study. A needlestick injury was defined as a puncture or laceration with a needle contaminated with blood or other bloody body fluids from animals. Univariate and multivariate logistic regression models were performed for risk factor analysis. All analyses were performed using "Epicalc" package in the R software (R 2.13.1).

Results A total of 373 questionnaires were returned from 1,200 eligible participants (response rate 31.1 %) with 29.5 % being male, 51.7 % with less than 30 years old, 38.8 % between 30 and 39 years old and 9.5 % in the >40 years age group. Over 80 % had low experience (1–10 years of experience), 16.1 % between 11 and 20 years of experience and 3.7 % over 20 years of experience. Around three quarters (77.8 %) reported having had a needlestick injury contaminated with animal blood. Participants reported to have

suffered needlestick injuries contaminated with blood from dog (71.4 %), cat (65.9 %), bovine (14.1 %), sheep (10.3 %), horse (4.8 %), exotic animal (4.1 %), poultry (3.8 %) and pig (2.4 %). Risk factors for blood-contaminated needlestick injuries were age and working in large animal practice, namely with bovine, pig and horse.
Conclusions The exposure rate of needlestick injuries in veterinary professionals in Portugal is high and clearly remains a major occupational health problem. Guidelines and strategies to reduce needlestick injuries in veterinary practice should be promoted and the lax attitude concerning these injuries should be replaced with a proactive attitude towards injury prevention.

OC 7.1.2

Seasonal patterns of malaria mortality in rural Burkina Faso based on two different methods for cause of death assessment

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Background To plan health interventions aimed lessening mortality, reliable and accurate empirical information on cause-specific mortality patterns is essential, yet such data are often not available in developing countries. Health and Demographic surveillance systems (HDSS) implementing the verbal autopsy method allow to observe cause-specific mortality of a population on a longitudinal basis in poor countries. Physician Coded Verbal Autopsy (PCVA) is usually used to determine cause of death (COD), but recently the Interpreting Verbal Autopsy (InterVA) method, a computerized model, was alternatively introduced.
Objectives The aim of this study is to determine the effect of season on all-cause and malaria mortality analyzing data for the period 1998–2007 obtained by the Nouna HDSS with $\sim$ 80,000 individuals in rural northwestern Burkina Faso and to compare seasonal malaria mortality patterns for the PCVA approach as well as for the InterVA model.
Methods All-cause and cause-specific death rates were calculated overall and by age group. Seasonal and temporal trends were modeled with parametric Poisson regression adjusted for sex, area of residence and year of death.
Results Overall, 7,378 deaths were observed corresponding to an average mortality rate of 11.9 deaths per 1,000. InterVA assigned as half as many deaths to malaria than physicians did. Both methods showed young children to be most affected by malaria whereas for adults and older people other CODs played a major role. Despite few discrepancies, both methods showed comparable significant malaria mortality patterns in children with higher rates during the rainy season. In adults and old people, the highest mortality rates were observed in the dry season for other CODs. The seasonal trend is well described parametrically with a sinusoidal function. Under five mortality declined significantly for other CODs over the years alongside stagnant malaria mortality.
Conclusions This study provides further evidence for the high impact of malaria on mortality in children, highlights the seasonality of malaria mortality in malaria endemic regions of rural West Africa and shows that it is still important to protect young children living in malaria high transmission areas. Furthermore, it was shown that both the probabilistic InterVA model and PCVA determine reasonably well seasonal patterns of malaria mortality in a rural malaria endemic area in Burkina Faso and are very valuable for the planning of health resources and activities, which should take into account seasonal variations in malaria mortality and other CODs.

OC 7.1.3

Nowcasting influenza epidemics using a sentinel network based influenza surveillance system

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Background Timeliness of a public health surveillance system (SS) is one of its most important characteristics.

In Europe the epidemiological surveillance of influenza is supported by general practitioners (GP) sentinel networks and, weekly, epidemiological bulletins are issued between Wednesday and Friday, reporting the previous week observed influenza values, representing a 2–4 days reporting delay.

Some SS use web interfaces or computer routines that can provide up to date daily data streams accessing the current situation.

The process of predicting the present week situation using the available incomplete information from the SS has received the term *nowcasting* and has high public health interest.
Objective Develop a statistical model to nowcast the influenza epidemic evolution in a weekly basis, by predicting two measures of interest: the current week influenza-like illness (ILI) rate (officially issued in the following week) and the probability that the influenza activity is epidemic.
Methods A two states (epidemic/non-epidemic) non-homogeneous hidden Markov model (HMM) is used, where the current week ILI rate is a function of an early observation of the ILI rate obtained by Friday of this week. The state-transition probabilities are modeled by a logistic function of the Friday ILI rate and of the number of ILI cases tested positive in the previous week.

For comparison purposes a homogeneous HMM is also applied to the data.

Bayesian inference is used to find estimates of the model parameters and of the nowcasted quantities.

The models are applied to data provided by the Portuguese influenza SS for seasons 2008–2009 up to 2010–2011 to nowcast in real-time each week of the season 2010–2011.
Results The non-homogenous HMM presents the best fit and is able to indentify four epidemic waves in the studied period, one in 2008–2009 and 2010–2011 and two in the pandemic season. Regarding the nowcast, the weekly ILI rates of season 2010–2011 are predicted during the same week in a very satisfactory way, given that the estimates start to increase, reach the peak and decrease in synchrony with the observed rate (this reduces the reporting delay in 5 days). The non-homogenous model is able to detect the epidemic start 2 weeks before the homogeneous one.
Conclusion The present work shows the additional value of the non-homogeneous HMM to nowcast the ILI rate and the influenza activity state.

OC 7.1.4

Vaccine-preventable outbreaks in Republic of Srpska, Bosnia and Herzegovina, 2009–2012

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Background European people are still facing with vaccine-preventable diseases. At the beginning of 21st century, most common vaccinable outbreaks in routinely vaccinated population are measles, mumps, and rubella. Routine vaccination in Republic of Srpska (RS)—one of two governing entities in Bosnia and Herzegovina, include: tuberculosis, hepatitis B, tetanus, diphtheria, pertussis, poliomyelitis, Haemophilus influenzae type B, measles, mumps, and rubella.
Objectives to describe epidemiological features of vaccine—preventable outbreaks in RS and to assess their impact on public health.
Methods Descriptive analysis, population based case-series. Surveillance of communicable diseases in RS is regulated by the Law on Protection of the population from infectious diseases. Classification of cases was based on Rulebook on Procedure of registration, the content of records and reports of communicable diseases. Data included in this paper came from official reports of Public Health Institute of RS (PHI) and particular from local registry of infectious diseases in Health Center Bijeljina.
Results Mumps outbreak in municipality of Bijeljina started in February 2009, signed out in April 2010 with the total of 380 reported cases (incidence 292 per 100,000 inhabitants). Immunization status against mumps among observed population was largely unknown—no data 55 %, fully immunized 13 %, partially immunized 14 % and non-immunized 18 %. Rubella outbreak was reported in March 2009 in Kozarska Dubica, Kotor Varoš and Prijedor and spread by the end of the year to the 15 municipalities of RS. The total number of notified cases from March 2009 to May 2010 was 1,073 (national incidence 76 per 100,000). Ongoing mumps outbreak in RS started in July 2011 in the East Sarajevo region and spread to 21 municipality across RS. According to data available until 31 March 2012, total of 6,018 (incidence 429 per 100,000) mumps cases were reported to PHI. The largest share of cases (about 55 %) was 15–20 years of age in all mentioned outbreaks. The vast majority of reported cases (with the exclusion of some rubella confirmed cases) were diagnosed only by clinical manifestations.
Conclusions Vaccine preventable diseases nowadays have a very significant impact on public health in RS. Considering mentioned outbreaks, there are some issues related to immunogenicity of vaccines (properties of vaccine, maintaining of cold chain) and most likely because of war conflict consequences: migration, inadequate immunization records and low turnout to immunization.

OC 7.1.5

Estimating the risks from outbreaks of emerging infectious diseases to blood safety: European Upfront Risk Assessment Tool (EUFRAT)

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Background Outbreaks of emerging infectious diseases pose a potential threat to blood safety, and require decisions on implementation of protective measures. The browser-based European Up-Front Risk Assessment Tool (EUFRAT) provides quantitative, fast and flexible risk estimates for public health decision makers across the five steps of the transfusion chain from the risk of infection in the population to the risk to recipients of blood products. EUFRAT therefore has broad application potential. It was developed by the University of Utrecht for the European Centre for Disease Control and Prevention (ECDC) to support decision making for blood safety in outbreak situations.
Methods EUFRAT is a modelling tool that reflects both characteristics of an infectious disease and the transfusion practice. It can be used with any blood-borne infectious disease but contains specific parameters for 18 diseases of outbreak potential in Europe, including West Nile Virus, tick-borne encephalitis, hepatitis A, Q fever and malaria. Users apply population, outbreak and disease-specific data to estimate risk outputs for specific outbreak areas, as well as the associated risks from a traveller returning from an outbreak area. Infection risks in five subsequent steps in the blood transfusion chain are assessed: (1) the risk of infection in the donor population, (2) the risk of infected donations, (3) components, (4) end products, and (5) the risk of transmitting the infection to recipients. EUFRAT allows inputs to be point estimates or ranges, and uses Monte-Carlo simulation for ranges.
Results The tool has been applied to outbreaks of infectious diseases in Europe in 2012 to validate the modelling, and it is foreseen to enter a pilot phase in 2013.
Conclusion EUFRAT is a user-friendly, flexible tool that provides quantitative risk assessments not currently found in other models, and support guidance and decision making towards maintaining blood safety during outbreaks of infectious diseases in Europe.

OC 7.1.6

Effectiveness of the influenza A(H1N1)pdm09 vaccine in adults recommended for annual influenza vaccination: a matched case–control study

Giedre Gefenaite, Margot Tacken, Jens Bos, Irina Stirbu-Wagner, Joke C. Korevaar, Ronald P. Stolk, Bert Wolters, Marc Bijl, Maarten J. Postma, Jan Wilschut, Kristin L. Nichol, Eelko Hak

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Background and objectives Because of variability in published A(H1N1)pdm09 influenza vaccine effectiveness estimates, we aimed to assess the effectiveness of MF59-adjuvanted A(H1N1)pdm09 vaccine in a matched case–control study.
Patients/methods This study was conducted during the pandemic influenza season 2009–2010 in adults with underlying comorbidities and healthy subjects of 60 years and older recommended for annual influenza vaccination in The Netherlands. Sixteen laboratory—confirmed and eligible A(H1N1)pdm09 influenza cases registered by four Community Health Services of The Netherlands were included. The control population was retrieved from a general practice database and consisted of subjects who had not been registered with influenza code R80 (according to the International Classification of Primary Care) during the A(H1N1)pdm09 influenza season. The controls were matched to cases on sex, age and comorbidities. The primary outcome was laboratory-confirmed A(H1N1)pdm09 influenza. Odds ratios (OR) and their 95 % confidence intervals (95 % CI) were calculated. Vaccine effectiveness (VE) was expressed as $VE = (1 - OR) * 100$ %.

Results The A(H1N1)pdm09 vaccination rates in cases and controls were 6 and 76 % respectively. After matching cases with controls in a ratio of 1:10, vaccine effectiveness was 98 % (95 % CI 84–100 %).
Conclusions Even though we cannot entirely rule out that selection bias has played a role in our study, the present results indicate that the MF59-adjuvanted A(H1N1)pdm09 influenza vaccine has been effective in preventing laboratory-confirmed A(H1N1)pdm09 influenza in adults with underlying comorbidities and healthy subjects of 60 years and older during the A(H1N1)pdm09 influenza pandemic.

Oral Communications Session 7.2. Mortality

OC 7.2.1

Mortality and disability pension in Spain: a household design on the longitudinal database of the Andalusian population

Kristina Karlsdotter, Sol P Juárez, Francisco J Viciana-Fernández, Diego Ramiro-Fariñas, Juan Merlo

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Background Research has shown that both socio demographic and socio economic variables are associated with disability, but few longitudinal studies have analyzed the mortality risk among individuals with and without DP, and none in Spain. The vast majority of the studies about disability and mortality have considered only individual variables. However, the context in which individuals live may also be associated with the probability of receiving a DP and with the mortality of these individuals. Traditionally, the analysis of contextual effects on health outcomes has been focused on geographical areas like municipalities or regions while other contexts, like the household, have not been considered to the same extent. Nevertheless, some evidence show a high correlation in individual health among members of the same household, pointing to the existence of familial confounders.
Objectives For the first time in Spain, we investigated the association between DP and mortality, using a household approach, and examined what variables are associated with higher mortality risk in individuals with DP.
Methods We applied Cox regressions in which the outcome was all-cause mortality and controlled for age, marital status, educational achievement and a household's socioeconomic position. We also stratified the regression by households, to control for the existence of family confounders.
Results The HR for DP was reduced by almost one point when stratifying the regression by households, which indicates the existence of familial confounders. Men with DP had 2.10 times higher risk of dying than non-disabled men and disabled women had almost four times higher mortality risk than non-disabled women. Regarding the mortality risk factors for individuals with disability pension, men had 2.7 times higher mortality risk than women. Being married was a protective factor for men, but a risk factor for women. The educational achievement, as well as a household's socioeconomic position, reduced the mortality risk in individuals with DP.
Conclusions This is the first study to investigate the mortality in disabled individuals with data from Spain. Moreover, it is the first study to use a household design. The HR for DP was reduced by almost one point when stratifying the regression by households, which indicates the existence of familial confounders. Individuals with DP had higher mortality risk than non-disabled individuals. The educational level, along with the household's socioeconomic position, acted as a protective factor for disabled individuals.

OC 7.2.2

Explaining mortality differentials between Russia, Poland and the Czech Republic: prospective data from the HAPIEE cohort in Novosibirsk, Krakow and 7 Czech towns

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Background There are marked differences in mortality among Central and Eastern European (CEE) countries. In 2009, all-age male mortality in Russia was 1.9 times higher than in the Czech Republic; for females, the ratio was 1.5. Attribution of these differentials to various risk factors has been estimated indirectly by statistical models; there are very few direct estimates.
Objectives To estimate the contribution of classical risk factors, alcohol consumption (incl. binge drinking) and socioeconomic factors to explaining differences in mortality between 3 population-based cohorts in 3 CEE countries.
Methods The HAPIEE study is a multi-country cohort study of random population samples in Novosibirsk (Russia), Krakow (Poland) and 7 Czech towns. At baseline (2002–2005), 28,945 men and women aged 45–69 years completed a questionnaire, attended an examination and provided a blood sample. The cohorts were followed up for mortality using local (Novosibirsk and Krakow) and national (Czech Republic) registers. Until end of 2009 (mean follow up 6.0 years) there were 1,101 male and 490 female deaths from all causes among 11,426 men and 12,948 women with complete data in all variables used in these analyses.
Results In men, age-adjusted mortality hazard ratios (HR), relative to Czech cohort, were 2.42 (95 % CI 2.06–2.85) for Novosibirsk and 1.13 (0.95–1.35) for Krakow. HR for Novosibirsk vs. Czech cohort were 2.15 (1.82–2.54) after adjustment of classical risk factors (smoking, body mass index, blood pressure and total cholesterol); 2.17 (1.83–2.58) after adjustment for weekly alcohol intake, drinking frequency and binge drinking (>100 g in men and >60 in women per occasion at least once a month); 2.09 (1.76–2.45) after adjusting for education, self-reported material deprivation and household assets; and 1.79 (1.48–2.17) after simultaneous adjustment for all of these. In women, the age-adjusted HR for Novosibirsk vs. Czech towns was 1.91 (1.50–2.43) and 1.88 (1.40–2.52) after simultaneous adjustment for risk factors, alcohol and socioeconomic factors.
Conclusions This cohort study is one of the first attempts to explain mortality differences among CEE populations using empirical individual-level data. Classical risk factors, alcohol and socioeconomic factors jointly explained about 44 % of the marked differences in male mortality; socioeconomic factors made the largest contribution. Differences in female mortality were not explained by these factors.

OC 7.2.3

Association between socioeconomic status, health behaviors and all-cause mortality in the United States

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Background Recent epidemiologic investigations of social inequalities in mortality [see Stringhini S, Sabia S, Shipley M, et al. Health behaviours, socioeconomic status, and mortality: further analyses of the British Whitehall II and the French GAZEL prospective cohorts. PLoS Med 8(2): e1000419] showed that health behaviors accounted for approximately one-half to three-quarters of the association between socioeconomic status (SES) and mortality in the English Whitehall II cohort, depending on the particular indicator of SES; however, health behaviors explained less than one-quarter of this association in the French GAZEL study. The contribution of health behaviors to explaining socio-economic disparities in mortality in the United States (US) remains unclear.
Objectives We assessed the extent to which smoking, alcohol consumption, and physical inactivity mediated the association between SES and all-cause mortality in a representative sample of US adults enrolled in the Health and Retirement Study (HRS).
Methods Initiated in 1992, the HRS is a longitudinal, biennial survey of a national sample of US adults born between 1931 and 1941. Analyses were based on a sample of 8,038 participants enrolled in 1992 and followed for all cause mortality from 1998 through 2008. We used exploratory and confirmatory factor analysis to derive a measure of SES based on respondents' education, occupation, labor force status, household income, and household wealth. Potential mediators (smoking, alcohol consumption, physical inactivity) were assessed biennially. We used inverse probability weighted mediation models to account for time-varying covariates, including self-reported health and self-report of doctor's diagnosis of major medical conditions.
Results There were 914 (11.37 %) deaths during the 10-year mortality follow-up. Accounting for age, sex, and baseline confounders, being in the most disadvantaged compared to least disadvantaged quartile of SES was associated with an increased risk of mortality [risk ratio (RR) 2.73, 95 % confidence interval (CI) 2.25, 3.31]. Together, smoking, alcohol consumption, and physical inactivity attenuated the SES-mortality association by 38 % (95 % CI 28, 46 %), although it remained statistically significant (RR 1.87, 95 % CI 1.54, 2.28). Estimates were similar after accounting for potential confounding by time-varying health status using a stabilized inverse probability weighted marginal structural model.
Conclusions The distribution of health-damaging behaviors may explain a substantial proportion of excess mortality associated with low SES in the US. Patient-level interventions have the potential to produce changes in health behaviors, although structural barriers to sustained behavior change implicate the need for complementary social approaches.

OC 7.2.4

How valid are global mortality statistics? The example lung cancer

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Background The WHO, other international organisations and researchers frequently publish global mortality data, such as for example number of malaria, HIV or cancer deaths per year worldwide. The limitations of these data are usually acknowledged. The basis for all estimation procedures are generally different data sources, for example local disease registries, nationwide surveys or demographic surveillance data. In developing countries data are often of poor quality, yielding high uncertainty in any estimate. For global cancer mortality, the IARC/WHO has published detailed estimates of yearly incident cases and deaths. These are based on global and local registries and, for less developed countries, on several interpolation methods.
Objectives We highlight some of the recent methods to obtain estimates for global cancer mortality and present limitations and shortcomings. We show that some estimates should be updated.
Methods We consider recent mortality estimation procedures used for one non-communicable disease (lung cancer). For some cancers which are caused by few known factors, risk factor prevalence data in combination with population figures can be used to estimate current and future number of deaths. We present an extension of a recent published model and discuss application to diseases which are strongly related to smoking. In addition, we discuss in the context of malaria alternative methods to obtain mortality statistics, such as verbal autopsy data and techniques to use these to determine the cause of death.
Results For lung cancer, our model is able to predict death numbers very well as shown by comparison of model based estimates with observed deaths in countries which have a good quality of mortality data. For developing countries, our estimates differ considerably (44,000 deaths in 2008 in Sub-Saharan Africa) from WHO/IARC estimates (14,000 deaths). A map of lung cancer mortality in Africa based on our model shown that lung cancer is a growing issue in developing countries, as well as other chronic diseases. Further projection, taking increasing average age of the population into account, show a further increase of lung cancer deaths. With respect to other data sources, we show that verbal autopsy data are of limited use to determine cancer mortality.
Conclusions Mortality statistics and mortality estimation in developing countries remains a big challenge. However, sufficiently reliable information is urgently needed to estimate progress in terms of reducing mortality, such as formulated in the millennium development goals. The presented model may contribute to a better overall estimate.

OC 7.2.5

Low levels of psychological distress are associated with mortality: an individual participant meta-analysis of ten prospective cohort studies

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Objectives A series of studies have linked psychological distress (depression and anxiety) with cause-specific mortality, but the risk of lower, sub-clinically symptomatic, levels of disorder, hitherto of little interest to specialist mental health practitioners, has not been quantified. We examined this issue in a large-scale population-based study.
Design Individual participant meta-analysis of ten large prospective cohort studies from the Health Survey for England. Baseline psychological distress was measured by the 12-item General Health Questionnaire score, and mortality from death certification.
Participants A total of 68,222 individuals from general population samples of adults aged 35 and over, free of cardiovascular disease and cancer and living in private households in England at study baseline.
Main outcome measures Death from all causes (n = 8,365), cardiovascular disease including cerebrovascular disease (n = 3,382), all cancers combined (n = 2,554), and smoking-related cancers (n = 1,187). Mean (standard deviation) follow-up was 8.2 (3.5) years.
Results There was a dose–response association between psychological distress across the full range of severity and an increased risk of

mortality (age- and sex-adjusted hazard ratio for General Health Questionnaire scores of 1–3 compared to zero: 1.20, 95 % CI 1.13–1.27; scores 4–6: 1.43, 95 % CI 1.31–1.56; and scores 7–12: 1.94, 95 % CI 1.66–2.26; p for trend < 0.001). This association remained after adjustment for somatic co-morbidity plus behavioural and socioeconomic factors. A similar association was found for cardiovascular disease and cancer mortality.
Conclusions Psychological distress is associated with increased risk of mortality from several major causes in a dose–response pattern. Even at lower levels of distress the mortality risk was elevated.

OC 7.2.6

Socioeconomic inequalities and mortality: exploring possible relationships in the Lisbon metropolitan area

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Background There is an increasing number of studies that consider context as a health determinant, because individual characteristics alone fail to capture all the factors involved in disease.
Objectives The aim of this paper is to describe geographical mortality inequalities in Lisbon Metropolitan Area (LMA) and to analyze the relationship between mortality and SES indicators (integrated in INEQCITIES project).
Method Cross-sectional ecological design. The study population is all the population of LMA, registered in 2001. The mortality data (1998–2005) and SES indicators (2001) are at the parish level, both collected by the National Statistics Institute. We calculate age-standardized Mortality Ratios (SMR) for total deaths which were obtained using as reference the rates of 25 EU countries. In order to control the variability of small numbers in estimating the SMR, the Bayesian model proposed by Besag, York and Mollié was used, obtaining smoothed SMR (sSMR). We also calculate the relative risk (RR) of mortality by SES indicators, namely amongst the unemployed and manual workers, with a 95 % credibility interval (95 % CI).
Results The geographical distribution shows that mortality and SES indicators are related. The areas with highest mortality deficit are mostly located in the inner city area and to the west of the city. For men, areas with highest probability of presenting sSMR values over 100 are centred in eastern areas of the LMA, both in Greater Lisbon and Setubal Peninsula. For women there is considerable variability, although a concentration of excess mortality is evident in most rural municipalities, located to the northwest and southeast. Both areas are associated with deprivation: high values of unemployment are reported in Setubal Peninsula wards and a higher share of manual workers is found in municipalities located further away from Lisbon city.

The analysis of mortality by SES indicator and gender also showed that an increment in unemployment was associated with increased total mortality in men (RR = 1.064; 95 % CI: 1.026–1.104) and women (RR = 1.024; 95 % CI: 1.002–1.046). Manual Workers was associated with total mortality in men (RR = 1.003; 95 % CI: 0.998–1.009) and women (RR = 1.004; 95 % CI: 1.002–1.007).
Conclusions As in other European cities, the LMA parishes with excess mortality tend to be zones of greater socioeconomic deprivation. The identification of geographical patterns of health and socioeconomic (SES) indicators can promote the development of interventions aimed at reducing health inequalities. This study allows us to detect areas with high mortality risk where policies and programs are needed to reduce health.

Oral Communications Session 7.3. Obesity

OC 7.3.1

Marital transition and changes in adherence to the Mediterranean diet, obesity and physical activity in older Spanish men and women from the PREDIMED trial

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Background Current literature support both health-damaging and health-promoting changes in life style accompanying divorce and widowhood, and generally health-promoting changes following remarriage. No information exists regarding changes in adherence to the Mediterranean Diet (MeDiet) and marital transition.
Subjects and methods We followed-up 7,340 participants (57.5 percent women, mean age: 67 years) during a median follow-up time of 4.8 years. Adherence to the MeDiet was assessed with a short 14-item screener developed in the PREDIMED trial and a 9-point score developed by Trichopoulou et al. derived from a 137-item semi-quantitative food-frequency questionnaire. Physical activity was estimated by questionnaire (MET-min/day). Weight, height and waist circumference were measured by trained personnel and BMI and waist-to-height ratio calculated. Yearly self-reported marital status was collected, a subject's first marital transition was identified and changes were computed with its own last previous follow-up. Life style changes were compared between six main categories of marital transitions by Student's t test (5 % significance level).
Results Compared with men who remained married, men who widowed decreased mean BMI (0.40 kg/m^2; $P = 0.03$) and energy intake (193 kcal; $P = 0.02$). Men who divorced had decreased vegetable and fiber intake relative to men who stayed married (52 g and 3.0 g, respectively; $P < 0.05$). Men who remarried had increases in MeDiet 9-p score (0.54 points; $P = 0.04$), compared with men who remained divorced, widowed or unmarried. Compared with women who remained married, women who widowed decreased BMI (0.30 kg/m^2; $P = 0.004$) and those who divorced decreased waist circumference (2.8 cm; $P = 0.01$). Women who remarried had increases in alcohol intake (0.65 g; $P = 0.02$). No difference in physical activity was observed between marital transitions.
Conclusions Marital transitions are followed by changes in weight status and food habits. Special attention should be payed to men who divorce when designing dietary health promoting strategies.

OC 7.3.2

Body composition assessed by a fuzzy linguistic system

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Backgrounds: Bioelectric Impedance Vector Analysis (BIVA) enlarges the nosological framework provided by traditional Bioelectric Impedance Analysis (BIA) from assessment of body water and fat mass to seven diagnostic categories. Nevertheless, distinction between categories is not clear cut.
Objectives Development of a fuzzy linguist system to ascertain membership degrees of BIVA diagnoses according to impedance vectors.

Methods An Italian database with 179 cases 18–70 years was randomly divided into developing (n = 20) and testing (n = 159) samples. From the 159 registries of the testing sample, 99 had their clinical diagnosis dully recorded. Resistance/height and reactance/height were the input variables in the model. Output variables were the seven categories of body composition of vectorial analysis. Membership functions and Sugeno inference rule were defined from the developing sample and applied to the testing sample. Graphical methods were used to ascertain the model's goodness of fit and Kappa statistics was used to compare clinically established and fuzzy system diagnoses.
Results A very good agreement between plane location and membership degree was achieved. An excellent agreement was achieved between the defuzzified impedance diagnoses and their corresponding clinical diagnoses in the testing sample (Kappa = 0.85, $p < 0.001$).
Conclusions A refined diagnosis of body composition is achieved by a fuzzy diagnostic system. This does better advise clinical practice and is of epidemiological interest as it provides means for inference based on fuzzy probability in replacement to classical frequentist probability.

OC 7.3.3

Associations between central obesity and longitudinal changes in bone mineral density in adolescents

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Background Central obesity, estimated through waist circumference (WC), waist-hip ratio (WHR) or waist-height ratio (WHtR), has been associated with the risk of cardiovascular and metabolic disease but its effect on bone quality is far from clear. Prospective studies during adolescence may provide insights into the role of fat mass distribution in bone mass accrual.
Objectives To quantify prospective associations between WC, WHR and WHtR and forearm bone mineral density (BMD) throughout adolescence.
Methods The study was developed within a population-based cohort of urban adolescents born in 1990 and assembled in public and private schools of Porto, Portugal (EPITeen). We analysed prospective data from 1,180 adolescents (52.4 % males) assessed at 13 and at 17 years old. In both evaluations, a physical examination including height, weight and forearm BMD using dual-energy X-ray absorptiometry was carried out. WC was measured midway between the lower limit of the rib cage and the iliac crest, and hip circumference (HC) on the maximum circumference over the femoral trochanters. WHR was calculated by dividing WC by HC and WHtR was calculated as WC divided by height. Using WC, WHR and WHtR at 13 years of age as the main exposures, associations were estimated prospectively (with bone gain between 13 and 17 years) using linear regression coefficients (β) and 95 % confidence intervals crude and adjusted for weight, height and, in girls, for menarche age.
Results At 13 years old, the proportion of girls and boys with WC above the 75th percentile was 32.1 and 27.7 % respectively (using sex-specific waist circumference reference data for Portuguese adolescents). Mean (standard-deviation) forearm BMD increased from 0.368 (0.056) at 13 years-old to 0.439 (0.051) g/cm^2 at 17 years-old in girls and from 0.344 (0.051) to 0.453 (0.075) g/cm^2 in boys. After adjustment for main confounders, an inverse association was found between early central obesity measures and annual BMD variation between 13 and 17 years old. In boys, the associations were $\beta = -0.04$ mg/cm^2*year (-0.08, -0.01) for WC; $\beta = -3.03$ mg/cm^2*year (-3.83, -0.24) for WHR and $\beta = -6.62$ mg/cm^2*year (-12.02, -1.23) regarding WHtR. In girls, only early adolescence WHtR was significantly associated with annual BMD variation between 13 and 17 years old ($\beta = -4.96$ mg/cm^2*year (-9.52, -0.41).
Conclusions Beyond the adverse effect in other chronic diseases, central obesity can be associated to suboptimal peak bone mass accrual.

OC 7.3.4

Association between adherence to the Mediterranean diet and waist-to-height ratio among high-risk subjects: the PREDIMED trial

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Background Growing body of evidence suggests that adherence to the traditional Mediterranean pattern is directly associated to weight gain or obesity. Regarding measures of adiposity, the waist-to-height ratio (WHtR) has shown to outperform other indexes of adiposity in the prediction of diabetes or cardiovascular events. However, no previous study has evaluated the association between Mediterranean diet adherence and WHtR in adults.
Objective To study the association between adherence to the Mediterranean diet and WHtR.
Design The PREDIMED trial is a primary prevention trial in which participants were randomly allocated to a Mediterranean diet supplemented with extra virgin olive oil, to a Mediterranean diet supplemented with nuts or to a control group, and which aims to ascertain the association between the intervention group and major cardiovascular events. Participants are men aged 55–80 years and women aged 60–80 years at high cardiovascular risk because of the presence of either type 2 diabetes or ≥ 3 cardiovascular risk factors, but free of cardiovascular disease at baseline. For the purpose of this study, we conducted a cross-sectional analysis with information from the 4,282 women and 3,165 men participating in the trial. Trained dietitians used a validated 14-item questionnaire to assess adherence to the Mediterranean diet and a validated 137-item food frequency questionnaire to assess dietary habits that were completed during personal interviews. Trained nurses directly measured weight, height and waist circumference of each participant. To address the association between adherence to the Mediterranean diet score and WHtR, we used multivariable linear regression models. For analyses with WHtR > 0.6 as the dependent variable, non-conditional binary logistic regression models were used.
Results A strong inverse linear association between the 14-item Mediterranean diet score and WHtR was observed. For a two point increment in the 14-item Mediterranean Diet score, the multivariable-adjusted differences in WHtR were -0.007 (95 % confidence interval, -0.009 to -0.005) for women and -0.006 (-0.008 to -0.004) for men. For participants with highest adherence to Mediterranean diet (10 points out of 14) as compared with those less adherent (≤ 7 points), the multivariable-adjusted odds ratio for a WHtR >0.6 was 0.68 (0.57–0.80) for women and 0.66 (0.54–0.80) for men.
Conclusions Adherence to the Mediterranean diet was strongly, monotonically and inversely associated to WHtR in this cross-sectional analysis.

OC 7.3.5

How should we assess adiposity in order to identify adolescents at risk of alterations in glucose metabolism?

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Background Metabolic abnormalities such as insulin resistance have become more prevalent with the childhood obesity epidemic. However, it is not yet clear the best way to identify adolescents at risk.
Aims We aimed to evaluate the ability of different adiposity measures to identify 13-year-old adolescents with metabolic abnormalities.
Methods We used the cross-sectional data from 13-year-old adolescents enrolled in public and private schools of Porto, Portugal (EPITeen), in 2003/2004. We evaluated 1,239 adolescents (51.7 % of girls), with complete information on anthropometric data, fasting glucose and insulin levels. We measured weight, height, waist circumference, biceps and triceps skinfolds with the subject standing, in light indoor clothes and no shoes, and also the percentage of body fat through bioelectrical impedance (Tanita, TBF-300). A 12-h overnight intravenous blood sample was taken from an antecubital vein, and glucose and insulin levels were determined and the HOMA index was calculated (HOMA = insulin (μU/ml) * glucose (mmol/L)/22.5]). We assumed with metabolic abnormalities those with levels of glucose, insulin and HOMA above the 75th percentile. We used Spearman correlation coefficient to examine the correlation between the different anthropometric measurements and blood serum levels of glucose, insulin, and HOMA. Receiver-operating characteristic (ROC) curve analyses were used to analyse the potential diagnostic accuracy of the different measures of adiposity to discriminate between low and high insulin, glucose and HOMA.
Results The prevalence of overweight (BMI ≥85th percentile, according to CDC references) was 23.9 % in females and 26.8 % in males. In both sexes all of the anthropometric measurements correlate positively and significantly with insulin and HOMA. Among girls, the best anthropometric measure to identify adolescents with high levels of insulin and HOMA was waist-to-height ratio: sensitivity was 66.7 % (95 % CI: 59.4–73.9) for insulin and 60.2 % (95 % CI: 52.7–67.8) for HOMA; specificity was 59.2 % (95 % CI: 54.8–63.6) and 60.7 % (95 % CI: 56.4–65.1), respectively. Among boys the best anthropometric measure to identify those adolescents was BMI: sensitivity was 66.4 % (95 % CI:58.9–74.0) for insulin and 65.6 % (95 % CI: 58.0–73.1) for HOMA; specificity was 62.5 % (95 % CI: 58.1–67.0) and 62.2 (95 % CI: 57.7–66.6), respectively.

The most accurate anthropometric measure to identify participants with high glucose levels in both genders was waist circumference: sensitivity was 56.2 % (95 % CI: 48.3–64.1) and specificity was 50.7 % (95 % CI: 46.0–55.3) among girls; among boys, the values were 56.2 % (95 % CI: 48.3–64.1) and 50.7 % (95 % CI: 46.0–55.3), respectively.
Conclusions Beyond BMI, waist-to-height ratio and waist circumference also revealed to be an accurate measure in the identification of adolescents at risk of alterations in glucose metabolism.

OC 7.3.6

Sex-interaction effects of body composition on adipokines and C-reactive protein levels

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Background Central fat has been described to have a direct association with some adipokines, such as leptin and an inverse association with adiponectin, but the role of peripheral fat and muscle mass on adipokines and inflammatory markers levels has been less studied.
Objective To evaluate the independent effect of body fat distribution and muscle mass on adipokines (adiponectin, leptin) and high sensitivity C-reactive protein (hs-CRP), regarding sex-related differences.
Methods A sub-sample of 398 subjects (207 women and 191 men), aged between 24 and 64 years-old, randomly selected by age and sex from a prospective cohort of non-institutionalized adults from Porto (EPIPorto study) were examined by dual-energy X-ray absorptiometry (DXA) on body fat (total, central and peripheral) and muscle mass. The ratio of peripheral/trunk fat was calculated using DXA body fat output. The percentage of muscle mass was also calculated. A 12-h overnight fast blood sample was collected to perform measurements of adiponectin, leptin, and hs-CRP levels. The magnitude of the associations was measured by generalized linear models (dependent variables were ln-transformed). After testing for several potential confounders (age, education, height, diet, physical activity, alcohol intake and smoking), only age and height were included in the final model. The possible effect-measure modification by sex was evaluated through the inclusion of interaction terms in the regression models.
Results Significant differences in the association between peripheral/trunk fat ratio and adiponectin and leptin were found between sexes. After adjustment for age and height, the peripheral/trunk fat ratio was directly associated with adiponectin (women $\beta = 0.689$, $p = 0.045$ men $\beta = 2.377$, $p < 0.001$, sex-interaction p value $= 0.001$) and inversely associated with leptin (women $\beta = -0.099$, $p = 0.551$; men $\beta = -0.293$, $p = 0.459$, sex-interaction p value $= 0.007$). No significant sex differences were found with the leptin/adiponectin ratio ($\beta = -0.084$, $p < 0.001$, sex interaction p value $= 0.496$) and hs-CRP ($\beta = -0.500$, $p = 0.012$, sex interaction p value $= 0.766$). Muscle mass percentage was inversely associated with adiponectin ($\beta = -0.049$, $p = 0.015$), leptin ($\beta = -0.188$, $p < 0.001$), leptin/adiponectin ratio ($\beta = -0.022$, $p < 0.001$) and hs-CRP ($\beta = -0.434$, $p < 0.001$). No significant differences were observed between sexes, except for leptin (women $\beta = -0.192$, $p < 0.001$; men $\beta = -0{,}163$, $p < 0.001$, sex-interaction p value $= 0.034$).
Conclusions A higher peripheral/trunk fat ratio and muscle mass were associated with lower levels of leptin, leptin/adiponectin ratio and hs-CRP. Peripheral/trunk fat ratio was directly associated with higher levels of adiponectin and muscle mass had the opposite effects. Sex-interaction effects were found in the association between peripheral/trunk fat ratio and adipokines (adiponectin and leptin). The effect of peripheral/trunk fat ratio on adiponectin and leptin was higher in men.
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Oral Communications Session 7.4. Cancer III

OC 7.4.1

Occupational exposure to endocrine-disrupting chemicals and pesticides and risk of uveal melanoma

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Background A hormonal influence on the origin of uveal melanoma has been discussed, but the evidence is inconsistent.
Objective We studied the association between occupational exposure to endocrine-disrupting chemicals (EDC) and pesticides (insecticides, herbicides, fungicides) and uveal melanoma risk in a case–control study using data from nine European countries.
Methods Incident cases of uveal melanoma and population as well as hospital controls were frequency-matched by country, age, and sex. Exposure to several EDC based on interview data from 24 job-specific questionnaires were investigated. Exposure to these EDC was combined into a weighted intensity exposure score. We constructed a similar score for occupational pesticide exposure. Odds ratios and 95 % confidence intervals (CI) were estimated based on ever exposure, exposure duration and quartiles of exposure scores by logistic regression analyses, adjusting for several potential confounders.
Results 293 cases and 3,198 controls were interviewed. The overall prevalence of EDC and pesticide exposure was low. Although working in some industries was associated with increased melanoma risk (such as dry cleaning or working in the glass-manufacturing industry), EDC-specific risks were not elevated. The largest risk increase was seen for organic solvents with endocrine-disrupting properties (OR = 1.31; 95 % CI 0.78–2.21). We did not identify consistently raised associations with increasing overall EDC-exposure scores. Similarly, activities in farming or forestry, pesticide application, or pesticide mixing were not associated with uveal melanoma risk. The only strongly raised association was for exposure to chemical fertilizers (OR = 8.93; 95 % CI 1.73–42.13), but this observation was based on only three exposed cases and three exposed control subjects. Sensitivity analyses did not alter these results.
Conclusions Occupational exposure to EDC or pesticides was not associated with an increased risk for uveal melanoma. The evidence from this study does not support the hypothesis that hormonal influences are an important factor in uveal melanoma etiology.

OC 7.4.2

Cancer in childhood, adolescence and young adults: a population-based study of changes in risk of cancer death during four decades in Norway

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Background Although cancer is rare in childhood, adolescence and early adulthood, it is one of the most common causes of death in young people in developed countries.
Objective The purpose of this study was to explore the risk of early death (five-years after diagnosis) among children (0–14 years), adolescents (15–19 years) and young adults (20–24 years) with cancer born during 1965–1985 in Norway.
Methods All children born alive in Norway during 1965–1985, approximately 1.3 million individuals, were defined as our study cohort. The individuals were followed up from birth into adulthood by linking compulsory national registers (including the Cancer Registry of Norway and the Cause of Death Registry) that include the entire population of Norway. All children, adolescents and young adults diagnosed with cancer were identified, and the mortality among these patients was explored. Hazard and sub-hazard ratios were estimated using Cox regression analyses and competing risk models.
Results A total of 5,828 individuals were diagnosed with cancer (56.3 % males). During follow-up, 1,415 individuals died from cancer (60.2 % males) within 5-years after diagnosis. Over all, the hazard ratio of early deaths among the cancer patients relative to the general population decreased from 1965, with similar trends considering the total follow-up (45 years). Over all, there were fewer cancer related deaths among female patients compared with male patients. Except for all hematopoietic malignancies, adolescents and young adult patients had lower risk of cancer death than children.
Conclusion A general decline in risk of cancer death during the past four decades was observed. Furthermore, the differences in risk of death between the cancer patients and the general population have been substantially reduced since 1965.

OC 7.4.3

Metabolic factors and blood cancers among 578,000 adults in the metabolic syndrome and cancer project (Me-Can)

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Background We investigated associations between metabolic factors and blood cancer subtypes.
Methods Data on body mass index (BMI), blood pressure, blood glucose, total cholesterol and triglycerides from seven prospective cohorts were pooled (N = 578,700; mean age = 44 years). Relative risks of blood cancers were calculated from Cox regression models.
Results During mean follow-up of 12 years, 2,751 incident and 1,070 fatal cases of blood cancers occurred. Overall, higher BMI was associated with an increased blood cancer risk. In gender specific subgroup analyses, BMI was positively associated with blood cancer risk ($p = 0.002$), lymphoid neoplasms ($p = 0.01$), and Hodgkin lymphoma ($p = 0.02$) in women. Further associations with BMI were found for high grade B-cell lymphoma ($p = 0.02$) and chronic lymphatic leukemia in men ($p = 0.05$) and women ($p = 0.01$). Higher cholesterol levels were inversely associated with myeloid neoplasms in women ($p = 0.01$), particularly acute myeloid leukemia ($p = 0.003$) and glucose was positively associated with chronic myeloid leukemia in women ($p = 0.03$). In men, glucose was positively associated with risk of high grade B-cell lymphoma and multiple myeloma, while cholesterol was inversely associated with low grade B-cell lymphoma. The metabolic syndrome (MetS) score was related to 48 % increased risk of Hodgkin lymphoma among women.

Conclusions BMI showed up as the most consistent risk factors, particularly in women. For none of other metabolic factors a clear pattern was found.

OC 7.4.4

Lung cancer risk among bricklayers and other construction workers: a pooled analysis of case–control studies

Dario Consonni, Sara De Matteis, Ann Olsson, Beate Pesch, Hans Kromhout, Kurt Straif, Thomas Brüning, on behalf of the SYNERGY working group

Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico; Università degli Studi di Milano; International Agency for Research on Cancer; Institute for Prevention and Occupational Medicine of the German Social Accident Insurance, Institute of the Ruhr-Universität; Institute for Risk Assessment Sciences; International Agency for Research on Cancer; Institute for Prevention and Occupational Medicine of the German Social Accident Insurance, Institute of the Ruhr-Universität

Background Several occupations within the construction sector are included in lists of occupations known (list A, including insulators and pipe coverers, roofers, asphalt workers, painters) or suspected (list B, including carpenters and joiners, operators of excavating machines) to be associated with lung cancer risk. Other jobs, notably bricklayers, are not included in those lists, although they may be exposed to known carcinogens, in particular crystalline silica (especially during cutting operations of bricks and stones), and several studies reported an excess of lung cancer among them.
Objectives We present preliminary analyses of lung cancer risk among bricklayers and other construction workers within the frame of the SYNERGY project (http://synergy.iarc.fr), a large international pooled analysis of case–control studies on the joint effects of occupational carcinogens in the development of lung cancer.
Methods Industries and occupations were coded following the International Standard Industrial Classification (ISIC 1968/1971) and the International Standard Classification of Occupations (ISCO 1968). Because of coding heterogeneity across study centres, in the analysis of "bricklayers" we pooled the following ISCO codes together: 95120 (bricklayers), 95140 (stonemasons), 95190 (other bricklayers, stonemasons and tile setters), and 95910 (housebuilders). For men employed in selected occupations in the construction sector (ISIC code 5000), we calculated odds ratios (ORs) and their 95 % confidence intervals (CIs) adjusted for study centre, age, cigarette smoking (ever/never, log-transformed pack-years, time since quitting), and employment in list A or B occupations.
Results The pooled dataset included 15,608 cases and 18,531 controls from 16 studies in 13 European countries, Canada, Hong-Kong, and New Zealand. The number of blue collar cases/controls ever employed in non-list A or B occupations in the construction industry was 3,757/3,122. The majority (977 cases, 767 controls) was employed as bricklayers, with an OR of 1.4 (95 % CI: 1.3–1.6) and a clear positive trend with length of employment ($p < 0.0001$). We found increased relative risks for squamous (OR 1.6, 447 cases among bricklayers) and small cell carcinomas (OR 1.6, 181 cases); the OR for adenocarcinoma was lower (1.2, 213 cases). Elevated risks were also found for other occupations including plasterers and labourers.
Conclusions Our finding of increased lung cancer risk in bricklayers and other construction workers is consistent with previous studies. Although they may be exposed to asbestos, the agent most probably involved is crystalline silica, since exposure to this agent in the construction sector is frequent and several industrial hygiene surveys documented high levels of quartz for bricklayers.

OC 7.4.5

Does socio-economic status have an effect on prostate cancer incidence, Gleason score and prostate cancer treatment and survival? An exploratory study of the ERSPC's Italian data

Marco Zappa, Adele Seniori Costantini, Donella Puliti

Unit of Epidemiology ISPO

Aim The aim of this study was to evaluate whether socio-economic status has an effect on prostate cancer (PC) incidence, Gleason score at diagnosis and prostate cancer treatment and survival within the Italian Arm of European Study Prostate Cancer (ERSPC; Schroder et al. NEJM 2012).
Methods A total of 14 918 men aged 54–71 years old were randomized between 1997 and 2001 in the Florence area.

A deprivation index was constructed at a national level to measure the relative socio-economic disadvantage by using the 2001 national census data. This index is based on census data grouped at section level (on average 70 men for each section) and is defined by a combination of 5 indicators: educational level (% people with no higher than primary education), occupation (% unemployed people), housing condition (% people living in rented house), family condition (% single parent families and dependent children) and housing density (average number of people living in 100 m^2). We defined two socio-economic classes using tertiles of the index distribution in the Florentine area: (a) reference class (first and second tertile); (b) deprived class (third tertile).
Results In comparison to the reference class more deprivated class: (a) had a slightly lower PC incidence (RR $= 0.83, p = 0.1614$); (b) had a lower incidence of cases with Gleason score of ≤ 6 (RR $= 0.70$, $p = 0.0414$); (c) were less likely to have a prostatectomy (AOR $= 0.50$, $p = 0.040$); (d) had a lower survival rate ($\Delta = 16$ %, $p = 0.0025$).

All these differences related to deprivation—such as PC incidence, Gleason score, treatment and survival—disappear in the screening arm.
Interpretations of the results Our data supports the hypotheses that in the absence of an organised screening programme (1) use of Prostatic Specific Antigen (PSA) is lower among deprived men and (2) deprived men have access to lower quality treatment in comparison with the reference class. These two factors could explain the lower survival rate observed among deprived men.
The organised PC screening in Florence has been successful in reducing socio-economic inequalities in prostate cancer survival through a two-step process: (1) a similar use of PSA across socio-economic classes and (2) a similar treatment modality across socio-economic classes.

Posters

6th September 2012

Time: 10.00–10.45

Poster Topic 1A. Surveillance & Mortality

P1A01

A global analysis of transfusion reactions occurring at a university hospital in South America

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Background Blood transfusion is a process that involves risks to users even when performed according to recommended standards, well indicated and correctly administered.

Objectives This study was performed with the purpose to learn about the incidence of immediate transfusion incidents (ITI) in inpatients at the University Hospital—Unesp Botucatu, investigate the profile and causes of occurrences and propose improvements for the hemotherapeutic process in that hospital.
Subjects and method All ITIs occurring to inpatients at the hospitalization units of the University Hospital—Unesp Botucatu were studied and analyzed period from March 2002 to December 2007. For data collection, the following sources were used: the database for transfusion incident reports of the Sentinel Hospitals Project of Anvisa (PHS-Anvisa) in Botucatu—SP.
Results In the study, 238 ITIs were observed among the 63,493 transfusions performed, with a general incidence rate of 3.7 incidents/1,000 transfusions performed. ITIs showed similar prevalence among males and females, with higher incidence in patients aged 40–70 years who were hospitalized particularly in the Internal Medicine, Surgery and Gynecology/Obstetrics wards and often showed malignant and/or consumptive gastrointestinal, gynecological and hematological pathologies. ITIs were mostly identified by active search in the hospital units, with a total under-reporting rate of 51.3 %. They mostly occurred to patients who had a previous history of blood transfusions, but no antecedents of previous transfusion incidents. Febrile nonhemolytic reactions were the most frequent incidents, affecting 49.2 % of patients, followed by allergic reactions (34 %), acute hemolytic reactions (5.5 %), transfusion-related acute lung injury—TRALI (5 %), volemic overload (4.2 %) and unknown causes (2.1 %). ITIs showed mostly mild (86.1 %) and moderate (8.9 %) severity, and two deaths which were unrelated to blood transfusion also occurred. ITIs were originally caused by immunologic reactions in 42 % of cases, followed by human, process and/or service infrastructure failure (36.5 %), or they were caused by complications from patients' base diseases (3 %), by concomitance with immunosuppressive therapy (2.1 %), or by unknown causes in 16.4 % of cases.
Conclusions Although blood therapy at the University Hospital—Unesp Botucatu has improved in terms of quality and safety in the last few years, it still represents health risks to users. Hemosurveilance actions must be enhanced and improved conjointly with programs for encouragement, training, qualification and continuing education for health care professionals working in it with the purpose to reduce failure and occasional errors in the several phases of the hemotherapeutic process.

P1A02

Deaths of bicycle riders in Brazil in the period 2000–2010

Leila Garcia, Lucia Santana

Institute of Applied Economic Research; University of Brasilia

Background In Brazil, the number of vehicles increased substantially over the last decade. The traffic became heavier and there were implemented some laws aiming to reduce traffic accidents and injuries. However, the use of bicycle helmets is still not mandatory. Bicycle-related accidents are important causes of morbidity and mortality, and impose high costs to the Brazilian health system.
Objective To investigate the occurrence of bicycle-related deaths in Brazil, and to describe its trends in the period 2000–2010.
Methods Crude and age-standardized mortality rates per million inhabitants were calculated for Brazil and its macro-regions. The World Health Organization standard population was used for standardization procedures. Proportional mortality and mortality rate ratios according to sex and age were also calculated. Data from the Mortality Information System of the Brazilian Ministry of Health were used. International Classification of Diseases (ICD-10) codes V10–V19 were selected as cause of death.
Results In the period of 2000–2010, 15,170 bicycle-related deaths were recorded in Brazil. Standardized mortality rates increased from 4.6 per million, in 2000, to 8.5 per million, in 2010. In 2010, the highest standardized mortality rates were found in the Center-Western and Southern regions, respectively, 16.9 and 12.4 per million. Lower rates were found in the South-Eastern, North-Eastern, and Northern regions, respectively, 6.8, 7.6 and 7.9 per million. Male accounted for 90 % of the deaths during 2000–2010. The risk of bicycle-related deaths was 9 times higher among men compared to women. In this period, there was a reduction on the proportional mortality of children and adolescents (<20 years-of-age), from 21.3 to 11.4 % among the male, and from 40.5 to 20.8 % among the female. On the other hand, there was an increase on the proportional mortality of elderly people (≥60 years-of-age), from 13.5 to 23.1 % among the male, and from 8.3 to 13.9 % among the female. For the age range of ≥60 years, the mortality rate increased from 7.0 to 15.6 per million, from 2000 to 2010. In 2010, bicycle related deaths among women were concentrated in the age range of 20–39 (46.5 %), while among men, those deaths were more evenly distributed among age groups, although more prominent in the age range of 40–59 (37.2 %).
Conclusion The yearly bicycle-related mortality rate almost doubled from 2000 to 2008 in Brazil. Significant increases in those rates were seen in all Brazilian regions. The risk of death is higher among men and elderly people.

P1A03

Nosocomial outbreaks in Sao Paulo: a review of the investigations published from 2000 to 2010

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Background The knowledge gained from nosocomial outbreak reports is extremely important, as these publications support new policies and practices for the prevention of healthcare association infection (HAI).
Objectives This study is an integrative review aiming to describe nosocomial outbreaks occurred in the Sao Paulo State and reported from 2000 to 2010.
Methods The searching was done by means of scientific database, Annals of Brazilian Conferences on HAI Prevention and Hospital Epidemiology and Infectious Disease and the reports from the São Paulo State Health Department. **Results** A total of 87 outbreak investigations were identified; mostly (n = 50) occurred in São Paulo city. It was observed that only 15 outbreaks were reported to Center for Health Surveillance complying with federal law. The Neonatal Intensive Care Unit was the type of unit more frequently implicated (19.5 %), followed by Adult Intensive Care (13.8 %). The infection topography most frequently reported was the bloodstream infection (23 %). We found 63 outbreaks caused by bacteria; the major pathogen was *Acinetobacter baumannii* (11.5 %). Multidrug resistant strains were identified in 36.8 % of the outbreaks. Case definition was only described in 29.1 % and the percentage of outbreaks investigated by cohort or case–control studies was much low (10.3 and 4.6 %, respectively). Genotyping methods were used in 48.3 % of the outbreaks and the pulsed-field gel electrophoresis was the most used method (33.3 %). The source of transmission could be identified in 36.8 % and the contaminated substances were the most frequently identified as cause of outbreak (11.5 %). The implementation of control measures was reported in 89.7 % of the outbreaks, and among them the most common intervention was contact isolation (39.1 %).

In 29 (33.3 %) outbreak reports were identified the lack of some information such as site of infection (18.4 %), number of Infection-related outcomes (12.1 %), duration of the event (6.9 %) and the local where the outbreak occurred (5.7 %).
Conclusions we identified flaws in the outbreaks reported suggesting the need for improvement strategies including training on outbreak investigation methodology. The low level compliance to the official outbreak reporting to the State Health Department highlighted the need to a better approach of this subject.

P1A04

Excess mortality during dengue epidemic in children with 15 years old or less in the Metropolitan Area of Rio de Janeiro, Brazil, 2007–2008

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Background Sucessive dengue epidemics in Rio de Janeiro, Brazil, have been associated with greater severity and a shift in the age distribution towards younger groups. In the years 2007 and 2008 there was the most severe dengue epidemic in the metropolitan area of Rio de Janeiro.
Objectives The aim of this study is to investigate the excess mortality during dengue epidemic in children with 15 years old or less in the metropolitan area of Rio de Janeiro in 2007 and 2008.
Methods In order to predict the number of deaths of these epidemic years, a Poisson dynamic model was fitted to mortality data of dengue and other infections which represented possible differential diagnosis of dengue. Bayesian inference was performed. Excess mortality was calculated as the difference between the number of deaths observed and predicted by the model.
Results Excess mortality was detected in March 2008 in children with 15 years old or less. In parallel, was the highest number of reported cases of dengue in Rio de Janeiro in March and April 2008.
Conclusions Whereas the increase in mortality should be preceded by an increase in morbidity, it can be hypothesized that there was an excess mortality due to dengue in children during dengue epidemic that occurred in the metropolitan area of Rio de Janeiro in March 2008.

P1A05

Factors associated with failures in the clinical screening of blood donors in a Brazilian hemocenter

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Background understanding the reasons why blood donors previously approved in the clinical screening show positive results for diseases that can be transmitted by blood is critically necessary.
Objectives to investigate the frequency of positive results for hepatitis B and C, HIV and syphilis in blood donors at the Ribeirão Preto Blood Center, in Brazil; to describe the positive donors according to some demographic and socioeconomic variables; to identify risk factors associated to these donors and the reasons of their non-detection in the clinical screening.
Methods out of a total of 37.233 blood donations from July 1st 2005 to July 31 2006, there were 225 (0.6 %) which were blocked due to positive laboratory results concerning diseases that can be transmitted by blood. 106 of them were interviewed immediately after the medical consultation where they were informed of positive results for hepatitis B and/or C, or HIV or syphilis. The main reason for this interview was to study the possibility of donors have deliberately omitted risk factors at the clinical screening.
Results there was predominance of first time donors, males under 50 years of age, married, coming from Ribeirão Preto, with primary education and low economic status, who donated under request by friends or relatives. Hepatitis C was the most frequently detected infection (56.6 %) followed by hepatitis B (20.7 %), syphilis (10.4 %) and HIV (12.3 %). The distribution of risk factors among them was the following: previous exposure to injectable illicit drugs (5); unsafe piercing or tattoo (8); accidents with biological material (9); sexual intercourse with another man (14); previous blood transfusion (15) and heterosexual high risk intercourses (52). The main reasons for omitting risk factors at the clinical screening were total confidence on results of serological tests, not feeling comfortable about talking and not considering relevant to reveal them. Other reasons included the duration of interview, perception of an unskilled interviewer, embarrassment and doubts about confidentiality.
Conclusions the results indicate deficiencies in the approach of the clinical screening, which led to efforts to increase its sensitivity. These included better training of interviewers, wide dissemination of information concerning the available public services directed to anonymous serological diagnosis of hepatitis, HIV and syphilis, as well as the introduction of a DVD that is watched by all potential donors before they donate blood, in which all the relevant aspects of safety in blood transfusion are stressed.

P1A06

Underreporting of maternal deaths in the city of São Paulo City, Brazil, 2000–2008

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Background Maternal mortality is the leading cause of death among females aged 15–49 years old in the world. The maternal mortality statistics are the most poorly recorded by medical in the Death Certificates (DO), and underreporting of this deaths affect the formulation of appropriate maternal health. The work of the Committee of Maternal Mortality in the investigation of woman's deaths is very important because investigates suspect deaths too.
Objective To analyze maternal deaths and filling the DO of maternal deaths in the city of São Paulo-Brazil, from 2000 to 2008.
Methods Ecological study. Data from DO and reports of the Committee for the Study and Prevention of Maternal Mortality in the city of São Paulo, regarding maternal mortality occurring in the city from 2000 to 2008. The original DOs were analyzed to calculate the percentage of underreporting of maternal deaths, adjustment factor and filling the variables 43 and 44. In addition, the causes declared wich hid maternal deaths were investigated.
Results In total, 879 maternal deaths occurring during 2000–2008 in the city of São Paulo. The Maternal Mortality Ratios (MMR) for the period was 53.3 maternal deaths per 100 000 live births. Most of the woman was 20–39 years old (82.3 %) and 50.3 % of deaths were due to indirect causes. It was observed that most (45.3 %) of deaths were not cited maternal cause in DO. The medium correction factor was 1.83. Among the causes declared wich hid maternal deaths highlights were ill defined, which totaled 33.7 % of DOs without declaration. It also had important participation respiratory diseases (19.1 %), circulatory (16.1 %) and septicemia (14.1 %). Only 43.4 % of DOs

fields were 43 and 44 filled in correctly, and in 44.6 % they were not filled. Some DOs had just completed one of two camps.
Conclusion It is necessary more orientation and consciousness of medicals to the correct completion of the DO. The Committee of Maternal Mortality in the city of São Paulo helps to correct underreporting of maternal deaths identifying their real causes and defining strategies to their reduction. This study confirms the need to investigates those deaths aiming to improve the quality of the information on maternal mortality.

P1A07

The profile of maternal mortality in the south of Brazil, from 1999 to 2008

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Universidade Federal do Rio Grande do Sul

Background Maternal mortality is a health indicator related to quality of life and social inequalities, and it is avoidable in 95 % of cases. The purpose of this study was to describe geographic distribution of maternal mortality in Porto Alegre, in the south of Brazil, according to sociodemographic and obstetrical causes during the period from 1999 to 2008.
Methods Ninety-six cases were studied, corresponding to the total number of maternal deaths between 1999 and 2008. The data were obtained through Mortality Information System (SIM), Live Births Information System (SINASC), hospital charts and records of the Municipal Committee of Studies and Prevention of Maternal Deaths (CMEPMM). Analyses were performed according to the maternal mortality ratio (MMR) and proportional MMR according to group of causes, age group, skin color, schooling and some obstetrical variables. Geographical distribution of deaths was performed through identification of street codes and allocation within the corresponding territory of city districts. The programs used were Link Plus, Access and Excel 2003 of Microsoft Windows®, ArcView Gis 3.2® and Arc Explorer 2.0®.
Results The maternal mortality during the investigated period was 47.84 deaths/100,000 live births, and presented a mean reduction of 3 % a year. However, some causes are increasing, such as AIDS and clinical diseases. The main causes were clinical diseases, AIDS, cardiovascular diseases and hypertensive disorders of pregnancy. Causes such as abortion, hemorrhage, puerperal infection and AIDS, known to be associated with greater social vulnerability, were more important in non-whites, in the lower levels of schooling and in those who did not receive antenatal care. The geographic distribution of deaths, total and proportional according to its causes (abortion, hemorrhage and AIDS), were different among city districts, identifying areas of inequities.
Conclusion Although maternal deaths have been decreasing in Porto Alegre, the profile of maternal mortality shows an association with conditions where interventions directed to improving social determinants and the quality of health care could make a difference.

P1A08

Hospital surveillance of viral meningitis in endemic and epidemic periods in a meningitis reference service in Recife, Pernambuco, Brazil

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Background Meningitis is an important public health problem worldwide that leads to death and important sequelaes. Viral meningitis (VM) is the most common cause of aseptic meningitis. It has high morbidity, especially in children, occurring sporadically, endemically or epidemically. The clinical of VM is usually benign, except in neonates and immunocompromised patients. The cerebrospinal fluid (CSF) classically has cellularity below 1,000/mm^3 with a lymphomononuclear predominance. However, some studies show difficulties in differential diagnosis with bacterial meningitis, especially in the first 48 h of symptom onset, since this phase may have a polymorphonuclear predominance.
Objectives To describe and compare sociodemographic, clinical, epidemiological and laboratorial variables in VM endemic and epidemic.
Methods Descriptive cross sectional study of 4,419 cases with presumed viral etiology and symptom onset between January/2003 and December/2007 in a meningitis reference service in Pernambuco, Brazil. The epidemic period (August-December/2007) was based on the State's control diagram. We used the Chi-square test with a significance level of 95 % ($p < 0.05$).
Results Endemic (50.9 % of the cases): ages ranged from 17 days to 76 years, most frequent age 5–9 years (32.9 %); 60.6 % were male; 81 % were from Recife's metropolitan area; fever, headache and vomiting were present in > 80 % of cases; CSF's leukocyte ranged from 6 to 3,072/mm^3 and in 88.5 % it was ≤500/mm^3, polymorphonuclears predominated in 19.5 % of cases. Epidemic (49.1 % of the cases): ages ranged from 23 days to 69 years, most frequent age 5–9 years (45.8 %); 59.5 % were male; 90.1 % were from Recife's metropolitan area; fever, headache and vomiting were present in about 90 % of cases; CSF's leukocyte ranged from 6 to 2,800/mm^3 and in 94.6 % it was ≤500/mm3, polymorphonuclears predominated in 26.2 % of cases. Comparing both periods, children are more affected, especially between 5 and 9 years, with a highest percentage in the epidemic. We also observed a significant decrease in the number of <1-year-old affected in the epidemic. Fever, headache and vomiting were more frequent in epidemic, while neck stiffness occurred with a lesser percentage with statistical significance. In CSF analysis, >80 % presented leukocytes ≤500/mm^3, highlighting the polymorphonuclear predominance in greater proportion in the epidemic.

P1A09

Recent changes in stroke mortality trends in Germany

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Background Overall stroke mortality has declined in western countries during the last decades. A similar trend has been described in ischemic heart disease (IHD), although recent studies from several countries suggest this decline might be leveling off in some age groups. Little data is available on recent trends in sex and age specific stroke mortality.
Objectives To analyse trends in stroke mortality rates in Germany after reunification from 1991 to 2010.
Methods Annual mortality data for cerebrovascular diseases from 1991 to 1997 (International Classification of Diseases (ICD) 9 Codes 430–438) and from 1998 to 2010 (ICD 10 Codes I61–I69) were obtained from the Federal Statistical Office of Germany. Joinpoint regression analysis was used to examine changes in time trends in age standardized and age specific mortality rates from stroke in Germany.
Results Stroke remains the second leading cause of death after IHD in women but moved to the third leading cause of death in men after

IHD and lung cancer. From 1991 to 2010, age standardized stroke mortality rates decreased by 60 % in women and 64 % in men, with an average annual percentage change (APC) of about −5 % in both sexes. Compared to men, age standardized mortality rates in women were 27 % higher in 1991 and 15 % higher in 2010. Mortality rates declined faster in East (APC, −5.8 %) than in West Germany (APC, −4.4 %) and remained 21 % higher in the East in 2010 (Relative rate, 1.21).

Age standardized mortality rates steadily declined in women from 1991 to 2010. In men, a recent slowing of the decline in age standardized mortality rates was found, with a steeper decline in 1996–2007 (APC, −6.2 %) and a slower decline in 2007–2010 (APC, −4.2 %).

Age specific stroke mortality rates declined faster in older than in younger age groups in both sexes. A slowing of the decline of age specific mortality rates was observed from 2006 in men aged ≥85 years (APC, −4.0 %) and from 2007 in men aged <65 (APC, −1.5 %), 65–74 (APC, −1.5 %) and 75–84 years (APC, −3.4 %). In women, similar slowing of the decline was noticed in age-specific stroke mortality rates in all age groups above 65 years, but not in those < 65 years.

Conclusions Although overall stroke mortality in Germany steadily declined since 1991, recent mortality data suggest that this decline is leveling off since 2006 in women aged 65 years or older and in men of all age groups.

P1A10

Socio-economic status, lifestyles, and health status perception. The Italian behavioral risk factor surveillance system, Passi 2007–2009

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Background Epidemiological studies have demonstrate that education and economic conditions are associated with at-risk individual behavioral lifestyles, such as smoking habits, physical inactivity or unhealthy diet. These behaviors are responsible for most of the chronic diseases. Also geographic belonging can increase lifestyle gaps among individuals.

Objective To evaluate the role of socio-economic status, and geographic belonging on lifestyles, and health status perception.

Methods PASSI is the Italian behavioral risk factor surveillance system for monitoring the health status of the adult population (18–69 year-old). The unit of data collection for PASSI is the Local Health Unit (LHU). 93 % of LHUs participate to the surveillance covering about 85 % of adult Italian population. The list of residents enrolled in the unit is used to select a monthly random sample of people, stratified by six sex-and-age groups, with the size of each stratum proportional to the percentage of the local population in each of the six groups. In the period 2007–2009 a total of 94,996 people were interviewed by telephone through a standardized questionnaire.

Results In the period 2007–2009, 28 % of adults reports to smoke daily, 29 % to be physically inactive, 66 % to perceive a good health status; 11 % can be classified as obese. The percentage of cigarette smokers is higher in young adults 18–34 year-old (32.7 %; CI 31.9–33.4 %), in males and among residents of Central Regions (30 %; CI 29–31 %). The analysis shows a statistically significant association between smoking habit and socio-economic disadvantage in all geographic areas and in both genders. Obesity is more frequent in adults 50–69 year-old (16.6 %; CI 16–17 %), in males (11.5 %; CI 11.1–11.9 %) and in the South of Italy (12.3 %; CI 11.8–12.9 %). The percentage of obesity is lower among people with higher levels of education and better economic conditions (6.9 vs. 15.7 %; 7.9 vs. 13 %, respectively). Physical activity level is inversely proportional with age and is associated with the economic condition. Females are more sedentary than males. The percentage of inactive people is higher in Southern Regions (39.4 %; CI 38.6–40 %). Males, young people and those who live in the North have a better perception of their health status, which is also associated with high levels of education (OR 1.9; CI 95 % 1.8–2.2) and economic wellness (OR 2.7; CI 95 % 2.5–2.9).

Conclusions PASSI data confirm a relationship between both socio-economic disadvantage and territorial belonging, and some at-risk individual behaviors. Public health interventions should be targeted to specific groups of population to enhance the mean level of health and to reduce inequalities.

P1A11

Surveillance of antibiotic-resistance in a medium-sized hospital in central Italy

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Background A high percentage of healthcare-associated infections are caused by highly antibiotic-resistant bacteria. In 2011 a Laboratory-based microbiological surveillance system was set up in the main hospital (Presidio Ospedaliero Nord-PON) of Latina Local Health Unit (LHU), caring for 500,000 inhabitants in Latium Region, Central Italy.

Objectives (1) To assess the rate of antibiotic resistance in PON. (2) To define specific patterns of antibiotic-resistance in different bacterial species. (3) To define a specific surveillance system targeted to antibiotic-resistance.

Methods The PON is a 420 bed hospital with general medical and surgical wards, surgical (neurosurgery, vascular surgery) and medical (haematology, oncology, infectious diseases) specialties and an intensive care unit. Microbiological records of biological specimens received in the period January 1st–December 31st-2010 were reviewed. Duplicate isolates from the same patient were not considered.

Results In 2010, a total of 2015 microorganisms were isolated, of which *Escherichia coli* (19 %), *Pseudomonas aeruginosa* (11.2 %), *Enterococcus faecalis* (10.3 %), *Staphylococcus aureus* (9.8 %), *Acinetobacter baumannii* (8.3 %) were the most frequently isolated. Of 198 *Staphylococcus aureus* isolates, 33 % were methicillin-resistant (Italy: 36.5 %, EARS-Net 2010) but none was glycopeptide-resistant. 3 % of *Staphylococcus epidermidis* isolates were vancomycin resistant and 4 % teicoplanin-resistant. The percentage of enterococci resistant to vancomycin was 1 % in *E. faecalis*, and 9 % in *E. faecium* isolates (Italy: 2.8 and 4.4 %, respectively). Most of *Acinetobacter baumannii* strains circulating in the hospital were multidrug-resistant. In fact, carbapenems were effective in only 5 % of the isolates, amikacin in 19 %, and tigecycline in 44 %. Instead, colistin was the only antibiotic still fully effective (100 %). The situation appears to be relatively better in *Pseudomonas aeruginosa* isolates, as carbapenem-resistance accounted for 22 %

(Italy: 26.3 %); fluorochinolones-resistance for 36 % (Italy: 36.8 %); and ceftadizime-resistance for 30 % (Italy: 23.8 %). In *Klebsiella pneumoniae*, carbapenem-resistant isolates accounted for 13 % (Italy: 15.9), fluorochinolones-resistant strains for 38 % (Italy: 39.6 %). *K. pneumoniae* extended-spectrum beta-lactamase (ESBL) producing strains were 20 % (Italy: 47.2 %). Finally, 16 % of *Escherichia coli* isolates were found to be ESBL producers (Italy: 21.5 %), while 30.5 % were fluorochinolones-resistant (Italy: 39.4 %).
Conclusions Overall, the rate and patterns of antibiotic-resistance of bacteria isolated in PON hospital are in agreement with EARS-Net data related to Italy, except for *K. pneumoniae* and *E. coli* ESBL producing strains. Based on these results, a specific Alert Organisms Surveillance System (AOSS) was set up that provides the LHU Committee for the Control of Hospital Infections with weekly reports of selected antibiotic-resistant microorganisms.

P1A12

Surveillance of type 2 diabetic patients with nephropathy in Luxembourg between 2000 and 2006 using medico-administrative database

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Background Diabetes is associated with severe micro- and macro-vascular diseases. Among them, diabetic nephropathy is at high risk of mortality or severe impairment due to the renal destruction, the increased probability of retinopathy and cardio-vascular diseases. Luxembourg has not yet promoted national guidelines related to diabetes or nephropathy follow-up and no registry concerning these pathologies is available. However, public health authorities are in demand for surveillance information about chronic diseases.
Objectives The objectives were to study four main principles of prevention for patients suffering from diabetic nephropathy using medico-administrative data.
Methods The exhaustive population of treated diabetic patients residing in Luxembourg between 2000 and 2006 (N = 21,068) was clustered into four groups according to the stage of nephropathy (none or early stage, severe nephropathy, end-stage under dialysis and renal transplantation). Data about medical acts and dispensed drugs were collected from the national health insurance database for the period 2000–2006.

Four principles of prevention were retrieved from the therapeutic education guidelines of the French National Authority for Health: nephroprotection, abstention of nephrotoxic drugs (e.g.: non-steroidal anti-inflammatory drugs—NSAIDs), cardiac prevention and retinal prevention. The percentage of patients with severe nephropathy, who did not receive a nephroprotecting treatment according to the age and gender, was estimated. The four groups were compared with regard to NSAIDs, cardiac therapy, lipid-lowering treatment and eye fundus.
Results The percentage of patients with severe nephropathy but no nephroprotection was higher among males than females over the period, with a peak in 2003 at 5.2 % for the latters and 16.8 % in 2001 for the formers. This gap decreased over the period.

The study of dispensed NSAIDs revealed no significant difference between the two first groups (55 %). The situation improved for dialysed patients since this percentage was divided by three over the period (62.5 % in 2000 and 23.8 % in 2006).

No significant difference between patients with (28.4 % in 2000, 47.5 % in 2006) and without (30.6 and 46.1 %) nephropathy was found concerning dispensed lipid-lowering treatment.

Finally, differences were found between groups concerning the annual eye fundus, according to the severity of nephropathy.
Discussion This study allowed noticing that the studied principles of prevention were insufficiently followed in Luxembourg. However, the situation seemed to improve over the period. These results should be analysed with caution since medico-administrative data do not inform about individual risk or family history and that no information about self-service drugs (e.g: aspirin, ibuprophen, phytotherapy) were available.

P1A13

Systemic meningococcal disease among children in the Arkhangelsk region, Northwest Russia, 1991–2011: survival analysis

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Background Systemic meningococcal infection requires prompt and adequate medical care. Its clinical course is often considered unpredictable due to severity of a patient's condition and high risk for fatal outcome.
Objectives The study aims to assess survival of the children with systemic meningococcal infection in accordance with gender, age, form, extent of medical aid in Northwest Russia.
Methods A retrospective cohort study. We studied all cases of systemic meningococcal disease in children (35 girls and 55 boys) that occurred in the Arkhangelsk region in 1991–2011. Survival was analyzed using Kaplan–Meier curves with Breslow test for bivariate- and Cox regression for multivariable analysis.
Results The fatality rate was 41.1 %, 95 % CI 31.5–51.4. Survival functions for boys and girls did not differ, $p = 0.447$. All lethal cases occurred during the first 3 days of illness. Survival functions for infants and older children were similar, $p = 0.073$. Survival of the patient with correct pre-admission diagnosis was better in comparison with initially undiagnosed cases, $p < 0.023$. Survival functions were influenced by form of the disease, $p < 0.0001$, and by the presence of septic shock, $p < 0.0001$. Pairwise comparisons revealed differences in survival functions of children with meningococcemia and in those with meningitis, $p < 0.0001$, and mixed form of disease, $p < 0.0001$. Survival function in children with decompensated septic shock was lower than in those with compensated shock, $p < 0.0001$. Administration of glucocorticoids on pre-admission stage according to the common recommendations did not improve the outcome, HR = 1.0 95 % CI (0.48–2.10) adjusted for age, shock grade, leucopenia.
Conclusions Form of the disease, timeliness of the diagnosis and presence of the shock symptoms influenced the survival of the children with systemic meningococcal disease. The absence of positive influence on survival of glucocorticoids requires optimization of the algorithm of emergency care.

P1A14

Mortality predictors among Krakow older citizens during the 20-year observation

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Background Life expectancy has been increasing steadily over the last decades. Nowadays, in Poland life expectancy is 71.3 years for men and 80.0 years for women. The aging populations face a number of related changes, some of which lead to problems that can be addressed using research on mortality determinants.
Objectives The aim of this study was to assess the change in the predictive ability of gender-related 20-year all-cause mortality in community-dwelling older people.
Materials and methods The population under study consisted of a simple random sample of 2 605 non-institutionalized persons, aged 65 and over, resident in Krakow city centre. Vital Records of Krakow up to November 30, 2008 was performed regularly. The vital status of 133 respondents could not be confirmed at any time during the observation period. Out of 2,472 respondents 364 were survivors, 2,054 died and for 54 the vital status could not be confirmed at the end of the follow-up.
To test the associations between the chosen predictors and all-cause mortality hazard ratios were calculated from multivariable Cox proportional hazard model for men and women separately.
Results Our study confirmed that higher education (HR = 0.89; 95 % CI: 0.83–0.94) and being employed during the baseline (HR = 0.78; 95 % CI: 0.62–0.98) were protective factors in males, but not among females. Healthy lifestyle was a predictive factor for all-cause mortality for both men (HR = 0.69; 95 % CI: 0.56–0.86) and women (HR = 0.64; 95 % CI: 0.51–0.79). In the female group the effect of caring for own health was also a predictive factor (HR = 0.88; 95 % CI: 0.77–1.00). Our study showed that poor SRH is a valid predictor of mortality in elderly women (HR = 1.24; 95 % CI: 1.07–1.44), but not in men (HR = 1.05; 95 % CI: 0.86–1.29). Out of chronic condition diabetes mellitus was found to be a risk factor among males (HR = 1.32; 95 % CI: 1.00–1.74) and females (HR = 1.65; 95 % CI: 1.37–2.00) and asthma among males only (HR = 1.40; 95 % CI: 1.12–1.75).
Conclusions Predictors of 20-year mortality for males and females were different. For Males the most important factors influencing the risk of mortality were related to their socioeconomic position and objective health status. For Polish females the most important were subjectively measured health status and functional activity, as well as the diabetes mellitus, together with carrying for own health. Lifestyle related factors was found to be strong protective factor for both males and females.

P1A15

Congenital syphilis: sentinel event of antenatal care quality

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Background Congenital syphilis is preventable with the current level of health care available in antenatal care. However, Rio de Janeiro City has a high incidence of congenital syphilis, including severe forms of the disease, albeit an almost universal coverage of antenatal care and the strategies set up in place to avoid its occurrence.
Objectives This study aims to evaluate antenatal care's quality in reducing the vertical transmission of syphilis, looking at the pathway of pregnant women infected with the *Treponema pallidum,* whose pregnancy's outcome was a case of congenital syphilis, through the healthcare system.
Methods A sectional study was designed in 2007–2008 to be representative of low-risk pregnant women followed at the Unique Health Service's (SUS) network in Rio de Janeiro city. Pregnant women with syphilis were identified through interviews, checking of antenatal care card and searching reported cases in the National Surveillance System (SINAN). Cases of congenital syphilis were sought at SINAN, SIM (Mortality Information System) and SIH (Hospitalization Information Service).
Results We were able to identify 46 cases of syphilis in pregnancy and 16 cases of congenital syphilis, resulting in a prevalence of 1.9 % of syphilis in pregnancy and an incidence of 6 cases of congenital syphilis per 1,000 pregnancies. The vertical transmission rate was 34.8 %, including 3 fatal cases (1 abortion, 1 stillborn and 1 neonatal death) and high proportions of prematurity and low-birth weight. The healthcare pathway of those women revealed several flaws in the delivered care, as late entry to antenatal care, lack of syphilis diagnosis during pregnancy and lack of partner's treatment.
Conclusions Innovative strategies are needed to improve the outcomes of syphilis in pregnancy, improving the laboratory network, the quality of care delivered to the couple and most important of all, the investigation of every case of congenital syphilis as a sentinel event of the quality of antenatal care.

P1A16

High seroprevalence of norovirus in the Portuguese population

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Background Norovirus is the leading cause of diarrheal disease in the community as well as gastroenteritis outbreaks worldwide. Transmission occurs through the fecal-oral route or through contaminated foods or water. The disease is generally considered self-limiting characterized by vomiting and diarrhea, but serious complications including death have been reported. Noroviruses can be divided into 5 genogroups (G) of which strains from GI, GII and GIV infect humans. GII.4 viruses cause more than 50 % of all outbreaks worldwide. In Portugal only a few laboratory confirmed norovirus outbreaks have been reported and sporadic samples are not tested for this virus.
Objectives To determine the level of exposure of the Portuguese population to GII.4 norovirus.
Methods Serum samples were obtained from 473 volunteers between 2010 and 2011. Samples were tested for the presence of IgG antibodies to human norovirus GII.4 (NO1805) using a recombinant virus-like particle (VLP)-based enzyme immune assay. VLPs were produced in baculovirus and purified by CsCl ultracentrifugation.
Results Overall, 342 (72.3 %) of samples tested positive for IgG antibodies against GII.4 norovirus. Seroprevalence was similar for both women (72.1 %) and men (72.8 %), being slightly higher in those coming from the south of Portugal (79.2 %) than those coming from the north and center of Portugal (71.4 %). Seropositivity increased with age from 68.4 % in the 19 to 29 years-old to 78.7 % in the 40–49 years old.
Conclusions The high seroprevalence of norovirus demonstrates that these infections are common in Portugal. Therefore, to better estimate the public health risk of viral gastroenteritis in the Portuguese community, routine testing of fecal samples from foodborne diarrheal outbreaks and hospitalized children with diarrhea should be considered.

P1A17

Mass gatherings: syndromic surveillance system at a music festival in Portugal, 2010

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Background Mass gatherings are events attended by a sufficient number of people to strain the planning and response resources of the location where they are held, providing a setting for increased health risks, particularly the transmission of communicable diseases. BOOM Festival is a psychedelic Goa-trance music Festival (high recreational drugs consumption) with around 30,000 participants, lasting for 9 days and taking place every 2 years, on the shores of a dam, near Idanha a Nova, Portugal. In 2008, a Shigella outbreak was reported through the international surveillance networks. By retrospective analysis a high incidence of gastrointestinal disease was detected, with 137 cases being observed at the Primary Health Care facilities in Idanha a Nova.
Objectives For the 2010 edition of the BOOM Festival, the stakeholders decided to set up a syndromic surveillance system to provide early detection of disease, threats or syndromes requiring immediate control measures by Health Authorities.
Methods The SVIGBOOM2010 syndromic surveillance system was in place from the 11th of August to the 1st of September 2010 and collected data using several sources and applying a questionnaire to all participants who attended a health care service ("Field Hospital" at the festival venue, Primary Health Care Center or Hospital). The questionnaire was filled in by health care providers, addressing patient demographics (age, sex, residence), date of arrival on the Festival, date of onset of symptoms, symptoms, diagnostic tests/samples taken and the outcome (transferred, discharged, etc.). Information on new patients was sent daily to Directorate General of Health (DGS) daily; DGS sent aggregated information to European Centre for Disease Control and Prevention (ECDC) in Stockholm.
Results The surveillance system reported 2,287 episodes of illness. The majority (61.8 %) were observed due to traumatic complaints (small cuts and bruises, insect bites, etc.). There were also 126 (5.5 %) episodes of gastrointestinal symptoms and 111 (4.8 %) of respiratory symptoms reported. Nevertheless, the most important event detected has been a measles case on an unvaccinated young adult. The case was reported to ECDC through EWRS (confidential information) and reported to WHO/EMMO. The case has also been reported to the Mandatory National Reporting System for Communicable Diseases.
Conclusions Overall the surveillance system fulfilled its role in detecting cases with Public Health importance. The number of patients admitted at the Hospital and Primary Care facilities was lower than in previous editions of the festival. It is recommended to maintain a specific epidemiological surveillance system in further editions of BOOM, and eventually extend it or adapt it to other events.

P1A18

Excess pneumonia and influenza hospitalizations associated with influenza epidemics in Portugal from 1998 to 2010

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Background Influenza virus circulate every year, causing epidemics usually benign for the human population, but that can degenerate into severe disease, like pneumonia. This is particularly the case in specific groups, like the elderly, with higher risk of complications associated with influenza leading to hospitalization or death.
Objective Estimate excess number of hospitalizations from pneumonia or influenza (P&I) (ICD-9:480–487) as main diagnosis during influenza epidemics from seasons 1998–1999 to 2009–2010 in Portugal mainland (total and age groups). Measure the correlation between excess number of hospitalizations from P&I, and influenza vaccine coverage in the elderly. Compare P&I excess number of hospitalizations age distribution during seasonal epidemics with (H1N1) 2009.
Methods Weekly P&I hospitalizations extracted from the National Hospital Discharge database (1998–2010).

Information on Influenza epidemic periods and dominant type of virus was defined from data from the national influenza surveillance system. Influenza vaccine coverage (IVC) was obtained from telephone surveys conducted by INSA.

Age-specific baseline hospitalization rates, estimated by ARIMA model without time periods associated with excess number of hospitalizations, using Flubase R package. Excess numbers of hospitalizations were calculated by subtracting expected hospitalizations rates from the observed members during influenza epidemic periods. Correlation between excess number of hospitalizations and IVC was measured with Spearman rho coefficient.
Results Average excess number of hospitalizations per season was 1,826 (0 to 4,129), with seasonal average rate of 14.8 per 100,000 inhabitants.

During epidemics with A(H3) age groups that most contributed for excess number of hospitalizations were 65+ (72 %) and 0–4 (13 %). On the other hand epidemics with influenza B dominance showed a reverse pattern with a higher contribution of 0–4 (62 %) and the elderly (19 %). Regarding the pandemic season, ages groups with most relevant contribution was 20–49 (50 %); 5–19 (18 %) and 50–64 (17 %); extreme age groups 0–4 and 65+ contributed with 13 % and 4 % respectively.

Excluding the pandemic season, correlation between excess number of hospitalizations and IVC in the elderly was −0.268, but not significant. Restricting to A(H3) dominant epidemics a significant correlation (−0.757) was observed.
Conclusion Influenza associated P&I excess number of hospitalizations pattern differs between age groups and dominant virus in different epidemic periods. Results suggest that at population level, increase in vaccine coverage is associated with a decrease of excess number of hospitalizations during A(H3) influenza dominated seasons.

P1A19

Community knowledge towards Dengue control in Madeira

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In 2005, *Aedes aegypti* (Linnaeus, 1762) was detected for the first time in Madeira Island. During subsequent years, the species thrived, expanding its distribution area through the island. Since this mosquito is one of the most competent vectors of Yellow Fever, Dengue and Chikungunya arboviruses, these arboviral infections may emerge in Madeira's territory. Moreover, there is a high human migration flux between Madeira and Dengue endemic countries such as Brazil and Venezuela. An outbreak will represent a public health and economic threat for the island. Having no vaccines or treatment against Dengue and Chikungunya viroses, control of *Ae. aegypti* populations remains the cornerstone for the prevention of these illnesses. In this scenario, policies to decrease *Ae. aegypti* abundances are mandatory. Vector control measures based on breeding sites reduction are known to be the most efficient. This mosquito breeds in water, preferentially in small containers in domestic environments. Therefore, community involvement is crucial to its elimination.

In this work we aim to characterize infested area in Madeira in what concerns the knowledge, attitudes and practices of the human population towards mosquitoes' development.

A survey was conducted, from October to December 2011, among a previously defined *aegypti*-infested area. According to a stratified sampling, 1,279 subjects were randomly selected. Inventories of their houses' breeding-sites were performed and face-to-face questionnaires regarding mosquito's life-cycle, vector-control measures, *Ae. aegypti* identification, dengue epidemiology and mosquito's medical importance were applied.

Most of studied population (86.3 %) considered that mosquitoes can transmit diseases, however only 38.4 % answered correctly when asked about examples of mosquito-borne diseases. Considering the presence of mosquitoes in their residential area, even though the majority of all respondents (62.8 %) is concerned about it, only 39.4 % admitted that these mosquitoes can transmit diseases. This could mean that despite population's awareness about mosquitoes and their importance regarding medical issues they do not known how mosquitoes put their health in risk. Consequently, local population do not completely acknowledge the urgent necessity to control them. Results will be crossed with demographic data and analyzed separately for different geographic infested areas.

These findings will be useful in the implementation of future strategies for community education, since misunderstood information or myths may compromise population′s commitment in vector-control actions.

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P1A20

Empirically-derived food patterns and total mortality in the PREDIMED study

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Background There has been growing interest in the last years in assessing the relationship between diet and disease through the study of whole dietary patterns and not only focusing on single nutrients or foods. Though several studies have assessed the relationship between a posteriori dietary patterns and different health outcomes, there is little evidence on post hoc dietary patterns and all cause mortality in Southern European populations.

Objective To identify the association between a posteriori defined major dietary patterns and total mortality in the PREDIMED study.

Methods We followed-up 7,340 participants (57.5 percent women, mean age: 67 years) during a median follow-up time of 4.8 years. To assess dietary exposures, a validated 137-item semi-quantitative food-frequency questionnaire was administered. Dietary patterns were ascertained through a factor analysis based on 30 predefined food groups. Participants were classified according to tertiles of adherence to dietary pattern scores at baseline. Cox regression models were used to estimate multivariable-adjusted hazard ratios (HR) for mortality. Deaths were confirmed by review of medical records and consultation of the National Death Index.

Results We identified two major dietary patterns: the "Western" dietary pattern and "Mediterranean" dietary pattern. During follow-up, 337 participants died. Among deceased participants, the median age of death was 70 (6.5). After controlling for potential confounders including the intervention group, higher baseline adherence to a "Mediterranean" dietary pattern was associated with lower risk of all-cause mortality (adjusted HR for third tertile vs. first tertile: 0.68; 95 % CI: 0.49–0.95) (p for trend 0.028).

Conclusion Higher adherence to a Mediterranean-type diet may reduce the risk of all-cause mortality in elderly people at high cardiovascular risk.

P1A21

Epidemiology and surveillance of hepatitis B and C in Republic of Srpska (BiH) 2002–2011

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Background Viral hepatitis is a largely neglected epidemic in Europe. An estimated 14 million people live with chronic hepatitis B and 9 million people are infected with hepatitis C. Chronic hepatitis is a major cause of liver cirrhosis and primary liver cancer. Each year, hepatitis B is responsible for about 36,000 deaths with hepatitis C responsible for around 86,000 deaths.

Objectives to describe epidemiological characteristics and surveillance system of hepatitis B and C in Republic of Srpska (RS), an entity of Bosnia and Herzegovina (BiH).

Methods Descriptive analyses of mandatory notifiable cases of hepatitis B and C in RS as reported to RS Public Health Institute. According to the Law on protection of population from infectious diseases all physicians are required to report cases of hepatitis B and C and HBsAg carriage to public health authorities. Active epidemiological surveillance of hepatitis B and C started in January 2011. Classification of cases was based on Rulebook on Procedure of

registration, the content of records and reports of communicable diseases.

Results Total number of reported cases during observed period were: hepatitis B—587, hepatitis C—341 and HbsAg carriage—411. The annual incidence rate (IR) of acute hepatitis B ranged from 1.5 per 100,000 (2005) to 4.7/100,000 (2009) and 14.1/100,000 (2011). HbsAg carriage IR varied from 2.1/100,000 (2011) to 4.6/100,000 (2003). Hepatitis C IRs were from 1.2/100,000 (2004) to 3.3/100,000 (2008). The male:female ratio for hepatitis B was 1.86:1 and for hepatitis C 2.12:1. Age distribution for hepatitis B: 20–49 years (51.1 %) and 50–64 (34 %); hepatitis C: 20–49 (49.6 %), 50–64 (34.8 %) and *65* years and older 15.6 %.

Conclusions The increased hepatitis B incidence in 2011 is most likely a result of introducing a system of active surveillance. One of the main tasks for health service and authorities in order to improve the hepatitis B&C surveillance is to establish a national register for hepatitis. It is necessary to consider the issue of comprehensive hepatitis B and C preventive measures and health programme at national level.

P1A22

Frequency of asymptomatic carriers of *Plasmodium vivax* or *Plasmodium malariae* as determined by PCR in an area of very low incidence in Brazil

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Background Malaria cases in Brazil are reported mainly from the Amazon region, with 307,000 cases in 2009. However, Extra-Amazonian authoctonous *Plasmodium vivax* infections have been reported in mountainous regions surrounded by the Atlantic Forest. A follow-up of the incident cases coupled to blood sampling of dwellers performed from 2001 to 2004, disclosed a prevalence of 1.5 and 0.9 % of asymptomatic carriers of *P. vivax* and *Plasmodium malariae*, respectively. It is difficult to determine where the reservoir of these parasites is when one considers the broad area of transmission (5,343 Km^2) and the low frequency of symptomatic cases (around 40 each year). In this study, we present the preliminary results of a 2 years follow-up of a dynamic cohort of dwellers in one of the Municipalities of transmission aiming to determine the frequency of asymptomatic carriers.

Methods All the dwellers in an area of 2 km around the residence of the first case of authoctonous malaria reported in 2010 were invited to take part in the study. Each dweller who accepted to participate was submitted to an interview about sociodemographic data and travel history, and to blood sampling for smears and Multiplex PCR. After the first visit, visits of follow-up were performed at each quarter (March, June, September and December), with revision of the initial information and new blood sampling. PCR was performed by the technique of Rubio for the initial screening followed by the techniques of Snounou and Kimura for confirmation.

Results Ninety-two dwellers were initially included. Mean age plus/minus standard deviation was 36.7 ± 23.8 years, with a median of 32 years and interquartile range of 14.25 to 54.75. There were 49 males (53.3 %). An initial prevalence of 3.4 % was detected for both species (2.27 % *P. vivax* and 1.13 % *P. malariae*). In the follow-up visits, an incidence rate of 7/156.5 persons-years of observation was detected for both species, comprising 4/156.5 persons-years for *P. vivax* and 3/156.5 persons-years for *P. malariae*. Three individuals had persistence of the carrier state for several visits (consecutive or not) while the other five became negative spontaneously.

Main conclusions It is possible that the transmission of malaria in the residual areas of Atlantic Forest outside the Amazon Region have been maintained by the asymptomatic circulation of parasites among the residents of such areas, with clinical cases being only the tip of a broader contingent, justifying their apparent low incidence.

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P1A23

Infant mortality and geographic access to childbirth in Brazilian municipalities

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Fundação Oswaldo Cruz

Background Change in the health conditions of Brazil in mid-twentieth century had a large impact upon mortality and morbidity in childhood. The development model that predominated over many years was exclusionary and concentrated resources in specific regions and social strata, affecting the evolution of infant mortality, reflected by the distinct trajectories between the Brazilian regions.

Currently, geographic access to childbirth services, relating to the unequal provision of quality health services, is a component of maternal and child vulnerability. If access to health services is critical for efficient care and reduction of inequities, the approach to the inaccessibility of some population groups is essential for decision making about the location and scope of services.

In addition to the unequal availability of health services and resources, the problems with geographic access to childbirth services reflect failures in integration and communication between health sectors. Although childbirth is a foreseeable emergency, maternal and infant care remains fragmented and unorganized.

Geographic access to childbirth is therefore critical to characterize the maternal and infant care services, providing significant contributions to reducing infant mortality in Brazil.

Objectives To describe the geographic access to hospital childbirth, considering its association to the infant mortality levels in Brazilian municipalities.

Methods Deaths and births information were analyzed in relation to the appropriateness to infant mortality calculation. Indicators of displacement, supply and access to health services were calculated to express geographic access. Using a multivariate regression model it was possible to test the association between the geographic access to childbirth and the infant mortality rate, mortality adjusting for municipal per capita income, geographic region, population size, number of neonatal intensive care unit beds, proportion of home births, in the municipalities with adequate vital information.

Results Of the 5,564 municipalities analyzed, 56 % had adequacy of vital information, corresponding to 72 % of Brazilian population. The analysis showed that the association between infant mortality and the intermunicipal geographic distance for hospitalization in childbirth was significant, even though controlled by demographic and socioeconomic factors.

Conclusions Although many important strategies have been recently developed in Brazil to improve the quality of care to pregnant women, emerges from this study the indication of insufficiency of actions to warrant childbirth access to everyone equally. Associated to the unequal supply of qualified health services and to the lack of integration with primary care, the great geographic displacement to childbirth hospitalization was shown to be a risk factor for infant mortality.

P1A24

Syphilis as probably cause of stillbirth in north of Brazil: evidences from blood and placenta exams

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Introduction Mother-to-child syphilis transmission is a serious public health problem and one of the most frequent causes of fetal morbidity and mortality.
Objectives Describe serial cases of stillborn babies probably caused by syphilis acquisition during pregnancy.
Methods Serial of cases of pregnant women with positive serology to VDRL and to FTA Abs IgG and IgM who delivered stillborn babies at Fundação Santa Casa de Misericórdia do Pará (FSCMPA). Informed Written Term Consent was obtained from those women to collect blood sample and to perform the study of their placenta and annexes (umbilical cord, fetal membranes). DNA extraction from blood and from placenta tissue was performed through Nested PCR-*polA* (nPCR-*polA*). indirect immunofluorescence antibody test (IFAT) in placenta tissue was also performed to identify specific *Treponema pallidum* antibodies.
Results *Treponema pallidum* was detected in 100 % (6/6) of the placentas analysis through IFAT and in 83.3 % (5/6) through nPCR in the placenta and in the blood. 33.3 % of placenta in macroscopy was large and pale; 66.7 % (4/6) of the umbilical cord were short and had a hemorrhagic aspect and 66.7 % (4/6) of fetal membranes had 50 % or more of opacification. In the microscopy analysis, 66.7 % (4/6) of placentas had the histopathology triad which strong suggests *Treponmema pallidum* infection: villitis/perivillitis and/or deciduitis, enlarged hypercellular villi, endoarteritis and perivasculitis of placenta villi and of umbilical cord with necrotizing funisitis. The last third (33.3 %; 2/6) of placentas had two signs of the triad, and therefore had histopathology suspicion to syphilis. Absence of Prenatal Care was referred to 33.3 % (2/6) of women. Half (2/4) of the women who had prenatal history performed VDRL more than once to screening to syphilis, but no specific treponemic test. During prenatal care, only one of those women was treated to syphilis, with no treatment extended to her partner.
Conclusions Cases of stillborn reported were probably related to *Treponema pallidum* infection in the maternal fetal interface of the placenta and in mothers' blood, what points out an insufficient prenatal care concerning diagnosis, treatment and control of syphilis and lack of health public politics to assure every pregnant perform the prenatal care. Epidemiologic surveillance of syphilis cases is very important in order to restrain the increase of the disease, including congenital syphilis directly related to a good prenatal assistance.

P1A25

Positive serology to hepatitis B markers in puerperal women attended in a maternal–infant reference

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Introduction Hepatitis B is one of the main causes of chronic liver diseases, cirrhosis and hepatocellular carcinoma and it represents an important problem of public health in Brazil and in the world, being endemic in the Amazon Region. According to Brazilian Ministry of Health, at least 15 % of the population has had contact with the hepatitis B virus (VBH) and around 1 % has chronic hepatitis B in the country. The great majority of people are unaware of his carrier status what play an important role in the transmission of the disease, contributing to its maintenance.
Objectives Evaluate the VHB seroepidemiologic profile in puerperal women.
Methods Cross-sectional prospective study with enrollment of 496 puerperal women who delivered in a Maternal Infant Reference Hospital in the North Region of Brazil, from April/2004 to February/2005 who gave their written consent to collect 10 mL of blood for evaluation of their hepatitis B status, after fulfillment of a questionnaire addressing epidemiologic and clinic questions. The study has been approved by the Ethical Local Committee.
Results Prevalence of hepatitis B serum markers was 6.2 % (31/496). The most identified serum marker was the association Anti-HBs/Anti-HBc, observed in 64.5 % (20/31) of the casuistic. Almost 20 % (19.3 %; 6/31) had the serum marker compatible with immunity (Anti-HBs). A suggestible serum marker for chronic evolution of Hepatitis B was present in 6.4 % (2/31). Anti-HBc as isolated serum marker was detected in 9.6 % (3/31) of the cases. Demographic data revealed predominance of low education level as 35.4 % (11/31) of women had not finished senior high school; adolescents represented 38.7 %; single status 41.9 % (13/31). About one-third (32.2 %, 10/31) of the puerperal women informed less than one Brazilian minimum wage as income. More than half were multipara (58.1 %; 18/31). History of drug addiction was reported by 6.4 % (2/31). Previous jaundice was informed by 54.8 % (17/31) as a self-report. Jaundice of their partners was also referred (16.1 %; 5/31).
Conclusions Serum hepatitis B markers were present in post-partum women indicating contact with the hepatitis B virus, through immunization or through infection that evolved to cure, as well presented serum markers that may evolve to chronic forms. Adolescents were responsible for almost half of the cases and together with other variables such low level of education, low income, drug addiction, and jaundice call attention to hepatitis B diagnosis in pregnancy, as important tools to screening for this disease in the prenatal care, in order to have a correct and precocious indication of neonatal prophylaxis.

P1A26

Occurrence of *Aedes aegypti* pupae in different locations of the city of Nova Iguaçu, Rio de Janeiro, Brazil

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Background Dengue is an important problem of public health in Brazil and in the world. It′s main vector, the *Aedes aegypti*, has a domicile and peridomicile distribution, given by the abundance of breeding sites, in the outside (trash) and used to store water for home use.
Objectives The authors analyze the occurrence of *A. aegypti* pupae according to the following aspects: type, size and material of the recipient, location and incidence of sun in the recipient, presence of pupae and other mosquitoes, pluviometric index and the temperature of the locations studied.
Methods The *Aedes aegypti* Infestation Index Rapid Survey (LIRAa) was realized in 2004 for the city of Nova Iguaçu, Rio de Janeiro, Brazil. The Bretau Index (BI) was calculated to all the blocks of the sample. The 6 blocks with the greater BI were selected for the

monitoring of immature forms of the vector. Vector breeding sites were considered as any recipient or deposit not air-tight, peri-or household, containing water (any volume), found at the households. The breeding sites were classified according to the type of recipient, it′s use and mobility, volume, material of confection, location and sun incidence. Variables as the pluviometric index, temperature, presence of other pupae and water pH were analyzed.

Results The presence of *A. aegypti* pupae was verified at 398 out of 5,954 recipients were inspected, After logistic regression analysis, those with greater statistic significance were vulcanized rubber (OR = 4.6, 1.44 < OR < 15.04); medium size recipients (OR = 3,24, 2,34 < OR < 4,48); large recipients (OR = 2.70, 1.76 < OR < 4.16) and external location of the recipient (OR = 2.16, 1.26 < OR < 3.70). The water pH did not shoed statistical significance ($p = 0{,}073$).

Conclusion Effective measures to vector control should be applied to sanitation, improving the water supply for the population, both in increasing their coverage and in its regularity, and the regular garbage collection.

P1A27

Mortality among obese persons in Italy: study of multiple causes of death

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Background Mortality data can be used as an epidemiological indicator for diverse diseases.

Objectives We used mortality data to describe deaths due to obesity in Italy, including geographic distribution and temporal trends, and to investigate associations with chronic diseases.

Methods We evaluated mortality for obesity (ICD-9 278.0 and ICD-10 E66) and its trends using the National Mortality Database (1980–2008); For the association with chronic diseases, we calculated the ratio of observed to expected deaths for each disease, using a standardized mortality ratio (SMR)-like analysis. Observed mortality was the number of deaths due to the chronic disease among deceased obese persons; expected mortality was the number of deaths due to the disease among the same-age general population of deceased persons in the same period (data source: National Mortality Database). For observed mortality, we used the multiple-cause-of-death database to review all 1,663,275 death certificates in 2000–2002 and 2006 (most recent periods with exhaustive data) for mention of obesity anywhere on the certificate; we selected certificates with the given disease as the underlying cause. The ratio of observed to expected mortality was also calculated for obesity for each of Italy's 20 Regions.

Results Since 1980, mortality for obesity has increased by 14 % (standardized rate: 0.059/100,000 in 1980, 0.804 in 2008). We identified 4,358 death certificates with mention of obesity. The mean age at death was 67 years (61 for men; 73 for women), which was significantly lower than that for all causes (77 years; 74 for men, 80 for women). Regarding the associations with chronic diseases, among deceased obese persons, excesses in death were found for: diabetes (SMR = 1.94, 95 % CI 1.71–2.18), heart disease (SMR = 1.17, 95 % CI 1.11–1.21), and respiratory disease (SMR = 1.22, 95 % CI 1.11–1.36); there was a deficit in cancer deaths. No clear geographic trend was observed in the ratio of observed to expected mortality for obesity.

Conclusions The increase in mortality due to obesity reflects reported increases in prevalence, and the lower age at death, compared to all-cause deaths, confirms the association with premature death. The lack of a geographic trend contradicts the known north–south gradient in prevalence and could be explained by reporting differences. Our results also confirm the association of obesity with diabetes and cardiac disease, as well as respiratory disease. However, since the data refer to deceased persons, they presumably include only severe obesity.

P1A28

In-hospital fatality following a hip fracture: what changed during the bone decade in Portugal?

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Fatality during hospitalization caused by hip fractures should be reducing because of the improvement of techniques and changes in treatment protocol.

The aim of this work is to evaluate space and time patterns of in-hospital fatality rates following hip fractures in Portugal during 2000–2008.

Osteoporotic hip fractures (820.x ICD 9-CM, caused by low impact, aged 49 +) from 2000 to 2008 were collected from National Hospital Discharge Database, mandatory for all public hospitals in Portugal, containing information such as: sex, age, causes and diagnosis. Cases of bone cancer, readmissions for after-care or complications were excluded. In-hospital fatality rate was calculated using the number of hospitalizations where patients died while in the hospital by the number of hospitalizations (hip fractures) in the same period; 95 % confidence intervals (CI) were calculated. Generalized Linear Models, Poisson response, were used to evaluate trends for each sex, the Incidence Rate Ratio was calculated as a relative risk measure. To explore the spatial distribution, global spatial autocorrelation index (Moran I) and spatial cluster analysis were used to identify spatial dependency and clusters in fatality rates.

The 77, 083 hospitalizations caused by hip fractures were treated in 80 different hospitals, about 5.5 % (5.4–5.7) hospitalizations resulted in dead while in hospital. Fifty-five percent of the hospitals treated less than 1,000 fractures in the period, the difference between in-hospital fatality rates considering these hospitals and those who treated more than 1,000 fractures was not statistical significant 0.38 % (−0.05–0.84). The in-hospital fatality was higher in male patients 8.7 % (8.3–9.1) versus 4.6 % (4.5–4.8) in female patients. In male patients no significant statistical trend was identified on in-hospital fatality rates, however in female patients a linear decrease trend was observed, IRR of 0.97 (0.95–0.98) (average decrease of in-hospital fatality rates by increasing 1 year).

The higher fatality rates were observed in inland and south districts, for both male and female patients. The district with the lower fatality rate in female had 3.1 %, whereas the higher had 7.6 %. In male patients the lower and higher extremes were 6.4 and 14.5 %.

In hospital fatality rates presented a statistical decrease for female patients that may be cause by changes in treatment during this period in women or by gender inequalities in the treatment. The higher in-hospital fatality rates were observed in inland districts, causes have to be assessed, however age does not seem to explain such differences.

P1A29

Burden of disease in Matosinhos

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Background The burden of disease studies aims to quantify the burden of premature death and incapacity for the main diseases and injuries, using DALY as a summary health measure of the population, which combines the estimates of years of life lost due to premature death (YLL) with the years of life lost due to illness and/or incapacity (YLD, Years Lived with Disability).
Objectives Estimate the burden of disease in DALY in the Population of Matosinhos Municipality for the period 2003–2005, and the burden of disease and injury that is attributable to selected risk factors.
Methods In this study, the methodology used is similar to the one used on the "Global Burden of Disease in the Northern Region of Portugal" published by the Public Health Department of the Northern Region of Portugal (PHD).

Matosinhos municipality mortality data were used for the estimation of YLL and data published for the Northern Region of Portugal by the PHD were used to estimate the values of YLD. To estimate the burden of disease attributable to each risk factors, we use updated information from WHO for Portugal, for the attributable fractions.
Results The five main specific causes of healthy years of life lost in the Matosinhos are, decreasingly: cerebrovascular diseases (with 6.1 % total DALYs and 2th cause in males and females), unipolar depressive episodes (5.8 % of total DALYs, 1st cause in females), ischaemic heart disease (4.2 % of total DALYs), HIV/AIDS (3.8 % of total DALYs and 1st cause on males) and diabetes mellitus (3.6 % of total DALYs). In men, behavior and mental disorders associated with alcohol addiction and trachea, bronchus and lung cancers are amongst the five main specific causes of DALY. In women, Alzheimer disease and other dementias are also amongst the five main specific causes of healthy years of life lost.

The five main risk factors responsible for the greatest amount of DALY in Matosinhos are: tobacco smoking, high blood pressure, alcohol consumption, high BMI and high cholesterol.
Conclusions This study confirms the importance of the known health problems, and reveals mental health and Diabetes Mellitus as two of the major health problems in Matosinhos.

P1A30

Study of patients with influenza A (H1N1) in the pandemic period (2009–2010)

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Objective To identify clinical features and treatment of patients hospitalized with pandemic influenza A (H1N1). To identify those variables associated with admission to intensive care unit.
Materials and methods
Scope A Coruña University Hospital (Spain).
Period July 2009 to January 2010.
Design Retrospective cohort observational study.
Inclusion criteria Patients of any age diagnosed with pandemic influenza A (H1N1) virus that meet hospitalization criteria: being an influenza clinical case, having risk factors for complicated influenza, and laboratory diagnostic confirmation (real-time PCR).
Sample n = 169 (precision = ± 7.6 %, alpha-level = 95 %).
Measurements Demographic, clinical and treatment characteristics.
Statistical analysis Descriptive analysis, multiple logistic regression.
Results Mean age was 35.0 ± 20.1 years, 52.10 % were women. 82.8 % presented some risk factor for complicated influenza, the most common were: asthma (24.9 %), hemoglobinopathy and/or anemia (24.9 %), pregnancy (13 %), smoking (13 %), obesity (12.4 %), active immuno deficiency (12.4 %). Most cases were community-acquired (98.2 %), with an average hospital stay of 8.3 ± 14.5 days (median: 5 days). The most common symptoms were: fever (96.4 %), cough (72.8 %), myalgia (43.2 %), dyspnea/difficulty breathing (36.1 %). Of the patients were included, 89.9 % underwent chest radiography: 33.7 % showed signs of pneumonia, with bilateral infiltrates in 33.3 % of cases and unilateral infiltrates in 66.7 %. 87.6 % received antiviral treatment and 72.8 % antibiotic treatment. The average time between symptom onset and treatment was 4.0 ± 3.4 days (median: 3 days) 11.8 % of patients required admission to the ICU, with an average stay of 12.5 ± 12.0 days (median: 10 days). 3.6 % of patients died: 66.7 % female, mean age 51.0 ± 16.1 years (median: 50.5 years). Variables independently associated with ICU admission were: smoking ($p = 0.021$, OR = 6.912, 95 % CI = 1.346 to 35.497), active immuno deficiency ($p = 0.036$, OR = 15.712, 95 % CI = 1.190 to 207.550) and bilateral pneumonic infiltrates ($p = 0.011$, OR = 7.508, 95 % CI = 1.596 to 35.317).
Conclusions Most cases were community-acquired, with risk factors for complicated influenza. More than half of the patients had no radiological signs of pneumonia, the most frequent radiological finding was infiltrates in one lobe. Most patients received antiviral and antibiotic treatment. Variables associated with ICU admission are smoking habit, active immuno deficiency and bilateral pneumonic infiltrates.

Poster Topic 1B. Health services

P1B01

Impact of the hospitalization on the nutritional intake of patients: results from nutriDia Brasil in Pelotas/RS

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Background NutriDia Brasil is part of worldwide project, nutritionDay. The hospital wards are evaluated, trying to point the nutritional problems in hospitalized patients.
Objectives The aim of this study is to describe the nutriDia Brasil results in hospitals of a city in the south of Brazil.
Methods Three hospitals participated in the project in 2009. Data collection occurred in August 11th, using standardized questionnaires from nutritionDay, translated to Portuguese. The patients were asked about their weight and alterations in their food intake. Another questionnaire accessed their acceptance of the meals during the day of the study. Descriptive analysis was performed and Pearson Chi-square was conduct to assess the associations between the groups.
Results Ninety-four patients were evaluated, 64.9 % were male. Most of them showed nutritional risk (66.7 %) and women showed a higher prevalence of decreased food ingestion than men (70 and 51.7 %, respectively). More than half of the patients (51.8 %) didn't accept all the lunch offered. The main reasons for the incomplete acceptance of the meal were lack of appetite, the appearance and taste of the food, gastrointestinal symptoms, and the performance of diagnostic exams during the meal time.

Conclusions Malnutrition is frequent in hospitalized patients and it becomes even worse during the length of stay. The correct management of nutritional status is extremely important to the patients' outcome, and this includes measures to assure their acceptance of a nutritionally adequate ingestion. Reason correlated to the patients should be corrected, as well as the appearance and taste of the meals should be improved. NutriDia Brasil participation is a important toll that can be used as a yearly control of the results of the new measures implemented in the hospitals.

P1B02

Development of hospitalizations due to primary care sensitive causes at a regional Brazilian managing collegiate

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Background The concept of Primary Care Sensitive Conditions refers to processes in which, whenever interventions with effective and timely primary care actions occur, there is a decrease in the number of hospitalizations, disease prevention, treatment of acute disease and chronic disease control. Also, there is a decrease in the number of hospitalizations due to such causes. Hospitalizations due to Primary Care Sensitive Causes (HPCSC) have been used in some countries in order to indirectly measure Primary Care functioning and resolubility capacity. The occurrence of and increase in such hospitalizations may indicate lack of users' access to the service, low-qualification care provision, low resolublity of services and/or investment in other care-provision areas.
Objectives This study aimed at evaluating the development of Hospitalizations due to Primary Care Sensitive Causes at the Mantiqueira Regional Managing Collegiate (CGR Mantiqueira) over a 10-year period. **Methods** The hospitalization data used in this study were collected from SIH-SUS (Hospitalization System) through the Tabwin software for the period from January 2000 to December 2010. The data were shown by occurrence frequency and not by scores, and the frequency was consolidated by CGR based on a database generated by the application of the online Quali AB questionnaire conducted by SES SP in partnership with UNESP, from July to October 2010 (www.abasica.fmb.unesp.br).
Results The number of HPCSC showed oscillations, with increase and decrease in the number of cases. During those years, new Health Care Units, the Family Health Strategy and Community Agents Strategies were implemented; however, the number of cases did not decrease, and many organizational problems were mentioned by the Health Care Units.
Conclusion The CGR Mantiqueira services must be tailored to meet the principles of the Primary Care National Policies, particularly as regards the involvement of teams and managers, integration of health care services and changes in the work process. It is only with these changes that HPCSC could stop only oscillating and then significantly decrease.

P1B03

Distance to health care and survival of patients who underwent coronary artery bypass grafting and angioplasty

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Background Utilization of coronary artery bypass grafting (CABG) and angioplasty improve coronary heart disease outcomes. Survival rates can be employed as indicators of the role of distance in access to treatment.
Objectives To investigate the influence of distance traveled for care on the mortality of patients who underwent CABG and coronary angioplasty.
Methods A non-concurrent cohort study of hospitalizations for cardiac surgery for CABG and angioplasty in 2005, with public funding, in the Brazilian Unified Health System, in the state of Rio de Janeiro, Brazil was investigated. Applying probabilistic record linkage techniques (software Reclink3), those records were linked to the Brazilian mortality database for follow-up between 2005 and 2007.

Straight-line distances between place of residence and place of surgery were calculated (software TerraView). Logistic regression was used to estimate the risk of death at 1 year for each procedure.
Results 4,096 patients were hospitalized, of whom 66 % were men, and one-third had between 50 and 59 years and a third between 60 and 69 years. Approximately one-third of the patients underwent CABG. For those, the risk of death at 1 year for men was 2.1 times that of women, and 7 % higher for each additional year of age. It also increased by 0.7 % for each kilometer traveled. For coronary angioplasty, there was no difference between men and women, and no distance effect. There was an increase of 6 % of the risk of death at 1 year for each additional year of age.
Conclusions Living far from the city where the surgical procedure was performed was associated with increased chance of death at 1 year for patients who underwent CABG. Patients treated at distant locations may experience barriers to access: urgencies are not met by timely care at closer locations. Delays in surgery may also aggravate the disease, reinforcing the need for urgent attention. Another issue related to distance from the service is the difficulty in continuing treatment. It is to be expected that places able to perform cardiac surgery also have a better framework for subsequent monitoring of the patients.

Angioplasty, on the other hand, may have targeted patients with less severe condition, or may be in greater supply, as its learning curve is shorter than for CABG. Hence, it may present lower barriers to access.

P1B04

Dental treatments received by elderly in two economically different countries

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Background World Bank has ranked Finland as a high and Lithuania as an upper-middle income country. In 2000, GDP per capita was USD 23,600 in Finland and USD 3,300 in Lithuania. The dentist-population ratios were 1:1,178 and 1:1,118, respectively. Of the elderly (aged 65 + yrs) 44 % in Finland and 23 % in Lithuania were edentulous. Global strategy by WHO suggests that priority is given to diseases linked by common, preventable and lifestyle related risk factors, including oral health.
Objectives We compared dental treatments received by dentate elderly patients in Finland and Lithuania, in particular from a point of view of preventive procedures.
Methods The Finnish data came from the nationwide Health 2000 Survey, the Lithuanian data from public clinics in a middle-sized city, Kedainiai. For the present study, both data sets were restricted to dentate

patients aged 60 + years reporting a visit to a dentist within the past 5 years. Regarding their most recent treatment course these elderly reported treatments received, such as filling therapy, root canal treatment, tooth extractions, fixed or removable prosthetics, radiographs, and scaling/cleaning, fluoride therapy, instructions for tooth brushing or dietary advice, the last four indicating preventive procedures. Number of Finnish elderly was 295 (51 % female) and of the Lithuanian ones, 137 (47 % female); mean ages were 69.7 and 68.4 years, and mean numbers of teeth, 13.7 and 16.9, respectively. Of the Finnish elderly, 59 % and of the Lithuanian ones, 31 % were wearing removable dentures. Statistical evaluation was by Chi-square tests.

Result Of all, 60 % reported visits to a dentist within past 2 years. For the Finnish elderly, top-three treatments were scaling/cleaning (61 %), filling therapy (54 %), and radiography (25 %); for the Lithuanian elderly, filling therapy (80 %), root canal treatment (49 %), and extractions (47 %). In both countries, one-fifth reported removable prosthetics, whereas receiving fixed prosthetics was more common in Lithuania (25 vs. 9 %, $p < 0.001$). Regarding preventive treatment, Finland dominated in passive prevention such as scaling/cleaning (61 vs. 11 %, $p < 0.001$) and fluoride therapy (15 vs. 0 %, $p < 0.001$) and Lithuania in active prevention, such as tooth brushing instructions (16 vs. 6 %, $p < 0.001$) and dietary advice (5 vs. 2 %, $p = 0.04$).

Conclusion Conservative treatments were prominent in both countries. Preventive procedures were scarce, except for plenteous scaling/cleaning in Finland.

P1B05

A comparison of patients with community-acquired pneumonia (CAP) who sought primary care at the hospital emergency room with those who sought care initially in the community clinics

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Background There are conflicting views about whether there is excessive use of the emergency departments (ED) for primary management of community acquired pneumonia (CAP) or that there are significant delays in CAP patients in seeking treatment at the ED.

Objectives The aim is to compare the characteristics of patients who go directly to the ED for primary medical care for CAP with those who are referred to the ED by primary care physicians.

Methods Cross-sectional and case–control studies. Data extraction from medical files of two hospitals (715 from Rambam and 800 from Tel-AVIV Medical Center—TASMC). Computerized data from the Maccabi Health Services data base on community treated patients.

Results *Compare between hospitals*: The mean age for men was 69.3 in TASMC and 61.7 in Ramban and among women 70.9 and 63.9 respectively. The patients visiting the TASMC ED more commonly had fever compared to Rambam (24.4 and 15.1 % respectively) and saturation under 90 % (31.3 and 14.9 % respectively). The rate of hospitalization was 90.5 and 91.1 % respectively. The adjusted OR for admission in Rambam compared to TASMC was 0.91; 95 % CI: 0.5–1.5. *Compare by referral status*: For the TASMC, 94.3 % of self-referred and 86 % of physician referred were admitted ($P < 0.0001$). The rate of self-referral to ED due to CAP was 66.6 % among patients with CVD, 62.2 % among patients with diabetes, and 63.45 % among patients with COPD compared to 48.6, 55.6 and 55.9 % respectively among patients without the corresponding diseases. 18 % of self-referral compared to 26.6 % of the physician referred reported antibiotic treatment in the community. 29.1 % of self-referred patients compared to 17.6 % of the physician referred had a low saturation. *Compare between hospital and community patients*: Based on the Maccabi data, the mean age of CAP patients treated in the community was 50.7 years compared with 61.2 years among CAP patients treated in hospital. Comparing patients with co-morbidities with patients without comorbidities, the risk for hospital visit was three fold higher among CVD patients and 3.7 fold higher among PVD patients. After adjustment for age, sex and SES the OR was 2.1; 95 % CI: 1.6–2.6 for CHF, OR = 2.8; 95 % CI: 2.1–4 for Parkinson and OR = 1.9; 95 % CI: 1.4–2.7 for PVD.

Conclusion Older age and co-morbidity were associated to ED visit due to CAP. Hospitalization rate in two hospitals were similar. Self-referred patients were hospitalized more than community referred. Patients referred from the community were much more likely to have co-morbidities.

P1B06

Access and utilization of prenatal care services in the Unified Health System of Rio de Janeiro municipality

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Background The prenatal care is composed of practices considered effective for reducing adverse perinatal outcomes. However, in Brazil, studies have demonstrated inequities in the access of pregnant women to prenatal care, with worse outcomes for those with lower socioeconomic status.

Objectives To evaluate access and utilization of prenatal services in the Unified Health System (SUS) in the city of Rio de Janeiro/Brazil and verify its association with characteristics of pregnant women and health services.

Methods We conducted a cross-sectional study, in 2007–2008, through interviews and analysis of pre-natal cards of 2.353 pregnant women attending low risk pre-natal care services of the SUS. Descriptive analysis of the reasons mentioned by women for late initiation of prenatal care and hierarchical logistic regression to identify the factors associated with utilization of prenatal care was made.

Results The absence of a diagnosis of pregnancy and poor access to services were the reasons most often reported for late onset of prenatal care. Earlier access was found for white pregnant women, with higher education, in the first pregnancy and with partner. The late onset was the factor most associated with the inadequate number of visits, also seen in adolescent. Black women had lower adequacy in the realization of exams as well as lower overall adequacy of prenatal care, considering the Humanizing Antenatal Care and Birth Program (PHPN) recommendations of the Ministry of Health.

Conclusions Social and demographic characteristics, more than need of care, were the most important factors associated to prenatal care utilization, indicating inequities in this assistance. Strategies to enhance early diagnosis of pregnancy and to identify pregnant women at higher reproductive risk, to reduce organizational barriers to services and increase access to family planning are a priority.

P1B07

Evaluation of syphilis and HIV control measures in antenatal care delivered at the public health sector (SUS) in Rio de Janeiro city

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Background The prevention of vertical transmission of syphilis and HIV infection can be achieved by measures of control adopted in antenatal care.
Objectives Evaluate the adequacy of control measures of syphilis and HIV infection in antenatal care at public services of Rio de Janeiro/Brazil.
Methods Sectional study developed in 2007–2008 by interview of 2.353 pregnant women, 102 antenatal care providers and prenatal care charts review. A logical-operational model was developed for the evaluation based on the recommendations of the Ministry of Health.
Results Many failures were identified mainly in counseling, serologic testes performance, cases of syphilis treatment and partners management. The results of bivariate analyses showed worse adequacy of syphilis and HIV measures of control in women with late initiation of antenatal care and less than desired number of consultations, except for HIV counseling.
Conclusion Strategies to increase early antenatal follow-up, health care providers training in counseling and clinical management, educative activities aimed to pregnant women and general population, and, most of all, better performing of routine tests are priorities to be pursued, if one aims better control of vertical transmission of these infections.

P1B08

Evaluation of prenatal care adequacy in the Unified Health System of Rio de Janeiro municipality

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Background Prenatal care (PN) has achieved almost universal coverage in Brazil, but the persistence of adverse perinatal outcomes suggests problems in prenatal care quality. The last study conducted in the municipality of Rio de Janeiro (MRJ) showed an adequacy of only 38 % of that assistance.
Objectives To evaluate the adequacy of PN care assistance in the network of the Unified Health System of MRJ. **Methods** A cross-sectional study was conducted in 2007–2008 through interview of 2.355 pregnant women assisted at low risk public services. To assess the adequacy of care was used the PHPN index with the recommendations of the Program for Humanization of Prenatal and Childbirth Care of the Ministry of Health, and also an expanded PHPN index, including obstetric and clinical procedures, ferrous sulfate prescription as well as educative activities.
Results Only 75 % of women initiated prenatal care within the first 16 weeks of pregnancy. Late onset of PN care was strongly associated with inadequate number of PN visits, adequate for 80 % of women. The adequacy of routine exams was low, observed in only one-third of pregnant women as well as vaccination for tetanus, adequate for approximately 50 %. The global adequacy was of 38.5 % for PHPN index and 31.7 % for expanded PHPN index. In pregnant women at term, the global adequacy was below 10 % for both indexes.
Conclusion Strategies to enhance the early diagnosis of pregnancy and initiation of prenatal care along with a better use of health services contacts for preventive and curative measures are necessary.

P1B09

Knowledge, attitude and practice of prenatal care providers regarding syphilis management in pregnancy in the municipality of Rio de Janeiro/Brazil

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Congenital syphilis is a public health problem in many countries, including Brazil. Despite available clinical guidelines to prevent mother to child transmission during pregnancy, missing opportunities for adequate management of syphilis during pregnancy still occurs.
Objectives To evaluate the knowledge, practice and attitudes of health care providers regarding syphilis management during pregnancy and to identify barriers to adequate care in public prenatal services in the municipality of Rio de Janeiro.
Methods Crosse-sectional study with prenatal care providers of public health services in Rio de Janeiro/Brazil. Doctors and nurses who provided individual antenatal care consultations were invited to participate in the study by answering a self-applied questionnaire. 102 prenatal care providers answered the questionnaire, corresponding to 70 % of eligible doctors and nurses identified at a sample of public health care services at the city. Uni and bivariate analyses were performed with SPSS 16.0.
Results Many barriers to adequate care were identified, mainly related to knowledge and familiarity with guidelines, STD counseling and patient and organizational context barriers. These barriers presented different distribution according to the type of service—hospitals, ambulatory services or primary health care units. Health care providers who reported access to guidelines and education activities related to syphilis presented better performance, but the differences observed were small. Obstetricians and nurses-midwives reported less difficulty in STD counseling.
Conclusion Adequate implementation of clinical guidelines can be affected by many types of barriers and their identification is essential to the formulation of proper interventions. Better access to traditional educational activities and guidelines had weak effects in improving adequate management of syphilis, urging new strategies do reduce mother to child transmission of syphilis.

P1B10

Pharmaceutical intervention in cardiovascular risk prevention

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Background Cardiovascular diseases (CVD) remain a major cause of death, morbidity and disability worldwide and also in Portugal. Community pharmacist intervention may have a positive impact on the reduction of cardiovascular (CV) risk.
Objectives This study aims to characterize the community pharmacy intervention in the prevention of CV risk, namely the type of services implemented, the opinions, behaviors and practices of pharmacists regarding the introduction of Pharmaceutical Care in CVD field.
Methods A cross sectional survey was carried out (December 2008–April 2009) in a national sample of Community pharmacies distributed by the five health regions of mainland Portugal. Data was collected by a structured self-administrated survey sent to the Community pharmacies, by mail, followed by a reminder sent via fax. Data analysis comprised descriptive and comparative statistics.
Results A total of 348 pharmacies replied the study. The response rate in the first phase, after sending the mail was 18.4 % but increased to 30.5 % after sending the reminder. In 322 cases it was a pharmacist, who completed the questionnaire—technical director of pharmacy (197), assistant pharmacist (78) and other pharmacist (47). All the pharmacies except one make point-of-care determinations in CV parameters—99.7 % monitored blood pressure (BP), 96.3 % total

cholesterol and 98.0 % glycaemia. 7.2 % had equipment to perform International Normalized Ratio (INR) to anticoagulated patients. Of the studied sample, 103 (29.6 %) had undergone at least one CV screening to the population in the last semester. The services reported as more frequently implemented were health information campaigns (77.9 %) and health educational programs (60.6 %) in the CV area. In the last 6 months 95.4 % of the respondents taught at least to a patient how to use a measuring blood pressure device for domestic use. About 40 % of the respondent pharmacies said they do or have done Pharmaceutical Care—of these, 74.6 % in diabetic and 50.0 % in hypertensive patients. Almost all the inquired pharmacists (94.8 %) consider pharmaceutical care a valuable service for pharmacies and patients, but only 1/3 have implemented the service. Low patient's adhesion and lack of time were the main barriers identified for the implementation of pharmaceutical care practice.

Conclusions According to study results, most of community pharmacies monitor the main CV physiological and biochemical parameters, however only a few has pharmaceutical care services ongoing in this area. Portuguese Community pharmacies seem to be effectively involved in the CV risk prevention, by performing regularly screenings, monitoring and CV patients' education.

P1B11

How the "Health for All" project is contributing to achieve a fair and healthy society in S. Tome and Principe

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Background The sustainability of any country or region depends upon the health conditions of its populations. In fact, a population that is not healthy is unable to generate wealth, with direct and predictable consequences on social and economic development, and indirect consequences upon territorial management and organization. So, it is crucial that actions be taken upstream, by ensuring the provision of a package of integrated services that include not only quality local healthcare, but also programs of community rehabilitation (sanitation, improved access to drinking water, etc.), education and family support. This has been the role of "Health for All" project (since 1988) in São Tomé and Principe (STP).

Objective To evaluate the impact of the "Health For All" Project and its sustainability, following the introduction of the "integrated healthcare services package", including prevention, primary healthcare, acute care, health education and environmental intervention.

Methods Several methodologies were used, namely Geographical Information System (GIS) methodologies. The development and implementation of a GIS project, included: (1) data collection, storage, management and manipulation of indicators and variables; (2) spatial analysis; (3) survey of health care services and location.

Results Barriers to health and healthcare access by the more vulnerable groups—rural population, women, children and elderly—were reduced, contributing to a change in social and territorial iniquities. The improvement of health outcomes in STP was the result of a major upgrading in healthcare delivery systems: "Health for All" transformed a centralized and financially dysfunctional healthcare service into a functional and sustainable preventive and primary healthcare 'delivery to all' system. In financial terms, when compared to the World Bank health package set for Sub-Saharan African countries, it is 25 % more affordable, while also offering a wider package of services (including measures to combat AIDS, malaria and tuberculosis), with extremely positive utilization rates.

Conclusion The development of partnerships for the provision of primary healthcare has shown great potential with regards to: (1) the introduction of rigorous, coordinated and decentralized management standards; (2) investment in training and skills-development for the local workforce, with a reinforcement of the Ministry of Health's institutional capacity; (3) the provision of incentives for the national workforce to stem the flow of labour abroad; (4) financial sustainability through cost recovery; (5) the rationalization of the emergency service at the archipelago's only hospital by reducing demand. STP can today be considered an example for other African countries.

P1B12

Nursing emotional competence profile: exploratory study in continued care national network

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Introduction The relevance of this study—the first empirical research (to our knowledge) in Continued Care National Network (RCNN) context—emerge to understand the role of emotions in workplace behaviour (Côté, 2005; Austin, Dore & Donovan, 2008; Liu et al. 2008; Barsade, Ramarajan, Burack, 2008), but here, with terminally ill people and great physical and psychological weakness. Recent scientific literature is exposing a significatly negative correlations between Emotional Intelligence (EI) and emotional exhaustion; and significantly positive correlations between EI and occupational identity (Geng; Li; Zhou, 2011), and the development of emotional competence (EC) skills in workplace context (Veiga-Branco, 2007, 2010, 2011). Authors agree with the relationship between emotional responses, therapeutic relationship and perception of job satisfaction (Li, 2004; Hart e Walton, 2010; Karim & Weiz, 2010).

Aim The main objective of this research, is to know the capacities levels in the Emotional Competence (EC) profile in a nurses sample of RNCC, and study the five capacities as predictive variables, in the their Emotional Competence's (EC) profile.

Method A cross-sectional survey was carried out in a probabilistic sample including 154 nurses in RNCC, about 22 % male and 78 % female, and aged between 26 and 30 years old. The instrument applied was "*Escala Veiga de Competência Emocional"* (*EVCE*), developed by Veiga-Branco (2009), with 84 items, in temporal Likert scale, from Never (1) to Always (7). Data was analyzed using descriptive statistics. Factor analysis was used to identify capacities. Additionally, a multiple regression analysis was conducted to determine the relationship between capacities and EC and to establish the capacities that were the strongest predictors of EC.

Results/conclusions Five competencies were identified in this study. The ranking of the correlations was as follows: Empathy ($r = 0.783$; $p < 0.01$), Emotions Management in Group ($r = 0.724$; $p < 0.01$), Emotions Management ($r = 0.760$; $p < 0.01$), Self-motivation ($r = 0.693$; $p < 0.01$), and Self-conscience ($r = 0.678$; $p < 0.01$). The results were according the American Society of Registered Nurses (2007) that emphasizes the need of emotional skills in nursing education. The Cronbach Alpha for Internal Consistency obtained for each of the capacities was as follows: Empathy (0.854), Emotions Management in Group (0.833), Emotions Management (0.740), Self-motivation (0.705), and Self-conscience (0.622).

The estimated regression model includes Empaty, Emotion Management, Self-Motivation, Emotions Management in Group, Self-conscience, that represents 97.4 % of the variance in EC. This result, not according the theoretical model (Caruso & Salovey, 2004), presents how much important is empathy in work settings.

P1B13

A toolkit for health inequalities in the northern region of Portugal

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Background Reducing health inequalities is a matter of fairness and social justice. This is one of the key messages of the Marmot Review and it applies to any country or region.
Objectives The main goal of this project is to build a toolkit that will allow not only to identify health inequalities, but also to analyze the impact of some interventions in the reduction of these inequalities.
Methods Life expectancy at birth was considered as the summary measure of health status. In order to identify Health Inequalities the relative life expectancy gap was used. The relative life expectancy gap is the absolute difference in life expectancy between a Reference and the Geographic Area under analysis, presented as a percentage of the Reference's life expectancy. The methods used by the Association of Public Health Observatories of England in the development of a "Health Inequalities Intervention Toolkit" were adapted by the authors, in order to determine the contributions of the different causes of death and age groups to these gaps. Also, life expectancy potential gains were estimated.

The life expectancy impact of future interventions is estimated as a percentage reduction in the main causes of death in specific age groups.
Results A tool that allows us to observe in 3-years periods the relative gap in life expectancy from 1996–1998 to 2008–2010, was built. For a specific 3-year period (2007–2009) the tool allows to view the breakdown of life expectancy gap by cause of death and by age at death. By introducing different possible percentage reductions in leading causes of death in specific age groups and estimating its impact on the improvement of life expectancy and the reduction of its relative gap, this tool allows to create different scenarios for decision-making.
Conclusions The construction of this toolkit will enable Public Health Services at the regional and local levels to identify health inequalities and to make prognosis through analysis of some interventions impact in reducing life expectancy gaps. It will also help decision-makers to promote more effective interventions.

This toolkit is dynamic and its diagnostic, prognostic and analytical power should be improved over time. This toolkit is the first one of its kind developed in Portugal.

P1B14

Outcomes of patients with STEMI according to type of reperfusion used in Andalusia (southern Spain)

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Background Proper management of patients with acute coronary syndrome with ST elevation (STEMI) requires immediate access to defibrillation and early institution of reperfusion treatment. Percutaneous coronary intervention (PCI) and fibrinolysis are the two alternatives of reperfusion for STEMI treatment. Although the European guidelines recommend PCI in the first 90–120 min from first medical contact, Spain is among the countries with the lowest percentage of PCI in Europe. Currently access to catheterization units is not homogeneous for the whole population, there are considerable differences in the implementation and use of diagnostic and therapeutic resources.
Objectives To evaluate differences in care provided to STEMI patients in terms of reperfusion treatment.
Methods A retrospective cohort study on 11.122 patients with STEMI treated at public hospitals in Andalusia included in the ARIAM registry for the period 2005–2009. We analyzed the epidemiological characteristics of patients, complications during hospital stay and mortality in terms of reperfusion strategy realized.
Results Of all patients analyzed, 4.470 (40.2 %) were treated only with thrombolysis, 1.025 (9.2 %) with primary PCI, 585 (5.35 %) with facilitated, 630 (5.7 %) with rescue PCI and 3,431 (30.8 %) were not carried out any reperfusion strategy. Of the patients treated with PCI, the number of some complications was higher than those treated with thrombolysis, 7.4 % of ventricular fibrilation versus 4.2 % ($p < 0.001$), infectious complications 30.2 versus 16.5 % ($p < 0.001$), malignant arrhythmias 8.4 versus 2.5 % ($p < 0.001$). However the percent of ventricular tachycardia was higher in treated with fibrinolysis than PCI 6.1 % 5.8 % ($p < 0.001$). Mortality was higher in patients treated with fibrinolysis (10.4 %) and non-reperfused (13.9 %) than PCI (9.7 %). This differences was statistically significant ($p < 0.001$). The results of the multivariate analysis, shows that factors associated with increased risk of mortality are age OR 1.062 [1.052–1.073], female sex 1.364 [1.105–1.685], diabetes OR 1.226 [1.001–1.501] and Killip class III-IV OR 9.329 [7.512–11.586]. Patients with an anterior localization were at higher risk of death than the inferior-posterior OR 1.365 [1.119–1.665] as well as the extension Q, OR 2.700 [1.885–3.866]. As for the reperfusion treatment, PCI acts as a protective factor. The risk of death was 1.215 times higher for patients being treated with thrombolysis and 1.377 for no reperfused patients.
Conclusions There are differences in complications and mortality of patients with STEMI in terms of reperfusion strategy applied.

P1B15

Factors related to health services use in Brazil, 2003–2008

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Background In Brazil, the last decade has witnessed significant improvement in living conditions, as well as expansion of health policies, both for primary care and for cancer control.
Objectives To analyze the use of health services in primary, secondary and tertiary health care between 2003 and 2008.
Methods This is a cross-sectional study using data from the Health Supplement of the National Household Sample Survey (PNAD), Brazil, for the years 2003 and 2008. To investigate the use of health services, the following information was considered: general admission and hospitalization in the Unified Health System (SUS), screening for cancer of the cervix and for breast cancer, and dental appointments. Categories (use/no use) were broken down according

to socioeconomic and demographic variables, as well as proxies for urbanization and access to health services.
Results Between 2003 and 2008 the proportion of hospitalizations for people with health insurance decreased, and there was an increase in the proportion of admissions in SUS for those with insurance. For all strata of sociodemographic variables, access and urbanization, there were fewer people who had never been to the dentist, and for most, the dentist consultation occurred more than 2 years before the survey. The highest percentages of recent attendance (i.e. less than 2 years) were those for children and the elderly, with lower income, and colored brown, black or indigenous. The proportion of women undergoing mammography increased, especially those in 50–69 years age range targeted by the national screening policy. This increase occurred especially for white, brown and black, with health insurance, and for those who attended a physician in the previous year. As regards screening for cervical cancer, the proportion never screened has also been reduced, especially for elderly women. Increase coverage occurred more than 3 years previous to the survey, among the less educated, with lower income, white, brown and black, without health insurance, not living in a metropolitan area and not attending a physician in the previous year.
Conclusion The coverage of basic health care has increased, especially for the underprivileged, students and for the target population of national policies. In secondary care, represented by mammography, the increase appeared to be associated with the increased standard of living of the population in the period. Hospital admissions, on the other hand, there were increasingly covered by SUS, for those both with or without health insurance.

P1B16

Determinants of access to mammography in Brazil: what has changed between 2003 and 2008

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Background Mammography is the primary screening test for breast cancer, the most common among women worldwide. In Brazil, since 2004, mammography screening for breast cancer is recommended every 2 years for women aged 50–69 years.
Aim To analyze the effects of population and geographic characteristics on the chances of undergoing mammography in Brazil.
Methods Cross-sectional study using data from the Health Supplement of the National Household Sample Survey (PNAD), Brazil, 2003 and 2008. Patterns of mammography in women aged 25 or older were analyzed through prevalence ratios, and in women aged 40 or more, through multivariate logistic regression, using demographic, social and health services use indicators, as well as including the place of residence and geographical distribution of supply. Statistical analysis was performed with the software R and the functions of libraries SOAR and survey, to correct for complex sample design.
Results In 2008, approximately 52.6 % and in 2003, 67.4 % of women 40 years or older reported having ever undergone a mammogram. Compared with women of 40–49 years, those aged 50–69 were more likely to have been screened, and those aged 70 or older had lower odds. The chance increase with family income, schooling, being married and having consulted a doctor. Living in urban or metropolitan areas—places of major concentration of health services—increases the odds, as does having health insurance. Though these patterns were similar during the period analyzed, there was significant improvement of access and use for all subgroups, regardless of the availability of health insurance. The distances traveled by women who had exams funded by the Brazilian Unified Health System (SUS) in 2008 discloses the usual pattern: greater distances result in less use. The target age range of national policy saw increased coverage of screening.
Conclusions There is evidence of a decrease in inequalities due to income, but disparities related to regional variations were not lessened. Improved access seems related to public policies that increased income and social inclusion, and to the increased supply of SUS funded examinations, rather than to the growing supply of mammography units.

P1B17

A regional public health system for rare diseases

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Background In Europe it is estimated that 6 or 8 % of the population is affected by 5,000–8,000 distinct rare diseases for a total number of people affected between 27 and 36 million. European Union defines rare diseases when they affect not more than 5 per 10,000 persons in Europe. These patients are often isolated and vulnerable and needs consistent public health interventions which involve health care service at Regional, National or European level.
Objectives The Tuscany Region government, following the national recommendations on Rare Diseases (RDs) reported in the legislation DM 279/2001 and to answer to the needs of RD community, developed an innovative public health system with the aim to plan health care interventions on patients needs, advancement in diagnosis, therapeutic protocols/guidelines, social health care services, clinical and social research.
Methods Adoption of two official acts by Regional Health Authorities in favour to RDs: 2004, Appointment of a Steering Committee of Experts (DGR 570/04) and accreditation Centres of Reference and institution of the Regional Reference Network (DGR 1017/04).
2005, Institution Registry of Tuscany on Rare Diseases (RTMR) in collaboration with the Regional Forum of Patients' Organisations.

The Steering Committee includes 17 members, plus 2 representatives of the Regional Health's Department, 1 representative of the Regional Forum of Patients Organisations and 2 representatives of the RTMR. The registry collects data on patient identifiers and demographics, medical history, health status.
Results To date, the RD regional health system includes 184 active Reference Centres which cover the entire Region. Among 21,579 patients 634 different Rare Diseases were registered by RTMR, concerning Nervous system and sensory organs (30.8 %), congenital anomalies (20.7 %), endocrine glands and metabolism (18.5 %), blood and haematopoietic organs (8.0 %), osteomuscolar and connective tissues (7.6 %), tumors (6.5 %), circulatory system (3.9 %), skin and subcutaneous tissue (2.4 %), digestive system, genitourinary, infectious diseases, conditions of perinatal origin (<1.0 %). All the 184 Reference Centres are part of Regional Reference Network on Rare Diseases which is driven and coordinated by the Steering Committee of Experts which include also patients' representative.
Conclusions The Regional Public Health System established in Tuscany Region represents a valuable model where the patients play

a central role to maintain a long lasting efficient and sustainable public health system.

Poster Topic 1C. Occupational health & Health education

P1C01

Insufficient sleep duration and weight gain among registered nurses

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Summary justification of the topic relevance Weight gain and, consequently obesity, are strong risk factors for cardio-metabolic disease. Some epidemiological and physiological evidence has suggested that short sleep duration is associated with obesity. However, the generalizability of these results is unclear. In the context of studies on sleep and metabolism, shift workers may be particularly important, as this is a group at risk as regards short sleep duration.
Backgroud Sleep restriction tends to be accentuated among shift and night workers. Epidemiological and physiological studies suggest that short sleep duration has metabolic consequences associated with weight gain and obesity.
Objetive To investigate the relationship between sleep features (duration and deprivation) and weight gain among registered nurses, considering possible gender differences.
Methods This cross sectional study was carried out at 18 public Brazilian hospitals in 2010–2011, comprising a total of 3,229 registered nurses. They completed a comprehensive questionnaire with data related to sociodemography, professional work, sleep duration, as well as health habits and lifestyles. Workers were classified according to sleep duration into those who slept <7 h/night and those who slept 7–8 h/night. As to sleep deprivation, nurses were classified into those who did not report sleep deprivation (they slept enough to feel recovered) or those who slept less than they would like to feel recovered. These two variables were tested in relation to the association with reported weight gain since they were 20 years old up to data collection: those who reported gain up to 8 kg compared to those who gained more than 8 kg. The analyses were stratified by sex, including age, physical activity, smoking habits, number of jobs and work schedules as potential confounders. Logistic regression analyses were performed and the associations were estimated by adjusted odds ratios and respective CI (95 %).
Results The sample included 87.3 % of women and age mean was 39.9 (SD = 10.0) years. Most participants (87.2 %) were engaged on 2 or 3 jobs; and they (60.9 %) worked at daytime and at night shifts considering all jobs. Short sleep duration was more frequent among men (58 %) compared to women (52.4 %). However, 52.5 % of women reported sleep deprivation whereas 39.7 % of men did it. Among women, high chances of reporting weight gain of more than 8 kg were associated with sleeping less than 7 h/night and to not feeling recovered (OR = 1.25; IC = 1.03–1.51 and OR = 1.40; IC = 1.10–1.83, respectively), after adjustment by confounders. However, no significant association between insufficient sleep duration and weight gain was found for men.
Conclusion The findings suggest that insufficient sleep seems to play a role for weight gain among female shift workers but not among men. Lifestyles and work aspects may have different effects on men and women that could explain these results. Further research is needed to determine whether interventions aimed at increasing sleep may be useful in combating obesity.

P1C02

Factors associated with repeated work-related injuries in an Italian region

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Background Factors associated with risk of repeated work-related injuries have not been sufficiently studied.
Objectives To evaluate incidence rates of experiencing repeated injuries in an Italian region taking into account occupation and individual characteristics of workers.
Methods We analysed 275.556 work-related injuries occurred to workers of industries, services, craftsmanship, aged 25–55, with a permanent disability level ≤35 % (to exclude severe injuries), in Lazio region (Italy) in 2000–2010, gathered by Italian Workers' Compensation Authority (INAIL) database. We selected a cohort of 157.339 workers with a "first" injury (previous 2 years injury-free), evaluating the occurence of further accidents within 2 years in the same occupation, taking into account occupational sector and individual factors (age, gender, nationality, disability level, severity of first accident). Incidence rates of repeated work-related injuries were calculated through Poisson regression models.
Results Mean age of the 157.339 workers at first injury was 38.8(SD 8.6); 70.5 % were man, 9.8 % were foreigners; mean disability level was 0.8 %(SD 2.6), mean number of absence-work days were 31.5 (SD 45.1). We observed 10.943 repeated work-related injuries in the same occupation. Compared with workers of Utilities-Services, we found higher Incidence Rate Ratio (IRR) of repeated injuries among Health Services workers (IRR = 1.26;95 % CI: 1.18–1.35) and lower IRR for workers of Engineering (IRR = 0.91; 95 % CI: 0.83–0.98), Wooden Industry (IRR = 0.80; 95 % CI: 0.66–0.97), Chemical Industry(IRR = 0.70; 95 % CI: 0.59–0.82), Textile Industry (IRR = 0.68; 95 % CI: 0.50–0.92), Trade (IRR = 0.67; 95 % CI: 0.62–0.73), Energy-Water(IRR = 0.66; 95 % CI: 0.53–0.83), Construction (IRR = 0.61; 95 % CI: 0.57–0.65), Mining (IRR = 0.56; 95 % CI: 0.36–0.88), Electrics (IRR = 0.51; 95 % CI: 0.39–0.67). We found a lower IRR also for women (IRR = 0.74; 95 % CI: 0.71–0.78), 1 year increase of age at first injury(IRR = 0.98; 95 % CI: 0.98–0.99), foreign workers compared with italians (IRR = 0.71; 95 % CI: 0.66–0.77), 1 % disability level increase (IRR = 0.63; 95 % CI: 0.62–0.64), for 1 absence-work day decrease (IRR = 0.98; 95 % CI: 0.98–0.98).
Conclusion We compared economic activity sectors with Utilities-Services, because 40 % of injuries occurred in this sector. The unexpected results of lower IRR of repeated work related injuries in industrial sectors (including Construction, Mining) could be explained by a higher propensity to change occupation after first injury in industrial sectors and/or a higher probability of injury charges underreporting in industrial sectors, because smaller companies' size and different propensity to look after to health care. The hypothesis of underreporting is supported by finding that Health Services workers had the highest IRR of repeated work-related injuries. Furthermore, we also found a lower IRR of repeated work-related injuries among foreign workers, a group with a risk of underreporting probably more frequent than italians. As expected we found a lower IRR for women, probably because employed in less dangerous occupation, and for older workers probably because more experienced.

P1C03

The role of the school in the promotion of physical activity in Italian school-children

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Background Physical activity, both as formal sports and free play, has an important role in the cognitive, physical and relational development of the child and also contributes to the maintenance of good health and ideal bodyweight. For these reasons, it is suggested that children should participate in physical activity (including that at school, sports training and active recreation) for at least one hour per day. The Italian child surveillance system, OKkio alla SALUTE, has collected data relating to the physical activity of children aged 8–9 years, and the contribution made by the school.
Objectives To investigate the association between the physical activity of children and their family background, and to assess the contribution of the schools.
Methods The survey has been conducted on a representative sample of children from the 3rd year of primary school using a standardized procedure. The children were classified as "active" if in the day before the survey they had participated in physical activity at school, or sports or played outside. The study uses multiple logistic regression to investigate the effects of environmental, familial and scholastic variables on the risk of being classified "active". The analysis uses appropriate methods to take account of complex sampling scheme used to collect the data (stratified cluster sample design and representativeness at local or regional level).
Results In the 2010 survey, 42,549 children participated with only 3 % who refused. The percentage of children not classified as active was 18.4 % (95 % CI: 17.5–19.3 %). The regression analysis revealed a statistically significant association with the educational level and the citizenship of the parents. The odds ratio (OR) associated with high school education was 0.88 (95 % CI: 0.80–0.97), while for a university degree the OR was 0.84 (95 % CI: 0.73–0.96). For children of foreign parents the OR was 1.22 (95 % CI: 1.05–1.41). The presence of initiatives to improve physical activity in the schools was protective, OR = 0.74 (95 % CI: 0.61–0.90), as was the inclusion of two hours per week of physical education in the children's timetable, OR = 0.83 (95 % CI: 0.72–0.95).
Conclusion The data collected in 2010 has revealed that about 1 out of 5 of Italian children aged 8–9 is not physically active, especially in the South of the country. The schools can make an important contribution to promote a healthy lifestyle, including adequate physical activity, in Italian schoolchildren.

P1C04

High prevalence of cardiovascular diseases among employees younger than 40 years in pulp and paper industry in Northwest Russia

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Background Working conditions in pulp and paper industry are often deleterious for health. In Russia, more than 40 % of workers employed in pulp and paper industry reported unsatisfactory working conditions in 2010. Pulp and paper production workers are exposed to a complex mixture of chemicals and physical factors. Arkhangelsk pulp-and-paper mill (APPM) is the largest pulp-and-paper mill in Northwest Russia.
Objectives To study prevalence of cardiovascular diseases among workers younger than 40 years old employed at the APPM.
Methods A cross-sectional study. Altogether, 3,599 workers were examined during 2008–2009. Prevalence ratios and Chi-square tests were used to compare a prevalence of cardiovascular diseases (ICD-10: I_{00}–I_{99}) among workers in departments with specific chemical and physical exposures and among workers of maintenance department, which was selected as a reference group.
Results The workers in from the departments of paper, cellulose, wood-stock, cane fiber boards, cardboard, mechanical-repair and thermal power plant are exposed by dust, methylmercaptane, sulfur substances, hydrocarbons, chloride-bearing wastes and other chemical pollutants, noise, high and low temperature, and generally hard labor. The workers of maintenance department are exposed only by electromagnetic radiation from office equipment. The prevalences of cardiovascular diseases among workers in age group before 40 years old in thermal power plant (18.9 %; $p < 0.001$), departments of cane fiber boards (25.0 %; $p < 0.001$), cardboard (16.6 %; $p = 0.001$), cellulose (16.1 %; $p = 0.004$), paper (12.0 %; $p = 0{,}020$), wood-stock (16.3 %; $p = 0.001$) and mechanical-repair (13.9 %; $p = 0.017$) were higher compared to the workers of maintenance department (6.6 %). Keeping in mind healthy worker effect the effect of hazardous working conditions in the abovementioned production shops may be even greater than the data suggest.
Conclusions Considerable differences in the prevalence of cardiovascular diseases were observed among workers younger than 40 years old in several production shops of the APPM compared to the administration of the APPM suggesting that hazardous working conditions may contribute to the development of cardiovascular diseases at young age and thus warranting further studies with further going aim to develop strategies to protect health of employees in pulp-and-paper industry in Russia.

P1C05

Effectiveness of educational interventions to improve antibiotic use in hospital settings

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Background Resistance to antimicrobial drugs is one of the main concerns to World Health Organization. It's a problem that has been evolved in the last decades and has becoming an important issue in public health. The increased use of antibiotics worldwide has a direct relation to the emergence of bacterial resistance, an important factor of morbidity, leading to the growing of costs in health. More than 30–50 % of the antibiotic use in hospitals is unnecessary or inappropriate.[1]
Objective To evaluate the effectiveness of educational interventions in pharmacists and physicians to improve antibiotic use in hospital settings.
Method It was conducted a search of the MEDLINE-PubMED scientific database from January 2001 through December 2010, and in addition, other references cited by papers retrieved, were added. The search strategy was designed to identify relevant studies addressing antibiotic resistance and the prescribing/dispensing habits of health care providers (physicians and pharmacists) pre- and post-educational interventions.

Results Our search retrieved twenty-six papers, and just in six, authors studied the efficacy/effectiveness of one or more interventions versus no intervention, using a control group. Whereas most interventions were concentrated on physicians, four studies included a multidisciplinary interventions targeting physicians and nurses, patients (one study), and in one case, solely pharmacists. Some studies identified the patients targeted, being elderly in five papers and children in three. While eight studies used passive interventions, all the others used active and/or passive interventions. Twenty-one papers reported positive results for all outcome measures; four papers reported some outcomes as positive and others as positive but statistically non-significant; and one study reported negative results. In eight studies authors analyzed clinical outcomes to assess whether a reduction in antibiotic use might cause clinical alterations, including length of hospital stay, and mortality, morbidity and/or readmission rates.
Conclusion Although papers analysed presented very heterogeneous study designs, it is possible to conclude that educational interventions, in health professionals, revealed to be effective to improve antibiotic use in hospital settings.

Reference

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P1C06

SCALING UP: participatory health research through healthy universities

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When it comes to Health Promotion Research, different contexts influence efficiency of prevention models, including charisma and abilities of researchers themselves. Participatory Health Research (PHR) is gaining recognition internationally as a valid alternative to experimental designs. However, lack of commonly recognized definitions and methodological standards has limited the use of PHR on a large scale.
Objectives Within SCALING UP project, we will use PHR methods in various cultural contexts, practice settings and intervention frameworks in order to systematize use of PHR for mobilizing youth on a large scale regarding issues related to healthy lifestyles. The aim is to develop internationally recognized standards for PHR in this field; evaluating quality of community-based research practice on emerging fields of youth health research with regard to sustainable impacts on science practice, health education and citizenship.
Methods Multicentre research, the development of PHR projects, analysing their implementation, structural requirements, outcomes, weaknesses and potential applications. SCALING UP aims to be a PHR model to activate university communities in addressing the problems faced by youth, through using PHR and Community Mobilization strategies. It will be applied to 4 universities in Portugal, Cape Verde. Through the consortium of IREFREA and UICISA-E/ESEnfC we intend to draw upon knowledge from international experts on empowerment leadership and PHR to expand on current quality frameworks of healthy settings.
Results Result will be twofold: a framework to develop new, transnational social intervention tools on youth health and making measurable contributions to improving the health promotion practice within participating university communities. During the first year, the institutions that have joined the SCALING UP have created a "seed group" of teachers(17), students(15), staff(5) and community leaders(11). They participate at training course (30 h). Those "seed groups" began mobilizing its community to measure lifestyles and promote dialogical procedures and creative ways to make community intervention.
Conclusions All four "seed group" recognize the link between peer education and participatory action research as strategies that will achieve the objectives of a health promoting university and believe that to engage youth in community development projects will be an asset to reduce the gap between young people of different social status, allowing students to models and also have social contact and support socially excluded communities. Participatory action research seems to be a strategy that reconciles the different dimensions of the mission of institutions of higher education: training, research and community service.

P1C07

HyDia project: evaluation of a tailored intervention among medicated patients with uncontrolled hypertension, from Lisbon primary healthcare centers

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Background Hypertension is the highest attributable risk factor for cardiovascular disease and its prevalence is very high in Portugal. Despite the availability of effective treatments, the high blood pressure (BP) control in clinical practice is not optimal, with the lack of adherence being one major cause. According to the Health Belief Model, patients only consider healthy behaviors if the perceived benefits compensate the perceived difficulties, especially in chronic diseases. Health education plays an important role to capacitate patients for right choices but primary care physicians often have inadequate time during clinical appointments to educate patients about the complexities of chronic disease management. On the other hand, there is a lack of tailored but structured interventions in primary care and an increased need to implement effective interventions, in Portugal.
Objectives To create and evaluate a tailored intervention that combines health education and behavioral strategies, to improve patient's knowledge on hypertension and BP control.
Methods A randomized controlled open trial was designed to evaluate a tailored intervention on BP control among uncontrolled ($\geq$ 140/90 mmHg) patients, aged 40–85 years, followed in Lisbon primary healthcare. We created an initial questionnaire to characterize patients according to socio-demographic variables, hypertension characteristics, adherence to treatment, comorbidities, lifestyle, social support, beliefs and knowledge (hypertension and hypertensive drugs). Then, we defined an algorithm relating possible answers with knowledge needs that would guide a face-to-face educational session, ministered by trained pharmacists. Patients are asked to fill in a diary with both registries: blood pressure measurements and hypertensive drugs intake, for 3 months. Once a month, pharmacists will phone to patients, answering questions about the disease and medication or reinforcing the patient-physician communication. To assess the

effectiveness of the intervention, changes on patients' knowledge, BP control, systolic BP and adherence to treatment will be evaluated ($\alpha = 0.05$).

Preliminary Results Six primary Healthcare units of Lisbon accepted to participate in the project. From the eligible hypertensive patients, a random selection of 280 will be invited to the study (assuming 60 % of participation rate). Subjects will be allocated 1:1 into interventional or control group. According to evidence we expect to improve the patient's knowledge about their hypertension and cardiovascular risk, and to improve behaviors related with lifestyle and medication adherence, and therefore, improve blood pressure control.

Conclusions We created a tailored intervention that, after its evaluation of effectiveness, may help the management of hypertension at primary care level and be a solid foundation for further investigation in health education.

P1C08

Epidemiology of occupational accidents in five Portuguese hospitals between 2000–2010

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Introduction hospital workers perform their activity in terms of potential professional risk, namely accidents at work. These setting a public health problem by the individual, social and economic repercussions that entail.

Objectives Analyze the epidemiology of occupational accidents in five Portuguese hospital units between 2000 and 2010 and examine the variables that correlate with work absenteeism.

Methods retrospective cross-sectional epidemiological study for the period of January 1, 2000 and December 31, 2010. The information was obtained through anonymous survey for accident notification 3,382 workers. Data collection was performed by one of the researchers, after authorization of the Board of Directors between March and September 2011 on working days between the 09:00 and the 17:00 h in occupational health service.

Results During the study period were reported 3,382 accidents. The highest prevalence was found in females (82.9 %), in the superior health technicians (57.8 %) followed by the medical auxiliaries (32.9 %), in the age group 18–29 years (30 %) and undergraduate qualifications (58.5 %). On workers with more than 10 years service time (46.2 %) in naming scheme (64.7 %) and the practice shift schedule (82.6 %). The highest accident rate occurred in internment (40.7 %), internal-medicine service answering for 13.7 % followed by the emergency department (13.1 %). On average the accidents occurred at 12.8 h (±4.6 s), on Monday (18 %) in the first two working days after weekly rest (56.8 %) and between the 1st and 3rd hour of work (47.1 %). The main cause of accidents was the stinging needle/hack per object (51.1 %) and the agent of injury tools/utensils (49 %). Resulted in inability 31.9 % and the number of days lost was 45,817. The upper limbs (55.3 %) were the most affected body part injured and the most frequent injury was wounds (44.9 %). Through the Pearson correlation, we see that the number of days lost is positively and significantly correlated with the time of service, the type of injury and age and negatively with the academic qualifications, the number of hours completed by the accident, the day of the week and the year.

Conclusions labour absenteeism increases with age, time of service, low academic qualifications and in the early hours of work. The data provide scientific support to implement preventive measures and health protection of workers in hospitals.

P1C09

Promoting sexual and reproductive health of students in vocational education: a study with Portuguese youth

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Framework When attempting to understand adolescent sexuality, we must consider the biological aspects, such as genotype and social aspects, such as family, group, society and culture it belongs to. The challenges faced by adolescents in this area are many. The onset of sexual activity can be considered a moment of great impact on their life.

Objectives To assess the relationship between sociodemographic variables and attitudes towards sexuality, the motivations for having or not having sex, organizational culture of family and knowledge about contraception.

Methods This is a quantitative study descriptive and explanatory cross-correlated with a non-probability convenience sample of 809 students attending vocational schools in Portugal. The evaluation protocol includes sociodemographic questionnaire, the scale of attitudes towards sexuality (Nelas et al. 2010) and the scale of motivation for having or not having sex (Leal; Maroco, 2010), and the inventory of organizational culture of the family of (Nave 2007).

Results The sample consisted of 809 adolescents, 42.4 % female and 57.6 male, aged between 14 and 23 years. 84.5 % are Portuguese, 12.1 % are African. 61.6 % live in the village and 14.6 % live in the city. 83.2 % live with their parents. 64 % considers that there isn't an appropriate age to begin sexual relations, and yet believe that this age should be higher in women than in men. 63 % of young people refer to already having their first intercourse, 65 % boys and 60.3 % girls. The minimum age was 12 years for girls and for boys 10 years and maximum 20 years for girls and 21 for boys, and 9.6 % reported that they felt pressured by their boyfriends and friends to commence having sexual activity. 79. 4 % reported having easy access to family planning services. The area of the course they attend influences attitudes towards sexuality and the desire to have or not have sex and boys have more motivation to have sex than girls. 30.8 % consider having a family with strong organizational culture. The attitudes towards sexuality are not influenced by nationality.

Conclusion Understanding the attitudes towards sexuality of young people means knowing the variables that may influence them, such as family culture, the area of education, age and gender, because they interfere significantly in the same, being determining indicators in promoting sexual and reproductive health.

P1C10

Prevalence of environmental tobacco smoke exposure among Portuguese children at home and in the car

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Background Children's exposure to Environmental Tobacco Smoke (ETS) is associated with serious health problems, such as increased risk of acute lower airway infections, greater likelihood of recurrent respiratory infections, increased risk of ear infections induction and exacerbation of asthma and pulmonary emphysema. This exposure occurs mainly at home and in the car.
Objectives To describe the prevalence of Environmental Tobacco Smoke (ETS) exposure among Portuguese children at home and in the car, by regions.
Methods A descriptive cross-sectional study was carried out in the 2010/2011 school year on a sample comprising 2,999 4th grade students aged 9.50 ± 0.68 years old (mean $\pm$ SD). Size sample is representative of this population and includes cities in the regions of Northern Portugal, Centre, Lisbon, Alentejo, Algarve, Madeira and Azores. Data on parental smoking habits at home and in the car was gathered through a self-report questionnaire filled out at school by children.
Results In the total sample, 15.8 % [IC 95 %, 14.5–17.1 %] of children are daily exposed to ETS at home and 18.1 % [IC 95 %, 16.7–19.5 %] are occasionally exposed by at least one of the inhabitants. Among children who travel by car (n = 2,810), 4.4 % [IC 95 %, 4.1–5.7 %] state their parents smoke regularly and 24.3 % [IC 95 %, 22.7–25.9 %] they smoke occasionally at car. Analysing prevalence of ETS exposure at home by region, the highest prevalence of daily exposure is found in Lisboa (21.1 % [IC 95 %, 18.5–23.7], followed by Azores (15.3 % [IC 95 %, 9.5–21.1]) and the North (14.4 % [IC 95 %, 12.4–16.4]. The lowest prevalence of daily exposure is found in Centre (8.5 % [IC 95 %, 4.2–12.8]). The highest prevalence of daily ETS exposure in the car is found in Algarve (10.1 % [IC 95 %, 3.8–16.4]) and the lowest in the North (3.7 % [IC 95 %, 2.3–5.1] and in the Centre (3.7 % [IC 95 %, 0.2–7.2]).
Conclusion Children exposure to the ETS in Portugal is high. Parents and other inhabitants usually smoke at home and often in the car. These data indicate that preventive interventions in this field should constitute a priority for health education in schools and for health professionals.

P1C11

Evaluation of the impact of road traffic interventions on traffic-related occupational injuries in Spain, 2004–2010

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Background Recent decrease in the incidence of both occupational and traffic injuries in Spain has taken on a higher relevance of traffic-related occupational injuries.
Objectives To evaluate the impact of two road traffic interventions (new penalty points against driving license in 2006 and the reform of the Spanish penal code in 2008) on traffic-related occupational injuries in Spain between 2004 and 2010.
Methods Pre-post intervention study with comparison group, incidence trends in traffic-related (during commute and during working hours) and non traffic-related (at work place) occupational injuries were compared at three different time periods: before (2004–2005), between (2006–2007) and after (2008–2010) the interventions. Estimated rate in the middle of each period and quarter percentage change (with 95 % confidence interval (CI95 %)) were assessed by negative binomial regression models.
Results Around 10 % of total non-fatal and 35 % of total fatal occupational injuries were related to traffic. Among commuting injuries, these percentages increased to 40 % in non-fatal and 70 % in fatal, and during working hours the percentages increased to 60 % for non-fatal and 70 % for fatal. The quarter percentage change for traffic-related non-fatal occupational injuries during working hours was 0.5 (95 % CI: −1.1; 2.2) between 2004 and 2005, 3.6 (95 % CI: 1.9; 5.2) between 2006 and 2007, and −1.6 (95 % CI: −2.4; −0.7) between 2008 and 2010. For non-fatal occupational injuries during commute related to traffic the quarter percentage change was 1.2 (95 % CI: −0.6; 3.1), 3.5 (95 % CI: 1.6; 5.3) and −1.6 (95 % CI: −2.5; −0.6) between 2004 and 2005, 2006 and 2007, and between 2008 and 2010, respectively.
Conclusions These preliminary results show that road traffic interventions have not had any effect on traffic-related occupational injuries in Spain during this period.

P1C12

Newspapers and health information: are they reliable?

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Background The contemporary news media are very influential in shaping discourses on various topics about health. Few studies have examined the health stories in terms of coverage whether they reflect reliable information for the community.
Objectives This study aimed to analyze the contents of two daily newspapers' stories to determine their approach and news reliability.
Methods This descriptive study analyzed the contents of two daily newspaper's news about health. Newspapers are randomly selected from the five largest (according to circulation figures) Turkish daily newspapers. One week is chosen randomly from each month for the 2011 issues. A structured form is used for the content analysis-column length, space occupied, photograph use, page placement and source of information.
Results A total of 486 health related news (64.4 %-Hürriyet and 35.6 %-Zaman) from 168 issues (from main newspaper and supplements) were examined. Median number of these news were three per journal article (range 1–6) and 22.6 % of them were at the main newspaper. The articles about health were published usually during autumn (30.0 %) whereas minimum at summer (18.5 %) and especially at week days (62.1 %). Most of them had visual material (86.4 %) and coloured (87 %) where 90 % of the visual material were pictures. News which were descriptive or provide general information (51.4 %) were the major group while diagnostic/therapeutic news (37.2 %) were the minor and 93.2 % of the health news located at the health columns were on general health. The origin/source of the stories were indicated 80.3 % of Zaman-Newspaper this percentages for Hurriyet-Newspaper was 76.4 % and no difference was found between these newspapers ($x^2 = 1{,}026$ $p = 0{,}311$). Only 13 % of Zaman's stories and 22.8 % of Hurriyet's stories were expert views and less than 10 % of the news used evidence-based-medicine-source.
Conclusion The quality and reliability of the health related stories mainly depend on their intelligibility and source. According to our findings these newspapers are not very reliable source to provide information on health to the community.

P1C13

Professional morbidity analysis in the northern region of Portugal

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Background Professional morbidity is defined as the rate of patients with specific occupational disease in respect of a total population studied, in a certain place and at any given time, being considered a very important measure in the process of health planning and health services planning. Understanding the weight and distribution of professional diseases is essential for an adequate prevention of occupational diseases and the adoption of the necessary strategies to improve professional environments in order to reduce the workers' health risks and hazards.
Objectives The main objective of the study was to describe and analyze data from the epidemiologic surveillance system of professional morbidity in the Northern Region of Portugal, in order to contribute to identifying and establishing intervention priorities, and to support decision making procedures in public health.
Methods All available data was obtained from the surveillance system of the Department of Public Health of the Regional Health Administration. This data corresponds to confirmed incident cases of professional diseases occurred in active workers from all the 109 councils of the Northern Region of Portugal, from 1999 to 2010. A characterization of professional diseases was done according to different variables—sex, age, profession, council of residence, business activity and council where it is implanted, code of professional disease (national classification and DIC-10) and year of the disease onset. Statistical tools were used to calculate risks, as well as standardized morbidity rates and ratios. We also used geographic information software (ArcGIS) for mapping.
Results 3,353 cases of professional diseases were notified during the study period, with an average incidence of 279 new cases per year. Male workers were affected about twice as much than female workers. Professional diseases caused by physical agents (such as musculoskeletal diseases and professional hearing impairment) were the most prevalent ones, corresponding to 66.8 % of all notified cases. During the 12-year period, only 3 cases of professional cancers and 25 cases of diseases caused by biologic agents (two-thirds of which were tuberculosis—68.0 %) were notified.
Conclusions According to international publicized statistics, these results reveal a sub-notification of professional diseases in the Northern Region, mainly of work-related cancers and of diseases related to biologic agents. Regardless of the reasons, the underreporting of professional diseases is an obstacle to knowing the real dimension of occupational morbidity, thus limiting the adoption of accurate preventive measures.

Poster Topic 1D. Pharmacoepidemiology

P1D01

Purchase of medicines for weight loss: an analysis about the behavior of the Brazilian population

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Background According to previous publications, Brazil is one of the biggest consumers of medications for weight loss treatment. The use of these medicines without a medical superintendence can be very harmful to health, aggravating or even causing cardiac diseases.
Objective The main objective of this study to evaluate the consumption of weight loss medicines by the Brazilian population based on data of the Household Budget Survey (HBS) 2002–2003. We also intend to analyze the socioeconomic profile of its consumers as well as the concomitant use of other medicines.
Methods This analysis is accomplished with data from the Household Budget Survey (HBS) 2002–2003, a cross-sectional study conducted by the Brazilian Institute of Geography and Statistics (IBGE) and held between May 2002 and May 2003. It involved interviews of a sample of 48.470 households. We performed a complex sample data analysis for the evaluation of the costs of the medicines used for weight loss and to describe the socioeconomic profile of its users. We performed a logistic regression in order to analyze the link between the consumption of weight loss medicines with other medications.
Results 0.4 % of the Brazilian population has used some kind of weight loss medications during the period of the study, with an average annual expense of US$ 161.19 per year. Among women the annual average expenses were US$ 177.12 [95 % confidence interval (CI) US$ 152.98–201.32]. The users are more likely to be women, 71,6 % (95 % CI 64.0–78.1), young (69,4 % under 45 years old) and only 20.9 % were obese (95 % CI 16.2–26.7). When comparing the consumption of weight loss and psychoactive drugs we had an OR of 1.55 (95 % IC = 1.08–2.21).
Conclusion Most of the purchase of weight loss medicines in Brazil is made by non-obese persons. The major consumers of these medicines are young women with normal weight or just overweight. There's also an important link between the consumption of weight loss medicines and other psychoactive substances. The consequences on the use of this kind of drugs when not indicated (for obesity) may cause major health problems on the patient.

P1D02

Adverse drug events identified by triggers tool in Brazilian university hospital

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Background The use of drug leads patients to benefits, but it is not free of risk, because this use can cause to adverse drug events (ADE). The ADE is one of the most common causes of harm to patients resulting from medical interventions, especially in hospitalized patients.
Objectives This study aims are identifying and characterising ADEs that occurred in inpatients in a public university hospital, and determining associated factors to them. Methods. The ADEs were identified by retrospective chart review and by the application of triggers tool proposed by the International Healthcare Improvement (IHI), adapted to the local reality. The simple charts random sample was selected of patients older than 15 who were discharged between January and July, to 2008. The obstetric patients were excluded. The triggers identification in the chart was done by pharmacy and medicine students. The charts with triggers were reassessed by a pharmacist and a nurse to verify the occurrence of ADE. The Naranjo algorithm was used to classify the events.
Results Two hundred and forty hospitalization were studied which age average of 50.8 (± 20,0) years old. Approximately 64 % were males. 495 triggers were identified in 177 chart (73.8 %) and 44 ADE in 35 patients (14.6 %). This results in 18.3 patients ADE/100 patients. The identified events vary depending on the severity levels

from minor ones, such as vomiting, to serious ones, such as prolonged hypoglycemia. Seven patients had more than one event, two of them had three. About 52 % of the ADEs were classified as possible and 46 % as probable. The drugs more often involved are nalbuphine (5), heparin (4) and ranitidine (4). There was a positive association between the use of 10 drugs or more with the occurrence of ADE (OR = 3.52; 95 %CI 1.32, 9.38) and a hospital stay longer than 10 days (OR = 3.18; 95 %CI 1.39, 7.30).
Conclusions A parsimonious drug prescription may reduce the occurrence of ADEs. The sort of the event presented can direct the development of strategies to reduce the horn caused by drug use and improve the care quality.

P1D03

Nonadherence to antiretroviral therapy associated factors: preliminary results from a Portuguese cohort of HIV-1 infected adults

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Background Adherence to combination antiretroviral therapy (cART) is an important determinant of the infection HIV/AIDS control. Better knowledge on this behaviour is needed to establish measures to improve medication effectiveness.
Objectives To estimate nonadherence prevalence and associated patient-related factors in a Portuguese cohort of HIV-1 patients prescribed cART.
Methods We conducted a prospective cohort study, with systematic sampling of HIV-1 infected adults prescribed cART and followed at the Infectious Disease Outpatient Clinic (Hospital de Santa Maria, Lisbon), with at least one medical appointment during the 3-month enrolment period (May–July 2011). In the baseline evaluation, adherence was assessed through the Adults AIDS Clinical Trials Group (AACTG) Adherence questionnaire. Related variables were assessed through the Illness Perception Questionnaire (IPQ), the Satisfaction with Social Support Scale (ESSS), and the Anxiety Depression and Stress Scale (EADS), validate to Portugal. Subjects were classified as nonadherents (i.e. with moderate and poor adherence, according to AACTG adherence questionnaire) if they had at least one failure during the last weekend, the 4 days prior to the questionnaire or the 30 days before the questionnaire. Logistic regression model was used to describe factors independently associated with nonadherence.
Results From 306 subjects who had a medical appointment during the enrolment period 203 (66.3 %) were eligible. The participants were 47.8 ± 10.0 years-old (mean ± SD) 75.6 % man, and prescribed to cART for 115 ± 66.3 months. A total of 195 subjects had completed the adherence questionnaire, 89 (45.6 %) were classified as nonadherent from which 16 (8.0 %) presented the lowest adherence level. Data from 183 patients were included in the regression model. Binge-drinking [$p = 0.0003$, Odds Ratio (OR) = 4.5, 95 % confidence interval for OR (CI95 %) = 2.0;10.0], higher values on anxiety scale [$p = 0.001$, OR = 1.2 (CI95 % = 1.1;1.3)] and higher values on IPQ subscale treatment control [$p = 0.02$, OR = 1.1 (CI95 % = 1.0;1.3)] were independently associated to nonadherence.
Conclusions Nonadherence to cART is highly prevalent and mainly related with moderate levels of patient compliance with the regimen. Patient-related variables were independently associated to nonadherence and should be addressed when establishing interventional programs in order to improve cART utilization and to prevent drug resistance development.

P1D04

Trends in the consumption of antidepressants and its impact on suicide rate in Portugal

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Background The Portuguese National Health Plan (NHP) for 2004–2010 established Mental Health as one of the four priority areas of intervention. This option recognizes the high social and economic impact of the disease.
Objectives To determine the trends in the consumption of antidepressants and to investigate whether it had an impact on suicide rates in Portugal.
Methods Estimates of drug consumption data for the period 2004–2011 were obtained through the CEFAR Pharmacy Sales Information System, a nationwide database with representative drug dispensing data at a regional level from ambulatory care. The Therapeutic and Chemical Classification/Defined Daily Doses (ATC/DDD) system developed by WHO was used and antidepressants (ATC: N06A) consumption was expressed in DDD per 1,000 inhabitants per day (DHD) and total DDD. Annual data on suicide rates were obtained from the Portuguese Institute of National Statistic using International Classification of Diseases 10th revision: codes X60–X84. A population based ecological study was conducted over the period 2004 to 2010. The association between the yearly suicide rates and antidepressant consumption (total DDD) was estimated using Poisson Regression (adjusted for overdispersion). Regional analysis was performed using the Portuguese territorial division of NUT II to explore regional asymmetries in suicides rates and drug consumption. To investigate the impact of government decisions to reduce antidepressants' reimbursement (Oct. 2010) on antidepressants consumption a linear regression model was set up.
Results The suicide rate (per 100,000 habitants) decreased from 11.5 in 2004 to 8.2 in 2006 and increased to 10.4 in 2010. The total DHD increased from 50.0 in 2004 to 76.7 in 2011. Fluoxetine and paroxetine consumption had a negative trend since 2004 in contrast with an increase of escitalopran and sertraline uptake. Regional differences were found in suicide rates and antidepressants consumption. In the overall population no association was found between the increase of antidepressant consumption and suicide rates. In Madeira region a significant reduction of 17.2 % in the suicide rate for additional consumption of 1 million DDD per year (RR = 0.83; 95 % CI 0.74–0.92) was found. No statistical difference ($p > 0.05$ for slope and intercept comparison) in antidepressant consumption was observed between 2010 and 2011.
Conclusions The consumption of antidepressants in Portugal has increased over the last 8 years and the pattern has changed; there was an increase in the consumption of the new and more expensive antidepressants such as escitalopram. No association was observed between suicide rates and antidepressant consumption. The reimbursement reduction in 2010 had no impact on antidepressants consumption.

P1D05

Attitudes and knowledge of primary care physicians to antibiotic prescription: a critical review of qualitative studies

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Background Increased resistance to antibiotics arose as a major public health issue in the last decades. Misuse and overprescribing of antibiotics are considered the most relevant factors in the development of this important public health problem, with healthcare providers occupying a central position. Understand their attitude towards antibiotic prescribing is crucial if we aim to tackle this global concern.
Objectives To carry out a critical review of qualitative studies about factors, attitudes and behaviors related to antibiotic prescription, and identify determinants of prescribing habits of primary care physicians.
Methods We performed an exhaustive Pubmed-based research on qualitative studies published between January 1987 and December 2011, about attitudes, knowledge and perceptions of primary care physicians related to antibiotic prescribing, using search terms and their synonyms. Data extraction included study population, work place, sample size, pathology, type of patient, method of data collection and method of analysis.
Results A total of 28 studies were included in this review. Sixteen studies only included general practitioners, eight included general practitioners or pediatricians and patients/caregivers and four studied physicians, other care providers and patients/caregivers. Concerning the targeted pathologies, respiratory tract infections were the object of ten studies. Other targeted pathologies were: urinary tract infection ($n = 1$), infectious diseases ($n = 1$), common cold ($n = 1$) and diarrhea ($n = 1$). One paper, studied patients with respiratory tract infection and diarrhea. The remaining thirteen studies did not identify the pathology. Methods of data collection also varied in the different studies. Mostly used semi-structured and/or "think-aloud" interviews ($n = 11$), questionnaires ($n = 11$) or focus group discussions ($n = 4$). Recorded physician-patient consultation was used in two articles. Accordingly to the studies reviewed, the factors that may influence antibiotic prescription could be grouped in two main categories: intrinsic factors (such as socio-demographics, attitudes and knowledge of physicians) and external factors (namely patient-related factors, health care system customs or the influence of pharmaceutical companies).
Conclusions Qualitative methodology is a very useful tool to explore all the factors that influence antibiotic prescription. Besides identifying the factors that influence antibiotic prescribing in primary care physicians, this methodology allows us to explore the relationship between different factors and strategies that aim to improve antibiotic prescription by these health professionals.

P1D06

Beliefs about medication questionnaire: results from its application to a Portuguese cohort of HIV-1 infected adults

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Background HIV infection treatment requires high adherence levels in order to attaint virologic suppression. Several social cognition theories have been developed to explain adherence to medication. Horne et al. have developed the Beliefs about Medicine Questionnaire (BMQ), with questions scored in a 5-point Likert scale. BMQ can be divided in two dimensions—Necessity and Concerns. Their work had shown that reported adherence is positively correlated with necessity subscale and negatively correlated with concerns about medication.
Objectives To characterize necessity and concerns beliefs about combination antiretroviral therapy (cART) and to describe associated factors.
Methods We conducted a prospective cohort study (systematically selected) of HIV-1 infected adults, taking cART and followed at Infectious Disease Outpatient Clinic (Hospital de Santa Maria, Lisbon), with at least one medical appointment during the 3-month enrollment period (May–July 2011). A questionnaire was applied, including BMQ and other questions about difficulty on medication intake and perceived self-efficacy on treatment persistence. Association between both subscales and perceived self-efficacy and intake difficulty were tested with mean differences test or Mann–Whitney test, according to variable characteristics and assuming $\alpha = 0.05$.
Results From 306 subjects who had a medical appointment during the enrolment period, 203 (66.3 %) were eligible. The participants were 48.2 ± 10.0 years-old (mean $\pm$ SD), 76.4 % man. Difficulty on medication intake was reported by 16 (8.8 %) subjects, for at least one of the drugs prescribed. Regarding self-efficacy on treatment persistence, 170 (93.4 %) subjects referred to be almost or completely sure to be able to continue on taking their medication. The mean scores of necessity and concerns about medication subscales were 32.4 ± 3.7 (possible range: 8–40) and 27.9 ± 5.6 (possible range: 11–55), respectively. In bivariate analysis, concerns subscale seems to be associated with intake difficulty ($p < 0.001$, mean score of patients with intake difficulty 34.9 and mean score of patients without difficulty 27.2), while necessity subscale does not ($p = 0.483$). Concerns subscale was also associated with perceived self-efficacy ($p = 0.036$, mean score of patients with high self-efficacy 27.7 and mean score in the group of lower self-efficacy 31.3), and necessity subscale was not ($p = 0.053$).
Conclusions Concerns subscale seems to be associated with intake difficulty and less confidence in being able to maintain treatment. Considering these and previous results, intake difficulties and the effects of cART on patient life should be evaluated, in order to adequate regimens to individuals characteristics and improve adherence.

P1D07

Prevalence of self-medication and the patient's adherence concerning antibiotic use in Algarve

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Background Excessive and not always proper uses of antibiotics give rise to numerous problems, being one of them antimicrobial resistance, a current major worldwide concern. Understanding cultural differences in the public's attitudes and behaviours in relation to antibiotic use is a pre-requisite to develop effective educational interventions.
Objectives The aim of our study was to estimate the prevalence of self-medication and patients' adherence to antibiotic treatment in the general population of Algarve.
Methods Study population—adult population living in the Algarve Region. The sample was stratified by age and gender. Data collection—self-administered questionnaire, asking about the use of antibiotics during the last 3 months preceding the study, reasons for taking them, sources of their acquisition, and intended antibiotics' uses. The survey was distributed by town hall, supermarkets, hotels,

municipal markets, restaurants. Statistical analysis—performed by using the SPSS v17. The level of statistical significance was established at $p < 0.05$, being results presented with a 95 % confidence interval.

Results A total of 1,192 respondents were included in the study, 48.7 % male. The participants' mean age was 46.62 years. Of the 259 respondents who reported antibiotic use during the last 3 months, 27 (10.6 %) did so without medical advice. Furthermore 218 respondents (18.3 %) assuming to have at least once taken antibiotics without being prescribed. Self-medication is higher than found in other Portuguese studies [1, 2]. Difficulties in getting a doctors' appointment and antibiotic leftovers were the main reasons for taking antibiotics without prescription, 267 (22.4 %) respondents reporting having leftover antibiotics at home. Self-medication was significantly more frequent among younger ($Chi^2 = 24.742$; $p < 0.001$), male (Fisher test; $p < 0.001$), respondents who keep leftover antibiotics ($Chi^2 = 99.375$, $p < 0.001$) and those who said that sometimes was easier to buy antibiotics without prescription ($Chi^2 = 218.106$, $p < 0.001$).

Nonadherence was 14.6 %, 36 respondents partially or not fulfilling recommendations regarding the number of treatment days. The improvement of the symptoms and side-effects were the reasons for not fulfilling the full number of treatments days as recommended.

Conclusions Self-medication with antibiotics is higher in Algarve than other Portuguese regions. Non-adherence to therapy and leftovers at home, as well as over-the-counter acquisition in community pharmacies are factors that promote self-medication.

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Poster Topic 1E. HIV/AIDS and tuberculosis

P1E01

Epidemiological profile of new tuberculosis cases in the epidemiological surveillance group of the XII Araraquara regional office, São Paulo/Brazil

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Background Tuberculosis (TB) is a permanent concern to health care authorities, and it stands as great challenge to public health worldwide since its incidence is frequently associated with a population's socioeconomic and life conditions. Also, it is a rather ancient infectious disease. In Brazil, there is the National Tuberculosis Control Program as well as state and municipal control programs. There is also a vaccine for control of severe forms of the disease in children, in addition to a drug treatment protocol and goals that have been agreed upon by the Brazilian government and the World Health Organization (WHO) to diagnose 90 % of estimated cases and to effectively treat 85 % of them. Despite all this, new TB cases still emerge every year, and it remains as one of the main challenges to Public Health in the national scenario.

Objectives This study aims at describing the profile of new TB cases reported at the Epidemiological Surveillance Group—GVE XII Araraquara (SP).

Methods It is a descriptive and retrospective study conducted at GVE XII—Araraquara Regional Office, which comprises 24 municipalities, totaling a population of approximately 920,257 inhabitants. Data were collected from the database of the Tuberculosis Information system (Tbweb), which records the cases of the disease detected by Epidemiological Surveillance, and it did not involve patient identification. The number of new cases reported among the GVE XII residents from 2005 to 2010 was included in this study.

Results It was thus observed that the predominant clinical form was pulmonary; 71.5 % of the patients were young adult males (20–39 years). Incidence varied from 18.31 to 21.52 cases per 100,000 inhabitants, respectively in 2005 and 2008. As regards supervised training, increase was observed in 2010. Concerning treatment outcomes, cure ranged from 74.73 % to 80.70 %. The mean abandonment rate was 7.15 %, and death from tuberculosis was 3.99 %.

Conclusion The results presented contribute to improving the knowledge on the epidemiological situation of tuberculosis over the years and to emphasize the importance of strategies targeted at actions for tuberculosis prevention and early diagnosis performed by the municipalities in GVE XII—Araraquara.

P1E02

Factors associated with the occurrence of tuberculosis in Brazil: analysis of the 2008 National Household Sample Survey

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Background Tuberculosis (TB) remains a serious public health problem. Recognition of factors associated with TB exposes the complexity of the problem and the need for new strategies for coping with the disease, within and without the health sector.

Objective To investigate the association between individual socioeconomic and demographic variables and the occurrence of TB in Brazil.

Methods This is a cross-sectional study using data from the Health Supplement of the National Household Sample Survey (PNAD), Brazil, in 2008. Individual chance to report having been told by a health professional of having TB was analyzed in a representative sample of nine metropolitan areas of Brazil, with logistic regression models (weighting and correction of the effect of PNAD's complex sample design used survey and SOAR R libraries) using demographic, social and health services use indicators. Socioeconomic status was estimated by per capita income (in minimum wages) and by years in formal education. Having a place of reference when seeking health care and having health insurance were used as proxies for access; use of health services was indicated by having a medical consultation in the previous 12 months.

Results The chance of reporting a TB diagnosis increased with age, higher among men than among women, following the disease pattern. For the nine metropolitan areas, report of a TB diagnosis decreases with increasing per capita income over half a minimum wage. The chance for women is half the one for men. No medical consultation in the previous year decreases the odds of reporting TB by 60 %. High school education (or higher) also decreases the chance of TB by 60 %.

Conclusions Although demographic variables are associated with the occurrence of TB, the social determination of the disease should also be considered, through its association with income, medical

consultation in the previous year and health insurance. Moderating the factors that increase vulnerability to disease in segments of the population, improved access to diagnosis and treatment adherence should be priority strategies for achieving control of the disease.

P1E03

Deaths from tuberculosis in people with AIDS in the city of Sao Paulo, Brazil

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Background Tuberculosis (TB) is a major cause of death in human immunodeficiency virus (HIV)-infected people and has become a serious public health concern worldwide. Studies have shown that the introduction of antiretroviral therapy (ART) during TB treatment reduces mortality in HIV/TB coinfected people. Brazil was the first middle-income country to implement a national policy of universal free access to diagnosis and ART to all people living with AIDS in 1996.
Objective To analyze TB as underlying or associated cause of death among people with AIDS living in the city of Sao Paulo, before and after the HAART era (1991–2006), and to investigate possible differences according to the district of residence, from 2000 to 2006.
Methods A descriptive study among people with AIDS, residents in Sao Paulo city who died from TB as underlying or associated cause of death, from 1991 to 2006. Data sources: Sao Paulo State STD/AIDS Program, and Sao Paulo State Data Analysis Department (SEADE). Causes of death were coded according to the 9th (1991–1995) and 10th (1996–2006) Revision of the International Classification of Diseases. Age-adjusted mortality rates of the TB underlying cause of death were estimated and descriptive analysis of the underlying and associated causes of death in the study period was performed. Residence districts were classified into four groups of homogeneous areas according to the state of Sao Paulo Social Vulnerability Index. Comparisons of the proportions were performed using appropriated statistics.
Results Between 1996 and 2004, among people with AIDS the mortality rate of the TB as underlying cause of death declined to 78 % (from 4.1 to 0.9/100,000 inhabitants-year) and this rate remained stable for the next 2 years. In the late HAART era (2000 to 2006) TB as associated cause of death was reported in 19.5 % of death certificates (1,866/9,579). According to the district of residence, no differences were observed for TB as underlying cause of death; however, TB as associated cause of death was more observed in poor areas than in middle class area and rich areas, 20.6 %, 18.6 %, 14.7 %, respectively ($p < 0.001$, linear trend), in the late HAART era.
Conclusions HAART changed the patterns of morbidity and mortality associated with AIDS. Although the death rate of TB as underlying cause of death declined, the disease continues as important associated cause of death in poor areas of residence. The development of public policies to adjust health services to this scenario is required.

P1E04

Epidemiology of tuberculosis in a low-incidence Italian region (1999–2008)

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Background In Italy, Tuberculosis (TB) has increasingly become a disease for specific population subgroups such as immigrants. Although from 1974 in Italy the TB incidence for whole population is stable below 10 new cases/100.000 inhabitants, TB incidence in immigrants is considerably higher than Italians. In 2008 TB incidence among Italians was 3.8/100.000, TB incidence among foreign born persons was 52,1/100.000.
Objectives To describe the trend in TB incidence from 1999 to 2008 in Umbria: a low-incidence Italian region with high immigrants rates (9.7 %), exploring main differences between foreign-born and native-born.
Methods Data were obtained from the Regional Information System for Infectious Diseases. Personal data, citizenship, occupational status, professional position, sector of activity and site of the disease (pulmonary, extra-pulmonary and disseminated) of all notified TB cases were extracted. Using a linear regression model we estimated trends for number of cases and incidence rates; with a logistic regression model we estimated the effect of a set of covariates on the probability of being affected by TB.
Result 590 TB cases were reported of whom 43 % were immigrants. The annual proportion of foreign-born cases on the total TB notifications increased from 20.3 % in 1999 to 49.2 % in 2008. In 2008 39.7 new cases per 100.000 were registered among foreign-born subjects and 33.05/100.000 adding 20 % of estimated irregular presences to the denominators. TB incidence among Italians was 3.8/100.000. But a linear regression analysis showed a statistically significant decreasing trend in the notification rate among foreign-born people (coef: −7.32, r2: 0.57, $p < 0.05$). 74.2 % of reported TB cases were diagnosed with pulmonary disease, 23.1 % had a diagnosis of extrapulmonary TB and only 2.7 % with disseminated TB. The probability to be affected by extra-pulmonary is significantly larger in foreign patients (95 % CI = 0.48–1.07). Foreign unskilled workers report a higher probability to be affected by TB (95 % CI = 6.01–60.4) than Italy born ones (95 % CI = 0.75–2.45). Unemployment instead is significant only for the not-Italy born group (95 % CI = 2.78–6.13).
Conclusion Increasing immigration rates may affect TB epidemiology. The analysis of incidence trends is an important tool to identify specific sub-group at risk. TB among immigrants is a public health problem in Umbria and in Italy as well as in other low-incidence countries and it is characterized by particular clinical features and risk factors.

P1E05

Epidemiological characterization of respiratory tuberculosis cases, notified by the system of compulsory diseases declaration (DDO) in the municipality of Santa Maria da Feira in the period 2001–2010

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Introduction Tuberculosis is a major cause of death worldwide although it is curable in virtually all cases, when treated correctly and on time and in the presence of drug-sensitive strains. Portugal showed in 2010 an incidence of 22 cases per 100,000 inhabitants, being the only Western European country classified as intermediate impact zone.
Objectives To characterize sociodemographic aspects, comorbidities, risk factors and treatment results in cases of respiratory tuberculosis notified by the DDO system in the municipality of Santa Maria da Feira in the period 2001–2010. Calculate the cumulative incidence rates for each year of study.

Methods An observational, descriptive, cross-sectional and retrospective study.
Study population: individuals residing in the municipality of Santa Maria da Feira, classified as cases of respiratory tuberculosis and reported to the Health Authority through the DDO system, in the period 2001–2010.
Results 337 cases were reported during the study period, giving a cumulative incidence rate of 35/100.000 inhabitants in 2001, which decreased consistently over the years reached 14/100.000 inhabitants in 2010. The mean age at diagnosis was 44,4 years, and the absolute reason of cases by sex (male/female) was 2,70 to 1.

For the co-morbidities, it was found that HIV infection is present in 8,7 % of cases, diabetes mellitus in 3.1 % and chronic renal failure 1,5 %.

Regarding risk factors, we highlight the alcohol dependence in 8,1 % of cases and intravenous drug abuse in 3,4 % of cases, while 4,7 % present another risk factor.

It was registered a treatment completion rate of 88 %, with a rate of treatment interruption of 2.8 %; there were 6,6 % of deaths during the treatment. Directly observed treatment (DOT) was recorded in 92 % of cases.
Conclusions The work done in the last decade has reduced the cumulative incidence rate of respiratory tuberculosis in the municipality of Santa Maria da Feira to below 20 cases per 100,000 inhabitants (held since 2005), allowing its classification as an area of low incidence. Male gender continues to be the most affected and the median age of patients stands at 41,54 years, following the national trend. For other parameters such as the rate of imported cases and the coexistence of HIV infection, registered values are below those found in Portugal.

There is a treatment completion rate of 88 % in the last 10 years, which partly reflects the commitment and investment in caring for these patients and the application of measures such as DOT.

P1E06

Characterization of aspects related to the detection, diagnosis and treatment of respiratory tuberculosis cases with clinical follow-up in Respiratory Diagnostic Center of Santa Maria da Feira in the period 2001–2010

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Introduction The WHO declared Tuberculosis a global emergency in 1993 recognizing its importance as a public health problem, developing a global strategy called DOTS, seeking a more effective control of the disease. In organizational terms, the recommendations of the DOTS strategy should be to establish a network of diagnosis and treatment, based on National Health Service, decentralized and close to the people (integration into primary health care), managed and supervised by health professionals, endowed with an activities assessment system to detect cases and evaluate the results of treatment by cohort analysis.
Objectives To characterize the location and detection process in cases of respiratory tuberculosis notified by the DDO system in the municipality of Santa Maria da Feira in the period 2001–2010.

Calculate the time elapsed between the onset of symptoms and first consultation and diagnosis.
Methods An observational, descriptive, cross-sectional and retrospective.
Study population: individuals residing in the municipality of Santa Maria da Feira, classified as respiratory tuberculosis cases, reported to the Health Authority through the Compulsory Declaration of Diseases system (DDO), in the period 2001–2010 and with clinical follow-up in Respiratory Diagnostic Center of the county.
Results As regards the detection site, it was found that 90 % of cases have been reported from the primary care system; 91 % was detected by passive screening and 6 % by contacts screening (of 1,360 total screened contacts), resulting on a 5,05 times higher risk of TB developing on contacts in relation to the population of the county.

In terms of waiting times there was an 46 days average between the onset of symptoms and the first medical appointment. This time increases to 84 days average when calculating the interval between symptom onset and diagnosis and therapy initiation. This DDO notification happens on average 111 days after the onset of symptoms while performing the epidemiological investigation happens on average 15,69 days after notification.
Conclusions For the improvement of health care, should be adopted patient guidance and referral mechanisms to reduce waiting times and make infection control measures more effective. This commitment should involve mainly the primary care professionals. There is a need to develop health information programs in order to increase population literacy and raise awareness, so the population can be alert and look for early medical care after the onset of the first disease indicators.

P1E07

How to access vulnerable and hard-to-reach populations? Methodological challenges in HIV and STIs epidemiological and behavioural research with sex workers

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Background Sex workers (SW) are at increased risk for infection and transmission of HIV and other STIs. Difficulty in accessing SW lead researchers question how to best access hard-to-reach populations and answer associated methodological challenges, such as recruitment, sampling, sample size and assessment techniques.
Objectives We aim to discuss the methodological problems encountered throughout a Portuguese project conducted with SW to describe knowledge, attitudes, practices and prevalence related to HIV/AIDS.
Methods This project adopted a participatory research approach: NGOs, CBOs, health services, policy-makers and community members were involved in all project's phases. We started with full commitment of community members on the project's relevance and building mutual trust. This was possible through the liaison with an NGO that has years of community work experience with SW and other NGOs. Firstly, it required deep discussion and meaningful consensus of the project's focus and boundaries, and agreement between academic scientific methods and civil society commitment with advocacy for SW rights. This was crucial for community partners to acknowledge the project as a priority, thus indicate potential participants from their networks. Questions emerged about how best to collect data, what information to collect and weighing benefits/drawbacks of interviewer-applied or self-administered questionnaire. Given the lack of illiteracy and Portuguese proficiency among many SW, the feasible option was using community interviewers. This enhanced participants' acceptance of the study but raised ethical issues concerning confidentiality and honesty of responses. Also, it

wasn't easy to achieve compromise between project resources and what community claimed as a fair reward to participants for time spent. An HIV rapid test was offered, raising ethical questions on confidentiality and guarantee of a referral system to appropriate healthcare. The project assembled the largest sample of SW in Portugal (n = 1,040, 82 % female, 10.2 % male, 7.8 % transgender; 43.5 % non-nationals; 53.8 % working only outdoor).
Results A great amount of data on sex work context and behavioral practices were collected. Overall, 90.2 % had been HIV-tested; 8 % self-reported being HIV-positive. Of those who had a rapid test (n = 213), 8.9 % were reactive.
Conclusions The participatory process contributed to recruitment efficiency, obtain evidence on SW's needs and relevant HIV interventions priorities, empower SW to protect themselves and advocate for their rights. However, such network-based samples compromise estimates of population size, the degree of confidence in results and in its representativeness. Ultimately, conducting studies with hard-to-reach populations requires a balance between rigor and practicality, judging for the relevance of research results.

P1E08

The effects of educational intervention on the HIV/AIDS-related professional risk, practice and risk perception of acquiring HIV infection of health care workers

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Background Health care workers are key players in the prevention and management of HIV infection. Deficiencies of health care workers' knowledge with regard to HIV/AIDS may reduce compliance with infection control recommendations and contribute to unsafe practice and higher perception of professional risk of acquiring HIV infection.
Objectives To assess the impact of two-day educational intervention on the HIV/AIDS-related professional risk, practice and professional risk perception of aquiring HIV infection of health care workers.
Methods A pretest–posttest design included two waves of a cross-sectional study of the representative sample of personnel from primary, secondary and tertiary health care in Nis, Serbia. The intervention included 222 subjects, selected through two-stage stratified sampling (regarding number and occupation in the health care strata). Using random sample method, subjects from different departments were selected. Anonymous self-administered questionnaire was used in the study. Mantel–Haenszel Chi-square testing and multiple logistic regression analysis were applied.
Results In the group of doctors/dentists, significant improvements were achieved in the specific compliance of wearing gloves (39 vs. 47 %; $p < 0.007$) and glasses (12 vs. 26 %; $p < 0.003$), when working with every patient. In the group of nurses and laboratory technicians, significant changes were seen in the practice of appropriate disposal of sharps (27 vs. 39 %; $p < 0.001$) and hand washing (32 vs. 46 %; $p < 0.000$). Although there was no significant difference, the practice of recapping needles was decreased after intervention in both groups (doctors/dentists: 61 vs. 57 %; $p < 0.704$; nurses/laboratory technicians: 36 vs 32 %; $p < 0.236$). Doctors'/dentists' perception of professional acquiring HIV infection changed more (79 vs. 62 %; $p < 0.004$) than nurses'/laboratory technicians' perception (91 vs. 87 %; $p < 0.045$). After the educational program, significantly more, both, doctors/dentists (23 vs 48 %; $p < 0.001$) and nurses/laboratory technicians (13 vs. 29 %; $p < 0.008$) had been informed about protocols of post exposition prophylaxis, and about guidelines for safety measures and protection against HIV (doctors/dentists: 25 vs. 52 %; $p < 0.002$; nurses/laboratory technicians: 17 vs. 32 %; $p < 0.004$). A multivariate analysis identified participation in the prevention program (OR = 0.74, 95 % CI: 0.49–0.88), younger age (OR = 0.63, 95 % CI: 0.53–0.86) and previously treatment of HIV-infected patients (OR = 0.56, 95 % CI: 0.29–0.76) as significant predictors of HIV related practice change.
Conclusions Our educational intervention was effective in changing perception of professional risk of acquiring HIV infection in the desired direction, increasing compliance with infection control recommendations and contribute to safe practice. Future continued, well-coordinated education of HIV/AIDS-related issues for health care personnel is recommended as a vital strategy in crusade against unsafe practice and higher perception of professional risk of acquiring HIV infection.

P1E09

Survival in a cohort of TB cases reported in Rio de Janeiro City, Brazil

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Background Tuberculosis (TB) is a public health problem worldwide, especially in developing countries. Despite the existence of effective therapeutic strategies, TB is the 3rd cause of death from infectious disease in the country.
Objective To analyze the survival of a cohort of patients diagnosed with TB and notified to the Information System Notifiable Disease (SINAN) residing in the Rio de Janeiro City, Brazil.
Methods Non-concurrent cohort study of passive follow-up using probabilistic record linkage. The study population consists of new cases, patients treated previously (return after dropout, relapse) and transfering. Probabilistic record linkage was carried out between SINAN-TB (2006) and the Mortality Information System (SIM) from 2006 to 2008. The survival analyses were performed using the Kaplan–Meier curves and log-rank test to estimate the probability of survival. The survival time was defined as the number of days elapsed from the date of diagnosis until death. Data were analyzed using statistical package R 2.14.1 and the library survival.
Results Of the 6,648 patients, 884 (13 %) died during the study period. The survival time in the 90th percentile was 466 days (1-1061). Deaths from TB as underlying cause accounted for 24 % of all deaths. Kaplan–Meier survival probability were 92.9 % (95 % CI: 92.3–93.5). Mortality was higher among men (14 % versus 12 %). The survival time in the 90th percentile was 424 days for men and 927 days for women. We observed lower survival in: elderly aged 60 years or more; patients with mixed clinical presentation; and patients treated in hospitals. HIV-positive patients showed shorter survival and higher mortality (31 % versus 11 %). Patients transferred to continue treatment in another health unit had lower survival and higher mortality when compared with the cases of readmission after dropout and relapse. Patients treated at hospitals with emergency services had lower survival when compared to hospitals specialized in TB treatment. There was a greater survival among those treated under DOT.
Conclusions Interventions should prioritize early TB case detection through access to diagnosis and, therefore, treatment in a timely manner, in order to reduce mortality from TB.

P1E10

Multidrug-resistant tuberculosis in a hyperendemic area, Santos, Brazil

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Background The incidence rate of tuberculosis (TB) in the city of Santos is 85 cases per 100,000 inhabitants-year, which is twice as much the average rate in the state of São Paulo, southeastern Brazil. The mean prevalence of TB/HIV coinfection is 16 %, and TB cure and treatment dropout rates are 71 and 12 %, respectively. These unfavorable indicators indicate the need for monitoring the magnitude, profile and trend of multidrug-resistant tuberculosis (MDRTB) in this city.
Objective To examine the profile of *Mycobacterium tuberculosis* drug resistant in patients with and without risk factors for MDRTB and to estimate the incidence of MDRTB.
Methods A descriptive study was conducted with patients with pulmonary TB confirmed by *Mycobacterium tuberculosis* isolation. Patients were 15 years or older, living in the city of Santos, southeastern Brazil, and started treatment in 2011. TB cases were defined according to the National Tuberculosis Control Program criteria and MDRTB cases were those resistant to at least isoniazid and rifampicin. We included only cases with drug susceptibility testing (DST) performed. The study variables included sociodemographic factors and factors associated with MDRTB (prior history of TB; TB/HIV coinfection; cavitary lung lesion; being a health provider or homeless). Comparative analyzes were performed using appropriate statistics.
Results Of all TB cases reported in Santos in 2011, 108 were confirmed by culture and performed DST. Of these, 42 cases (38.9 %) had risk factors for MDRTB: 78.6 % were sensitive to all drugs; 4.9 % were resistant to one drug; and 14.6 % were MDRTB. Among 68 cases with no risk factors for MDRTB, 92.4 % were sensitive to all drugs; 4.5 % were resistant to one drug; and 3 % were MDRTB; and 37 % (3/8) of all cases of MDRTB presented primary resistance. Prior treatment and cavitary lung lesion were more prevalent among patients with MDRTB ($p < 0.05$) when compared to cases showing *Mycobacterium tuberculosis* strains sensitive to all drugs. The incidence of MDRTB during the study period was 2.1/100,000 inhabitants-year.
Conclusions The study results showed high MDRTB, though potentially underestimated, and high primary resistance rates. They highlight the importance of monitoring patients and household contacts for 2 years after treatment is completed, particularly contacts of those dropping out of treatment.

P1E11

Study of tuberculosis epidemiologic surveillance data in Santos, SP, Brazil, from 1998 to 2008

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Background Tuberculosis is an important public health issue. The Brazilian government reported 85,000 new cases in 2010.
Objective The objective the present investigation was to analyze the Program Tuberculosis Control (PCT) in the municipality of Santos—Sao Paulo, during the period from 1998 to 2008.
Methods We used epidemiological and operational indicators constructed from the database: TBWEB LABTB and the Department of Health in Santos/SP and population data estimates DATASUS and IBGE. We selected new cases of TB reported in the health units residing in the city, and year of diagnosis.
Results In the period 2003 to 2008, the population examined a total of 17,070 respiratory symptoms, with an average of 9.0 % positivity in the smear. In the analysis of the period 1998 to 2008, there were no gender, age and type of diagnostic discovery. There was a predominance of males 66.6 % and 65.9 % of adults aged between 40 and 49 years of age. The incidence rates of TB presented during the study, the rates drop from 119.1 to 79.5 cases per 100 000 inhabitants in 1998 and 2008, respectively. This decline was also observed for the clinical aspect of pulmonary and extra pulmonary. The co-infection rate averaged 15.0 % per year, males accounted for 63.5 % of co-infection and the predominant age was 20–49 years. The implementation of supervised treatment (DOT) in the city, truly began in 1998, and was gradually increasing, reaching in 2008 to oversee 77.8 % of cases. Regarding the evolution of the index cases were operational and proved to be unsatisfactory with small oscillations in the years 1998 to 2008. Were noted in 1998 and 2008 rates that followed to cure 72.3 % and 81.3 %, 12.7 % died and 9.0 % and 2.5 % and 2.4 % of cases of abandonment, successively. The TB mortality rate showed a strong downward trend in prevalence of pulmonary tuberculosis, male gender and older age groups.
Conclusions We conclude that to improve detection of TB cases in the county will be needed to accommodate changes in the way the suspects, facilitating their access to health facilities. Shares in the control of disease, such as DOT, should be developed aimed at healing and reducing dropout rates. As the PCT in Santos/SP, the surveillance, should increase their activities as much assistance as operational research, since incorporating the benefits of computerization and improvement of records until the early diagnosis and treatment of disease.

P1E12

Risk factors for drug-resistant tuberculosis in northern Portugal

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Background Drug-resistant tuberculosis (TB) is a worldwide threat and constitutes an unparalleled challenge for disease control. Several studies have demonstrated worse clinical outcomes in patients diagnosed with drug-resistant TB. Treatment of such patients is more complex, less effective, more toxic, and much more expensive than treatment of patients infected with drug-susceptible TB strains.

Objective Our aim was to identify risk factors for drug resistance in tuberculosis patients registered in the North of Portugal.
Design Retrospective case–control study. The medical records and drug susceptibility test data from TB patients diagnosed between 31 March 2009 and 1 April 2010 were examined. We enrolled 119 patients with any drug resistance to first line anti-TB drugs and 238 with drug-susceptible TB, matched by age group. Analyzed variables included gender, country of origin, employment situation, site of disease, previous treatment, presence of diabetes mellitus, HIV infection, alcohol abuse, intravenous drug use, abuse of other drugs and smoking habits. Multivariate conditional logistic regression were used to identify independent predictors for drug-resistant TB.
Results Diabetes mellitus [adjusted odds ratio (OR): 3.54; 95 % CI: 1.45–8.66], intravenous drug use (OR: 4.77; 95 % CI: 1.24–18.32) and previous TB treatment (OR: 2.48; 95 % CI: 1.12–5.49) were found to be risk factors for drug-resistant disease development.
Conclusion Diabetes mellitus, prior tuberculosis treatment, and intravenous drug use were risk factors for drug-resistant disease. The association between diabetes and drug-resistant TB should be further explored. Identifying clinical predictors of drug resistance can allow prompt identification of patients at risk for developing drug-resistant TB.

Poster Topic 1F. Environmental & molecular epidemiology

P1F01

Occurrence of pupae of Aedes aegypti in different breeding sites in locality of the municipality of Nova Iguaçu, Rio de Janeiro, Brazil

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Background The Aedes aegypti mosquito is the primary vector of dengue. The mosquito lives in urban habitats and breeds mostly in man-made containers. Dengue is a mosquito-borne infection found in tropical and sub-tropical regions around the world. In recent years, transmission has increased predominantly in urban and semi-urban areas and has become a major international public health concern. More than 2.5 billion people, in more than 100 countries, are estimated to live in risk areas for the transmission of dengue.
Objectives This study analyzed the Aedes aegypti pupae occurrence in different types of breeding sites in locality of Nova Iguaçu, Rio de Janeiro, Brazil.
Methods The monitoring of the immature forms occurrence was accomplished in six city blocks of Nova Iguaçu from December 2004 to April 2005. The breeding sites were classified according to their type, volume, container confection material and other factors.
Results A total of 5,954 containers were inspected, and the Aedes aegypti pupae was verified in 398 of these. After logistic regression analysis, the variables that presented higher statistically significant for the Aedes aegypti pupae presence were: vulcanized rubber with odds ratio (OR = 4.66; 95 % CI 1.44–15.04); medium size volume (OR = 3.24; 95 % CI 2.34–4.48); large size volume (OR = 2.70; 95 % CI 1.76–4.16) and external location of the container (OR) of 2.16 (95 % CI 1.26–3.70).
Conclusions The improvement of water supply and regular garbage collection are important components for the effective control of the dengue vector.

P1F02

The impact of the Cyprus smoking ban on air quality and on the economic business

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Background Tobacco use is the leading cause of preventable morbidity and mortality worldwide, and exposure to secondhand smoke (SHS) is a serious health hazard for non-smokers, especially children. A number of countries have passed smoke free legislations in recent years; on January 1, 2010 Cyprus passed a comprehensive law prohibiting smoking in public places including hospitality venues such as bars, restaurants, and hotels.
Objectives The goal of the present study was to assess indoor air quality within a convenience sample of hospitality venues in Cyprus before and after the implementation of the comprehensive legislation, and to assess the impact that the smoke free legislation had on revenue and employment within the hospitality industry.
Methods Several venues from the hospitality industry in Cyprus (n = 35), including cafes, hotels, restaurants, bars, and nightclubs, were sampled between April 2007 and January 2008 and the levels of $PM_{2.5}$ were measured with the use of a TSI SidePak Personal Aerosol Monitor; 21 of these venues were re-sampled after the introduction of the smoking ban between March and May 2010. Data on enforcement was provided by the Cyprus Police, whereas data on food and beverage consumption, accommodation and employment within the hospitality industry were obtained from the Cyprus Statistical Service.
Results The mean level of $PM_{2.5}$ associated with SHS was 277 $\mu g/m^3$ pre-ban and dropped to 28 $\mu g/m^3$ post-ban, which corresponds to a 90 % decrease ($p < 0.0001$). Furthermore, in the year following the ban, the hotel turnover rate increased by 4.2 % and the restaurant revenue increased by 6.6 %; employment decreased by 0.06 %, however, the corresponding decrease the previous year was 5.7 %.
Conclusions The results indicate that smoke free legislations, when they are enforced, do have a positive effect on indoor particulate matter attributable to SHS, demonstrating that banning smoking in public places is highly effective in improving the air quality and reducing the levels of indoor $PM_{2.5}$. Strict enforcement plays a key role in the successful implementation of smoking bans. Moreover, data from the food and beverage service activities sector in Cyprus indicate that the turnover index actually increased within 1 year from implementation and it does not seem that there was any significant effect on employment.

P1F03

Evidence-based search strings for the study of farmers' occupational diseases

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Objective The aim of the study was to identify efficient PubMed search strategies to retrieve articles regarding putative occupational determinants of farmers' diseases.
Methods Based on Medical Subject Heading (MeSH) definitions and expert knowledge, we selected the MeSH term *agricultural workers' disease* and, as candidate search terms, five MeSH terms describing farm work (*pesticides*, *agriculture*, *rural population*, *rural health*, *agrochemicals NOT pesticides*) alongside 25 other promising terms.

Using random samples of abstracts retrieved by each term, we estimated proportions of articles containing potentially pertinent information regarding occupational aetiology in order to formulate two search strategies (one more "specific", one more "sensitive"). We applied these strategies to retrieve information on possible occupational aetiology among farmers of knee osteoarthritis, multiple sclerosis and kidney cancer. We evaluated the number of abstracts needed to read (NNR) to identify one potentially pertinent article in the context of these pathologies.
Results The more "specific" search string was based on the combination of terms that yielded the highest proportion (40 %) of potentially pertinent abstracts. The more "sensitive" string was based on use of broader search fields and additional coverage provided by other search terms under study. Using the specific string, the NNR to find one potentially pertinent article were: 1.3 for knee osteoarthritis; 1.3 for multiple sclerosis; 1.1 for kidney cancer. Using the sensitive strategy, the NNR were 1.8, 2.4 and 1.4, respectively.
Conclusions The proposed strings could help health care professionals explore putative occupational aetiology for farmers' diseases (even if not generally thought to be work-related).

P1F04

Low level maternal smoking and infant birthweight reduction: genetic contributions of GSTT1 and GSTM1 polymorphisms

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Background Understanding causes of variation in birthweight has been limited by lack of sufficient sets of data that include biological determinants of response to environmental exposure. Genetic susceptibility to tobacco smoke might modify the effect of smoking on pregnancy outcomes.
Objectives We examined the association between low-level tobacco smoke exposure (4.8 cigarettes/day) during pregnancy, *GSTT1* and *GSTM1* polymorphisms and birthweight of the infant among 543 women who delivered singleton live births in a Kaunas cohort, Lithuania.
Methods We evaluated these associations with a multiple linear-regression model, adjusting for gestational age, maternal education, family status, body mass index, blood pressure, and parity. We studied the individual effects of metabolic gene polymorphisms and maternal smoking status, and the joint (modifying) effects of smoking, *GSTT1* and *GSTM1* on birthweight. Subsequently, we tested for the interaction effect of maternal smoking, *GSTT1* and *GSTM1* with birthweight by adding all the product terms in the regression model.
Results The findings suggested a birthweight reduction among light-smoking with the *GSTT1-null* genotype (−162.9 g, $P = 0.041$) and those with the *GSTM1-null* genotype (−118.7 g, $P = 0.069$). When a combination of these genotypes was considered, birthweight was significantly lower for infants of smoking women the carriers of the double-null genotypes (−311.2 g, $P = 0.008$). The interaction effect of maternal smoking, *GSTM1* and *GSTT1* genotypes was marginally significant on birthweight (−234.5 g, $P = 0.078$). Among non-smokers, genotype did not independently confer an adverse effect on infant birthweight.
Conclusions The study shows the *GSTT1* and *GSTM1 null* genotypes, either present both or only one in a single subject, have a modifying effect on birthweight among smoking women even though their smoking is low level. Our data also indicate that identification of the group of susceptible subjects should be based on both environmental exposure and gene polymorphism.

P1F05

Indoor temperature and lung function

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Background While many epidemiological studies have shown that low outdoor temperatures are associated with increased rates of hospitalisation and mortality (especially for respiratory or cardiovascular disease), such outdoor studies have shown that effects of low temperature are strongest below a locally variable threshold and the effects are lagged by up to a week. Unfortunately very few studies have looked at the association between indoor temperatures and health. Such studies are clearly warranted as people have greater exposure to the indoor environment than the outdoor environment. Information on the metric (i.e. lag and threshold) through which indoor temperatures effect health would be useful in helping define the biological pathway of the effect.
Objectives To examine the relationship between various metrics of indoor temperature and lung function in children with asthma. Our specific research questions are: 1) In which room of the home is temperature most strongly associated with lung function? 2) Which exposure metric best describes the relationship between indoor temperature and lung function? 3) Over what lag/time period does indoor air temperature affect lung function most strongly?
Methods The Heating Housing and Health Study was an RCT that investigated the effect of installing heaters in the homes of children with asthma. This study collected measurements of lung function (daily) and indoor temperature (hourly). Lung function and indoor temperature were measured for 309 children over 12,049 child-days. Hierarchical mixed effects models were graded by AIC scores fitted to identify the best fitting metrics.
Results For all four outcome measures of lung function (PEFR morning, PEFR evening, FEV_1 morning and FEV_1 evening) the strongest association was found with the degree of exposure to bedroom temperatures of less than 12 °C averaged over the preceding periods of 0–7, 0–8, 0–9, 0–10, 0–11, and 0–12 days.
Conclusion Indoor temperatures have a small, but significant, association with short-term variations in the lung function of children with asthma. The most important location of exposure is the child's bedroom. The effect of exposure can take up to 12 days to present, indicating that the effect temperature may be mediated through an indirect pathway such as viral survival.

P1F06

Asthma hospitalizations in relation to air pollution

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Asthma is one of the most common chronic diseases worldwide. Its prevalence is growing rapidly, however it differs between regions even of the same country.

Materials and methods For this study we used data collected in the frame of the project "Hospitalization"—"the Polish Survey on Overall Hospital Morbidity in Poland." Primary source of information were hospital statistical cards sent by electronic means to the central database. We analyzed hospital records for Malopolska region with primary cause of hospital admission defined as bronchial asthma or status asthmaticus (code J45.* or J46 according to ICD-10) for years 2005–2009. Air pollution data were collected from monitoring station in Malopolska. Poisson regression model was used to assess the impact of air pollution level on number of hospital admissions with adjustment for the daily mean of temperature.

Results During years 2005–2009 overall 10 734 asthma-related hospitalizations were recorded in Malopolska region, out of them 6,942 were "urgent" hospital admissions. The level of air pollution during this period was high, for example, mean daily PM10 air pollution level was higher than 60 $\mu g/m^3$ for 574 days, with the highest values over 350 $\mu g/m^3$.

Out of the analyzed pollutants the most important predictor was found to be SO_2 with RR = 1.008 (95 % CI: 1.004–1.013) and PM_{10} with RR = 1.003 (95 % CI: 1.001–1.005). We have also examined the effect of air pollution during the previous days on asthma hospitalizations. The most important effect was observed for 7 days delay by sulfur dioxide with RR = 1.004 (95 % CI: 1.001–1.007).

Conclusions The number of asthma hospitalizations, especially those unplanned, probably because of exacerbation of asthma episodes can be reduced by lowering air pollution level.

P1F07

Levels of CO_2 in day care centers and its association with wheezing during or after exercise in preschool children

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Background Many infants and preschool children experience wheezing symptoms in the first years of life. Wheezing related to exercise has been pointed out as an important predictor of asthma in preschool children. Several risk factors for wheezing are listed, some of those related to indoor air quality.

Objectives To study the association between potential risk factors and wheezing during or after exercise in infant and preschool children.

Methods In the scope of Phase II of ENVIRH study (Environment and Health in children day care centers), 19 schools from Lisbon and Porto, which included nursery and pre-school in the same institution, were studied. An assessment of indoor air quality was performed. The selection of schools was accomplished by stratified sampling followed by cluster analysis, which guaranteed the heterogeneity of schools concerning indoor quality. ISAAC questionnaire was distributed to all children aged 0–5 years (n = 2,287). For data analysis, three-level logistic random-intercept models were used, because children are nested in classrooms and classrooms are nested in schools.

Results 1,226 questionnaires were returned. From those, 52.3 % concerned to boys. The mean age was 3.5 years (SD ± 1.5 years). Concerning respiratory diseases, 28.5 % (95 % CI: 26.1–31.1 %) of children wheezed in the previous 12 months and 6.0 % (95 % CI: 4.8–7.5 %) reported wheezing during or after exercise. Among the several variables under scrutiny, in the multivariable analysis only increments of 100 ppm of CO_2 in the classroom (OR: 1.06, CI 95: 1.02–1.10, $p = 0.005$) remained significant for "wheezing during or after the exercise in the previous 12 months". For "wheezing in the previous 12 months", the following remained significant: age of the child (OR: 0.58, CI 95: 0.51–0.66, $p < 0.001$), mold or dampness at home (OR: 1.55, CI 95: 1:05–2.29, $p = 0.027$) and parental history of asthma (OR: 1.48, CI 95: 1.00–2.19, $p = 0.052$).

Conclusions These findings suggest that levels of CO_2 in the classrooms are related with wheezing during or after exercise. As exercise is a common trigger factor of asthma in children, more attention should be dedicated to day care centers indoor air quality.

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P1F08

Anticipation of age-at-onset in a group of Portuguese familial amyloid polyneuropathy (FAP ATTRV30M) kindreds

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Background Familial amyloid polyneuropathy (FAP) ATTRV30M is an autosomal dominant systemic amyloidosis. A wide variability in age-at-onset (AO) has been uncovered, including among Portuguese patients [17–82 yrs]. Early (≤ 40) and late-onset (≥ 50) cases are not separate entities, often coexisting in the same family, with offspring showing anticipation—a much earlier AO than their affected parent. Historically, anticipation was mostly ascribed to ascertainment biases. Previous studies with Portuguese, Swedish and Japanese families have shown the presence of a true marked anticipation.

Objective Our aim was to study anticipation in a larger number of kindreds than assessed before, removing possible biases and to gain more insight into parent-of-origin effects.

Methods From the UCP-registry, we analysed 926 parent-offspring pairs, both clinically observed and with well-established AO.

Results Women had a statistically significant higher AO than men, either for daughters (mean, SD—33.7, 6.08) versus sons (29.43, 6.84) or mothers (39.73, 11.85) versus fathers (36.15, 11.48). Also, 291 parent-offspring pairs showed marked anticipation ($\geq$10 years) and the transmitting parent was the mother in 203 pairs. Conversely, among the 22 offspring showing a 10 years higher AO, 19 had a transmitting father.

Mother-son pairs showed larger anticipation (10.43, 9.34) while the father-daughter pairs showed only residual anticipation (1.23, 9.77). Both offspring and parent's gender were highly significant factors (with no interaction).

To remove possible biases, we repeated these analyses: (1) excluding the proband, (2) in a random sample (60 % of cases) and

(3) excluding offspring born after 1960. Anticipation was found in all subsamples and the same trend of parent-of-origin effects was observed. Noteworthy, no parent with AO $\leq$40 had an offspring with AO $\geq$50.

Conclusions These findings confirm anticipation as true biological phenomenon. The study of genetic modifiers should focus on families, aiming to unravel mechanisms of anticipation that may have important clinical implications.

P1F09

Risk assessment in an estuarine environment: a case-study in the Sado estuary

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Introduction Previous environmental studies in the Sado estuary identified industrial and other anthropogenic contamination sources. Surrounding human populations have intense economic fishery and agriculture activities. Food usage previously characterized suggests exposure to estuarine products, farming products, and water in daily activities, as potential routes of contamination. In this geographical area no study relating the health effects due to exposure to heavy metals was ever conducted.

Objective To characterize exposure pathways to estuarine products and its potential health effects.

Materials and method A cross-sectional comparative study of residents in Carrasqueira (in Sado estuary) and residents in Vila Nova de Mil Fontes (VNMF), selected as the non-exposed population. VNMF sits near another river estuary with similar activities but no known contamination exposures. Simple random samples of individuals were selected in each study population from the National Health Service Lists. Face to face questionnaire data were collected at home and intended to characterize: (1) Health effects: diagnosed illnesses, reproductive history; (2) potential routes of exposure; (3) Potential routes of human contamination from the estuary. Statistical analysis included descriptive analysis and associations tests (Chi-squared test, alpha = 0.05). The odds ratio of having an adverse outcome within Exposed and Non-Exposed groups was adjusted for possible confounders using the non conditional logistic regression. Potential confounders were investigated and included if they changed crude OR estimate in at least 10 % after adjustment by the Mantel–Haenszel method.

Results 202 participants of all ages were included. Participation rates were 62.5 % in Carrasqueira and 48.3 % in VNMF. Carrasqueira participants reported a significant higher proportion of professional tasks promoting direct (48.8 %) and/or indirect (30.0 %) exposure to contaminants ($p < 0.001$ and $p = 0.006$ respectively). Carrasqueira had higher period of time spent in fisher and agriculture activities than VNMF (90 % of individuals had more than 8 years of exposure, $p < 0.001$). A higher *odd* of having chronic heavy-metal related morbidity (OR = 1.91; 95 % CI: 1.01–3.64), and congenital anomalies (OR = 1.53; 95 % CI: 0.47–4.92) were observed in Carrasqueira. Only age and years living in the local was retained as confounder in logistic regression, resulting in a 2,1 higher risk of having at least one of the diseases in Carrasqueira compared to VNMF (95 % CI: 1.02–4.69).

Conclusions Overall results indicate fragile but possible health effects of exposure to Sado estuary. Nevertheless, these results should be analyzed carefully since the outcomes in study are not specific and are based in small samples. Further studies should use bioindicators of exposure and outcome.

P1F10

Evaluation of visceral and subcutaneous adipose tissue levels of persistent organic pollutants (POPs) in an obese Portuguese population: biological implications

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The role of environmental toxicants, with hormone-like activity (endocrine disruptors, namely POPs—persistent organic pollutants), has been recently implicated in the multifactorial etiology of obesity, based on the assumption that compounds that are both persistent and bioaccumulative have the potential to induce adverse effects on human health. Due to their lipophilic nature, they tend to accumulate in adipose tissue (AT), and humans, exposed primarily via dietary intake, typically accumulate the highest concentrations, and are unable to metabolize or excrete them. In this regard, we aimed to evaluate their presence in human AT, especially in an obese population subjected to bariatric surgery, and subsequently asses its putative association with metabolic parameters.

To address this issue, adipose tissue samples (visceral, vAT and subcutaneous, scAT; n = 88) from an obese Portuguese population (body mass index, BMI > 40) were collected during surgery at the Hospital S. Jo o (protocol approved by the Hospital Ethics Committee). The levels of 13 POPs (HCB, HCH (α, β, δ), aldrin, endrin, dieldrin, lindane, endosulfan I, endosulfan II, p,p′-DDD, p,p′-DDE, o,p′-DDT, methoxychlor and TCDD) residues were determined by GC-ECD, with 4,4′-dichlorobenzophenone as an internal standard. Adipocyte size was also measured on histologic preparations. Anthropometric and biochemical data were collected, both before and 6 months after surgery.

Preliminary results show the presence of POPs in all evaluated samples of human visceral and subcutaneous AT. The median concentration of total POPs was higher in older women (46–62 years), and visceral AT had a higher concentration of POPs than subcutaneous AT. Of the quantified compounds, the p,p′-DDE, a metabolite of the banned pesticide DDT, was found in 58.4 and 23.5 % of visceral and subcutaneous AT samples, respectively. Regarding the size of adipocytes, the mean area was significantly higher in samples with higher concentration of POPs. This positive correlation was observed in visceral and subcutaneous AT. Comparing with comorbilities, the subjects with higher concentrations of POPs had more prevalence of type 2 diabetes (not significant), dyslipidemia and hypertension.

These preliminary results confirm that POPs are pervasive in this obese population, their abundance increasing with age. Their putative association with metabolism and outcome after surgery will be investigated.

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P1F11

Heritability of phenotypes related to glucose homeostasis and adiposity in rural area of Brazil

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Background The insulin resistance and obesity are part of a set of interrelated conditions and strongly associated with type II diabetes and cardiovascular disease. Although the association between obesity and dyslipidemia or type II diabetes is well documented, the exact nature of this relation remains unclear. The fact that obesity and dyslipidemia and type 2 diabetes show significant heritability raises the possibility that common genetic vulnerability may account for this association.
Objectives To estimate heritabilities and genetic correlations between indicators of glucose homeostasis and adiposity or lipid metabolism traits in a population of rural community of Jequitinhonha Vale, Minas Gerais, Brazil.
Methods The Jequitinhonha Community Family Study cohort was based in subjects aged $\geq$18 years, residents in the rural area. Phenotype data traits were assembled for 290 probands (51.7 % women). The degree of insulin resistance was assessed by homeostasis model assessment method (HOMA-IR) using levels of fasting glucose and insulin levels. Anthropometric data and fasting levels of LDL-Cholesterol (LDLc) and HDL-cholesterol (HDLc) were also used. The pedigrees were constructed with first, second and third degree relatives using the data management software PEDSYS. The heritability (h2) and genetic correlations were estimated thought the variance-components analyses and correlation coefficients (pg and pe) all of them adjusted by sex and age (model 1) and adjusted for age, sex, smoke, hip circumference, skinfold triceps (model 2). This analysis were performed using the SOLAR software package.
Results Significant heritability estimates of fasting glucose ranged from 38 to 48 % and the HOMA-IR from 35 to 23 % (model 1 and 2, respectively). The higher significant heritabilities estimated were high for HDLc ($h^2 = 52$ %), waist circumference (WC) and insulin ($h^2 = 50$ %, for both, model 1). In model 2 were HDLc ($h^2 = 54$ %), fasting glucose and insulin ($h^2 = 48$ %, for both), WC and mid upper arm circumference (MUAC) ($h^2 = 43$ %, for both). Significant genetic correlations were found between insulin with BMI ($\rho_g = 0.48$), WC ($\rho_g = 0.47$) and HDLc ($\rho_g = -0.47$). HOMA-IR was correlated with BMI ($\rho_g = 0.53$) and HDLc ($\rho_g = -0.58$).
Conclusions These results indicate that in this rural Brazilian population glucose homeostasis indexes, lipid metabolism and adiposity were highly heritable. Additionally these traits could be determined by common genes.

P1F12

The role of cord blood leptin levels in infant neurodevelopment: mother–child cohort, Rhea study, Crete, Greece

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Background Brain development starts antenatally and continues in childhood and adolescence. Cord leptin (CL) is a biomarker of fetal growth that plays an essential role in the regulation of energy homeostasis, food intake and body composition beginning in the early life. Leptin and its receptors are widely expressed throughout the central nervous system and there are growing evidences suggesting that leptin exerts neurotrophic actions and modulates a variety of neuronal processes.
Objectives Our main objective was to investigate the possible regulatory role of cord leptin to neurodevelopment in infants aged 18 months in the Mother–Child Cohort (Rhea Study) in Crete, Greece.
Methods The analysis included 251 mother–child pairs from the prospective mother–child cohort "Rhea" study in Crete, Greece with singleton pregnancies, providing cord blood serum samples for leptin analysis and complete data on neurodevelopmental assessment at 18 months by the Bayley Scales of Infant and Toddler Development (3rd edition). Multivariable linear regression models were used adjusting for several confounders.
Results A per unit increase in CL concentration (ng/ml) was significantly associated with increased scores in gross motor developmental scale (β-coeff 0.5, 95 % CI: 0.07, 0.93) after adjusting for maternal age at birth, maternal education, preterm, pre-pregnancy BMI, parity, birth weight, infant sex, breastfeeding duration, quality of assessment, and weight for age at assessment. Hyperleptinemia (over the 90th percentile) in cord blood was associated with 7 units increase in gross motor scale (β-coeff 6.90, 95 % CI: 0.41, 13.38) and 8.5 units increase in social-emotional scale (β-coeff 8.5, 95 % CI: 1.01, 15.99). A stratified analysis by gender has shown that the effect was greater in boys (β-coef_hyperleptinemia: 11.72, 95 % CI: 2.66, 20.77).
Conclusion This is the first prospective study showing that high levels of cord blood leptin may be associated with enhanced gross motor and social emotional development at 18 months of age. Additional longitudinal studies and trials are needed to confirm these results.

P1F13

Clustering analysis of mortality and hospitalization in a remediation area of regional interest in Tuscany, Italy

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Background The Cecina river valley, in Tuscany, is a site of regional interest for environmental remediation. The area is characterized by ground and surface water contamination by pollutants such as hexavalent chromium, arsenic, mercury, boron, nitrates, chlorides and trihalomethanes, for which excesses of the WHO limits are documented. These contaminants have both natural and anthropogenic origin such as natural background, pesticides use, waste landfilling, and are source of concern for the local communities. In some municipalities where the WHO limits of 10 mg/L for As in drinking water was exceeded, limit's derogations were allowed by the Italian Ministry of Health according to EC directive 98/83/CE.
Objectives To investigate the health status of the population residing in the area and to identify possible small areas with critical environmental and health pattern.
Methods An environmental database was built collecting water data from public and private sources during the period 2000–2010.

Mortality and hospital discharge records of population residing in nine municipalities was evaluated in the period 2004–2010. Twelve groups and subgroups of causes were considered.

A case–control study was performed using the frequency matching approach by age and sex. All cases and healthy controls were georeferenced using coordinates of the more representative residence taking into account the latency period of diseases and the residence duration. Clustering analysis was performed by using the Spatial Scan Statistics by Kulldorff (1997).
Results Statistically significant clusters of mortality for lung cancer, leukemia and diseases of the digestive system were observed in males and for chronic respiratory diseases in females.
Statistically significant clusters of hospitalization for acute respiratory diseases were observed in males and for leukemia, ischemic heart and digestive diseases for both genders. Some clusters were localized in small areas with moderate or high concentrations of hexavalent chromium, arsenic, mercury and nitrates, sometimes exceeding the WHO limits.
Conclusions The results showed some signals of weakness of the population health status in areas with environmental altered data. Although the interpretation of the clusters is limited, mainly because of the exposure was based only on residence address and other individual risk factors were not considered in the study, some clusters observed, especially for both genders or for female as for leukemia, respiratory and ischemic heart diseases, can be useful for planning advanced epidemiological studies and surveillance activities, for implementing an evidence-based dialogue with local communities, and for giving indications for environmental remediation.

P1F14

APCS and RBP4 will act as modifiers of age-at-onset in familial amyloid polyneuropathy (FAP ATTRV30M)?

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Background Familial amyloid polyneuropathy (FAP ATTRV30 M) is an AD inherited disease, due to a point mutation in the *TTR* gene. Remarkable differences in mean age-at-onset (AO) have been described in different clusters, including within Portuguese population.
Among Portuguese families, FAP shows a wide variation in AO (17–82 years) and asymptomatic carriers aged 95 can be found; this variation is also often observed between generations.

A previous study in Portuguese patients (Soares et al., 2005) found a modifier effect in AO for *APCS* and *RBP4*, when comparing classic and late-onset patients with controls. However variation between generations was not taken into account.
Objectives Our aim was to investigate if these two candidate-genes have a modifier effect in AO variation from parent to offspring.
Methods We collected a sample of 36 FAP families with at least 2 generations. We selected 5 tagging SNPs and also the 5 SNPs previously described. These SNPs were analysed by SNaPshot and RFLP, respectively. Samples' genotyping is currently underway and results are being analyzed with the GeneMapper^{TM} v.4.0 software.
Results Preliminary results in 5 FAP families showed that although for *RBP4* we found different genotype's frequencies in patients for rs7079946 and rs17484721 from HapMap, no striking differences were found between generations in the families analyzed for the two genes.
Conclusions In the total sample, we expect to find or exclude the potential role of these candidate-genes as modifiers of FAP ATTRV30 M, in order to better understand the mechanisms involved in AO variability between generations.

P1F15

Association between perception of sports facilities within neighborhood environment, physical activity and weight status. A preliminary study with adolescents of secondary schools in Porto-Portugal

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Background Making people more physically active has become a public health issue which increase the necessity to understand the factors that influence physical activity in adolescence. There is evidence on literature that the perception of sports facilities within neighborhood could be a facilitator for physical activity.
Objective The aim of this study is to investigate possible associations between perceived presence of environmental amenities such as sports facilities and urban green spaces, and physical activity among adolescents.
Methods We evaluated 101 (63.4 % girls) aged from 14 to 18-years-old adolescents enrolled at two public schools in Porto and living at Porto municipality. Physical activity and distance to sports facilities and urban green spaces was assessed using a self-reported questionnaire. Anthropometric measures were assessed in all adolescents: body weight and height. Adolescents were categorized as normal weight and overweight/obesity according to IOTF cut-points.
Results Physical activity practice was reported by 57.3 % of girls and by 43.7 % of boys ($p = 0.375$). The proportion of overweight/obesity was 21.6 % in girls and 21.9 % in boys ($p > 0.05$). Proportion of adolescents that reported having a sport facilities was 67.9 and 54.8 % of adolescents reported an urban green space in the neighbourhood, considering a walking distance about 10 min from their home. Adolescents who perceived a place to practice physical activity near home reported higher physical activity practice than those that reported no sport facility (69.8 vs. 32.0 %, $p = 0.003$, respectively). We not found association between practice physical activity, perception of sport facility and the weight status ($p = 0.261$ and $p = 0.365$).
Conclusion In our study the results suggest that there is a relationship between the perception of sports facilities proximity and self-reported physical activity among adolescents. However, the physical activity practice and perception of sports facilities were not associated with weight status.
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P1F16

Association between indoor environment characteristics of homes and respiratory symptoms in schoolchildren

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Introduction The health risks related with indoor exposures such as allergens and irritants, dampness and mould in homes have received

considerable attention during recent years, namely, regarding their potential effect on asthmatic children. However less is known regarding the importance of indoor environment characteristics in homes on the development of asthma and allergy symptoms among healthy children. The aim of the current study is to evaluate the associations between the indoor environment characteristics of homes and respiratory symptoms in schoolchildren without asthma or allergy diagnosis.
Methods Between November 2011 and January 2012, 360 parents and their children aged 7–11 years who were enrolled in 7 public schools in Porto completed a questionnaire based on the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire. Also information on children's socio-demographic and home characteristics was collected. Excluding children with asthma or allergy diagnosis, the association between the indoor environment characteristics of homes and respiratory symptoms was estimated in 228 children using odds ratio and 95 % confidence interval, calculated by logistical regression, adjusted for parents' education.
Results Considering the last 12 months, 10.5 % schoolchildren had wheezing and 6.5 % had rhinitis. Concerning the exposure to traffic, 32.6 % of homes were situated near busy traffic and 67.4 % were situated in an area far from busy traffic. Regarding the previous 12 months, visible mould growth on walls, floor or ceiling was reported by 13.0 % of parents and smell of mould by 9.5 %. Problems of water leakage or water damage in walls, floor or ceiling was reported by 11.6 %. Regarding children's bedroom, 8.5 % presented dampness or mould growth; 70.0 % had carpets and 48.6 % use antimite covers for mattresses and pillows. The presence of cuddly in the bedroom was reported by 80.2 % of parents. A third of parents reported that the interior of their home has been decorated in the last 12 months, and 52.0 % have pets at home. 18.7 % of parents reported that their children were exposed to tobacco smoke at home. After adjusting for parents' education, none of the home indoor environment characteristics evaluated was significantly associated with respiratory symptoms in the last 12 months in schoolchildren.
Conclusions The indoor environment characteristics of homes were not associated to the development of respiratory symptoms in non-asthmatic children.

Poster Topic 1G. Birth cohorts

P1G01

Predictors of weight change from 11 to 15 years of age: the 1993 Pelotas (Brazil) Birth Cohort Study

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Background Overweight adolescents may experience reduction in their quality of life due to low self-esteem, which can lead to poor economic and social outcomes in adulthood.
Objectives We explored predictors of weight change from 11 to 15 years of age through the analysis of prospective data.
Methods Data were collected from individuals at 11 and 15 years of age born in 1993 (Pelotas, Brazil). Nutritional status was assessed using body mass index (BMI) for age in z-score according to the World Health Organization 2007 standards. The independent variables used, collected at 11 years of age, were: socioeconomic position, adolescent's perception of own weight, body dissatisfaction, and weight loss dieting.
Results Of the 4,032 adolescents whose nutritional status could be evaluated in the two follow-ups, 93 % maintained their nutritional status classification from 11 to 15 years. 102 (2.8 %) became obese and 181 (4.5 %) ceased to be obese in the 4-year period. The prevalence of obesity decreased from 11 to 15 years in both boys and girls. In girls, becoming obese was related to poverty, whereas no association with socioeconomic position was found among boys. Perception of own weight, body dissatisfaction and weight loss dieting at 11 years were key predictors of becoming obese at 15 years of age in adolescent boys and girls.
Conclusions BMI tracks strongly in early adolescence. This finding suggests that interventions to change nutritional status should be implemented in childhood in order to be more effective.

P1G02

Lower treg number in cord blood is associated with significant increased risk against atopic dermatitis up to the second year of life

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Background Former studies revealed relationships between regulatory T cells (Treg) and atopic diseases.
Objectives The aim of our research was to analyse the influence of environmental exposure during pregnancy on cord blood Treg numbers and resulting consequences for the allergy risk later in life.
Methods Within a prospective mother–child cohort (LINA) Treg numbers in cord blood were characterized by the analysis of a specific demethylated region in the FOXP3 gene (TSDR). Exposures as well as disease outcomes were gathered using questionnaires.
Results Cord blood Treg numbers were associated with gender, family history of atopy as well as tobacco smoke exposure and the usage of disinfectants during pregnancy. Male newborns and those having parents with a history of atopy had lower Treg numbers in cord blood. Maternal exposure to tobacco smoke and the use of disinfectants also contributed to lower cord blood Treg numbers. We were able to show, that the number of Treg in cord blood is associated with the occurrence of atopic dermatitis, cradle cap or sensitization against food and inhalant allergens during the first year of life. The association between cord blood Treg numbers and atopic dermatitis remained significant until the 2nd year of life.
Conclusion This was the first study showing an impact of environmental exposure on the differentiation of Treg during the fetal period and the relevance of Treg numbers at birth for the allergy risk of the child. The Treg number at birth seems to be a relevant parameter for predicting the allergy risk. Furthermore, factors contributing to reduced Treg numbers at birth have to be considered as risk factors for allergy development.

P1G03

Risk of congenital anomalies in relation to the uptake of trihalomethanes from drinking water during pregnancy: a KANC cohort study

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Objectives Recent findings suggest that exposure to drinking water chlorination by-products—trihalomethane (THMs) may increase the risk of congenital anomalies; however, the results are inconsistent mainly because of crude exposure assessment. The aim of this study was to evaluate the impact of maternal exposure to individual THM uptake during pregnancy on cardiac and any congenital anomalies.
Methods A prospective cohort study of pregnant women was conducted between 2007 and 2009 in Kaunas, Lithuania (Kaunas KANC cohort study). A special water consumption and water use habits questionnaire was used to interview the 3074 women who agreed to participate in the study. We obtain registry-based data on any live infant congenital anomalies from medical records (n = 171).

We estimated maternal THMs uptake during entire pregnancy and trimesters by using tap water THMs concentrations, geocoded maternal address, individual information on drinking water ingestion, showering and bathing, and uptake factors of THMs in blood. Associations between the high and low THM levels, internal dose tertiles of THM and internal dose as continuous variable and congenital anomalies were analysed by means of logistic regression models with adjustment for maternal age, education, body mass index, foetus number, previous premature birth, chronicle disease, alcohol consumption and infant gender.
Results There were some evidence for a relationship between THM level (μg/L) in the maternal residential water supply zone during first trimester pregnancy and risk of congenital anomalies. We found little indication of a dose–response relationship for THM constituents (μg/d) and congenital anomalies. The relationship was strongest for bromodichloromethane (BDCM) (OR 1.54, 95 % CI 1.03–2.30 (highest vs. lowest tertile) and the probability of delivering any congenital anomaly was elevated by 3 % (OR 1.03, 95 % CI 1.00–1.07) per every 0.01 μg/d increases in the internal dose during first and second trimester. For the congenital heart anomalies the dose–response relationship was evident for first month pregnancy for BDCM (OR 2.17, 95 % CI 1.05–4.47) (highest vs. lowest tertile) with odds ratios increasing by 6 % (OR 1.06, 95 % CI 1.01–1.11) per every 0.01 μg/day increases in the BDCM internal dose. We found no statistically significant trends across exposure categories for either the musculoskeletal or urogenital anomalies.
Conclusion This study shows some evidence for a relationship between THM internal dose and risk of congenital anomalies. Particularly increase of prenatal exposure to BDCM might increase the risk of congenital heart and any congenital anomaly.

P1G04

Women's satisfaction with body image before pregnancy and body mass index 4 years after delivery

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Background Body image satisfaction (BIS) plays an important role in body weight and can contribute to the adoption and maintenance of a healthier lifestyle during and after pregnancy.
Objective To assess the association between BIS before pregnancy and body mass index (BMI) 4 years after delivery in mothers of a Portuguese birth cohort.
Methods This study is based on 3,612 women with prepregnancy BMI >18.5 kg/m^2 and reevaluated 4 years after delivery. BIS was defined as the difference between perceived and ideal body size, assessed by the Stunkard Silhouettes. Four years after the index pregnancy, weight and height were measured. Multinomial logistic regression models were used to compute odds ratios (OR) for the association between BIS and BMI classes at 4 years, taking women who were satisfied with their image as the reference class of exposure, adjusting for age, education, income, smoking, parity, weight gain during pregnancy and breastfeeding.
Results Before pregnancy, 7.1 and 49.9 % of women perceived their body size as too small and too large, respectively, the remaining being satisfied with body image. Among women with normal prepregnancy BMI, those who felt too small regarding their ideal figure were more likely to have a decrease in BMI within 4 years, which translated into a lower likelihood of becoming overweight or obese (OR = 0.63; 95 % CI: 0.44–0.91 and OR = 0.21; 95 % CI: 0.05–0.91, respectively), while feeling too large was associated with an increase in BMI and a higher risk of becoming overweight or obese (OR = 2.12; 95 % CI: 1.73–2.59 and OR = 3.42; 95 % CI: 2.02–5.79, respectively). The same tendency was observed for overweight women before pregnancy, with those who felt too large presenting an increase in BMI and being more likely to become obese 4 years after delivery (OR = 1.33; 95 % CI: 0.96–1.84) and less likely to become normal (OR = 0.64; 95 % CI: 0.38–1.08). In contrast, obese women who felt too large had a non-significant decrease in BMI, insufficient to change category.
Conclusions BIS has an independent role in maternal body weight after delivery and supports the importance of working on expectations and motivations to attain a goal. More realistic body size goals may lead to motivation to lose weight and higher success in attaining them.

P1G05

Bonding: marital satisfaction and parenting

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Background The study of the psychological dimensions associated with the level of Bonding father's face to the newborn has developed around two issues: the impact of the quality of the marital relationship in the connection and the influence of attachment style of the father in his emotional involvement with the child.
Objective For this study, mainly interested in understanding the influence of marital satisfaction perceived by the father in the establishment of the Bonding in the relationship with the baby. However, even more were outlined three goals: to describe how the type of Bonding is influenced by sociodemographic variables, obstetric variables determine whether the influence Bonding between parent and child, and finally, assess the impact of variables involved in pregnancy, labor and delivery in Bonding.
Methods This is a quantitative, descriptive-analytic and correlational, attended by 349 male parents, with a mean age of 31.84 years and standard deviation of 6.067. The protocol for data collection, applied up to 48 h post partum, includes information that allows the sociodemographic, obstetric, father involvement during pregnancy, labor and delivery and even the scales of Satisfaction Evaluation in Areas

of Married Life (Narcissus and Costa, 1996) and Bonding Scale (Figueiredo et al. 2005).
Results It was found that there are significant differences between: Positive Bonding and age ($p = 0.010$), degree of education ($p = 0.045$); Positive Bonding, Bonding Not Clear with being the first child or not ($p = 0.027$, $p = 0.043$); Positive Bonding and communicate with the fetus ($p = 0.005$) between the presence in the labor and Bonding Not Clear ($p = 0.045$). It was found significant positive correlations in some subscales of marital satisfaction and the types of Bonding. It also confirmed that age, duration of relationship, qualifications, or may not be the first child, type of delivery, presence in clinical monitoring prenatal, feel fetus movements, communicate with the fetus were found that interfered in the marital satisfaction.
Conclusions The results suggest that marital satisfaction influences the establishment of the Bonding in the early relationship parent/child.

P1G06

Intergenerational social mobility and body image satisfaction in women before pregnancy

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Background Advantaged socioeconomic position (SEP) in adulthood is generally associated with body image dissatisfaction among women, but motherhood could change this relationship. Intergenerational social mobility could clarify the role of ideals established in early life and newly acquired goals according to current standards of beauty.
Objective To assess the association between childhood and current SEP and body image satisfaction (BIS) before pregnancy in mothers of a Portuguese birth cohort.
Methods The birth cohort Geração XXI was assembled in 2005–2006 at 5 public hospitals of Porto, after delivery. This analysis includes 5,431 women. Mother's education was used as indicator of current SEP and childhood SEP was based on highest parent's education when these women were 12 years old. BIS was the difference between perceived and ideal body size, assessed using the Stunkard Silhouettes. Age-adjusted odds ratios (OR) were computed using multinomial logistic regression models, taking women satisfied with their body image as the reference category of the outcome.
Results Before pregnancy, 44.9 % of women felt satisfied with their body image, while 9.0 and 46.2 % perceived their body size as too small and too large, respectively. Women with education $\leq$12 years were more likely to be dissatisfied in either direction (feeling too small: OR = 1.48; 95 % CI: 1.19–1.84; feeling too large: OR = 1.40; 95 % CI: 1.25–1.58). Mother's parents' educational level <6 years was similarly associated with BIS (feeling too small: OR = 1.02; 95 % CI: 0.83–1.25; feeling too large: OR = 1.40; 95 % CI: 1.25–1.58). When cross-classifying according to childhood and current SEP, in comparison with women coming from higher SEP families and currently occupying a higher SEP (reference), those with $\leq$12 years of education had a higher probability of feeling too small, regardless of their parents' education ($\geq$6 years—OR = 1.71; 95 % CI: 1.21–2.41; <6 years—OR = 1.42; 95 % CI: 1.08–1.87), and a higher probability of feeling too large ($\geq$6 years—OR = 1.41; 95 % CI: 1.13–1.76; <6 years—OR = 1.69; 95 % CI: 1.45–1.96). In contrast, women whose parents had lower education but who attained themselves higher education had a higher likelihood of feeling too large (OR = 1.36; 95 % CI: 1.15–1.61) while no effect was observed for feeling too small (OR = 1.00; 95 % CI: 0.72–1.40).

P1G07

Gender differences in relationships between employment histories and health in the 1958 British birth cohort

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Background Great Britain, like many countries in Europe and North America, has seen dramatic changes in the nature of work and family and the normative divisions between them over the past 40 years. For example participation in paid work is now a fact of life for the majority of women, including those with family responsibilities, and fathers are now more involved in childcare. These changes in the labour market attachment of men and women are well-documented, but the impact of these changes on health over the life course is unknown.
Objectives The aim of this study is to assess gender differences in the health impact of women's and men's participation in paid and unpaid work over the life course.
Methods This study characterises gender differences in women's and men's participation in paid work in a British cohort using longitudinal typologies. The 1958 National Child Development Study is used in this work. This is a nationally representative sample of more than 17,500 babies born during a single week of 1958 in Great Britain. Work typologies are constructed from participant's annual employment status using sequence analysis. Relationships between life course typologies and objective measures of physical health at age 45, including body mass index, waist circumference, blood pressure and inflammatory markers will be examined separately for men and women, adjusting for educational qualifications and other a priori confounders.
Results It is hypothesized that gender differences in relationships between employment histories and health will be of smaller magnitude for women with stronger long-term ties to the labour market than for women with weaker labour market, independent of educational differences.

P1G08

The effect of the timing of the first wheezing attack on social determinants of cognitive ability: an evidence from the 1970 British birth cohort study

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Background The timing of occurrence in childhood respiratory symptoms and intellectual input to children appear to contribute to social determinants of childhood cognitive ability.
Objectives To examine the effect of first wheezing attack on childhood cognitive ability in relation to social position of the origin.
Methods Excluding disabled children, we used 7,981 cases with complete information, extracted from the 1970 British Cohort Study (BCS70). Prospective information collected at birth, age 5 and age 10 were used for this study. The first occurrence of wheezing attack is approximated by the maternal report, obtained when cohort children were at age 5. Social position of father is indicated by the Registrar's General Social Class (RGSC). Child's cognitive ability is indicated by cohort children's performance on

the English Picture Vocabulary Test, administered at age 5. Frequent reading to cohort children and the age of placement in pre-school education are mediators in this study. Sex, birth weight, and parental smoking status are treated as confounders. Ordered logistic regression was used to assess if the timing of the first wheezing attack would attenuate the association between father's RGSC and children's reading ability at age 5. We also examined the role of frequent reading and age of pre-school placement in relation to the exposure and the outcome. Additionally, we tested if the timing of the first wheezing attack would be still detrimental to their reading ability measured through the Edinburgh Reading Test at age 10.

Results Children with the lowest RGSC were negatively associated with reading ability at age 5 (OR = 0.28, 95 % CI 0.25–0.32). The association between father's RGSC and reading ability at age 5 was slightly attenuated by the first wheezing attack occurred under age one which remained to be significant even after fully adjusted for confounders, frequent reading and age of pre-school placement (OR = 0.74, 95 % CI 0.64–0.86). The effect of the first wheezing attack on reading ability at age 10 was completely attenuated when it was adjusted for reading ability at age 5, indicating that the detrimental effect of the first wheezing attack under one is indirect. Children from socially disadvantaged background were still likely to be showing poor reading ability, while frequently read children continued to do well at age 10.

Conclusion Wheezing attacks occurred tender age appears to have a detrimental effect on children's cognitive ability independent of their social upbringing.

P1G09

Combined analysis of the risk of adverse birth outcomes associated with maternal occupational exposure: a CHICOS initiative

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Background Occupational maternal exposures before conception or during pregnancy may be hazardous to fertility and optimal fetal and child development. Population-based birth cohort design has been used very few times in this field; most of the evidence come from retrospective occupational studies, case–control studies, and registry-based studies. In Europe, few single birth cohorts have enough statistical power to examine such relationships, and therefore pooling of data across cohorts will be particularly valuable. However, data are, by nature, non-uniform across cohorts and improved coordination at European level is needed to take full advantage of this important infrastructure of existing cohorts.

Objectives The European Commission's 7th Framework Programme has funded the coordination project CHICOS ("Developing a Child Cohort Research Strategy for Europe"—www.chicosproject.eu) to develop an integrated strategy for birth cohort research in Europe. One of the objectives of the CHICOS initiative is to demonstrate the feasibility of, and draw lessons from, combining European birth cohort data. Here we show a combined analysis with data from different European birth cohorts to estimate the risk of specific occupations on birth outcomes.

Methods A total of 14 European birth cohorts taking part of the CHICOS project and studying more than 200,000 mother–child pairs have been included in this combined analysis. Nine occupational sectors were defined as potentially exposed: health, day-care, cleaning, agriculture, electricity, lab work, food industry, printing and painting, and hairdressers. Birth weight and small-for-gestational-age were the outcomes assessed. Potential confounders were included in the analysis. We performed meta-analyses using a random effects model.

Results Between 75 and 92 % of women in the 14 birth cohorts declared having worked during pregnancy and those women appeared to have higher birth weight compared to non-working women. The nine occupational sectors accounted for 44 % of total workforce. Cleaning work appeared to be negatively associated with birth weight. Specific associations with other occupational sectors at risk within the working women will be presented.

Conclusions Many cohorts were interested and very committed to this collaborative project of combined data analyses. Pooling data across European birth cohorts will provide enough statistical power to evaluate the effects of specific occupational exposures on birth outcomes and will allow to study the heterogeneity between countries.

P1G10

Bonding and social support

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Background One of the important factors in the establishment of bonding between parent and baby is social support. This factor is associated to the existence and quality of social relations, marital relations and friendship. This has been pointed out as the main psychosocial variable involved in adaptation to parenthood and thus also important in the development of bonding between parent and baby.

Objective The central problem of this empirical study is to investigate the influence of socio-demographic, obstetric, father involvement in pregnancy, labor/delivery and social support, with the bonding.

Methods This study is a cross-sectional study, correlational descriptive, quantitative, attended by 349 parents, aged between 19 and 55, with an average age of 31,84, with the standard deviation of 6,067. To evaluate variables, instruments of recognized reliability were used, measured and validated for the Portuguese population: satisfaction scale with the social support and bonding scale. Questionnaires were also applied in what concerns social-demographic, obstetric and father involvement in pregnancy, labor and delivery, providing a reliable sample characterization.

Results This study reveals that positive bonding is influenced by age ($p = 0.010$), qualifications ($p = 0.045$), first child ($p = 0.027$), communication with fetus ($p = 0.005$) and be present during labor ($p = 0.045$). Regarding to social support: Positive bonding and "satisfaction with friends" ($p = 0.011$); Negative bonding and "intimacies" ($p = 0.011$); Total bonding and "family satisfaction" ($p = 0.001$).

Conclusion The data undoubtedly show the importance of nurse specialists in maternal health who must involve the father since the beginning of pregnancy. Since social support is key to bonding, it is essential that health professionals support and integrate the father in the adjustment process to parenthood.

P1G11

Father bonding: influence the emotional involvement of this dyad

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Centro Hospitalar Baixo Vouga; Polytechnic Institute of Viseu-Superior Health School; Polytechnic Institute of Viseu-Superior Health School

Background Father bonding toward the infant, a unique and lasting emotional tie, has not been received the interest in research. Nevertheless, it acknowledges the influence of several variables in emotional involvement between parent and baby, like as, father attachment. This study intends to implement our knowledge about these factors, essentially assess the importance of father attachment in bonding toward the child.
Objectives This study aims to assess father bonding toward the infant, and which variables, father attachment among them, influence the emotional involvement of this dyad.
Method The study sample was 349 fathers, between 19 and 55 years (SD = 0.33). Was administered a questionnaire, until 48 h after the birth of their child, consisting in socio-demographic, obstetric and father involvement characterization, and two scales, Adult Attachment Scale-R (CANAVARRO, DIAS & LIMA, 2006) and *Bonding* Scale (FIGUEIREDO et al., 2005a).
Results The results suggest that younger fathers ($p = 0.010$), with less education ($p = 0.045$), which are having their first child ($p = 0.027$), which were present the first ultrasound ($p = 0.005$) and spoke with his child during pregnancy ($p = 0.005$) shows more positive *bonding*. The anxiety dimension, in Adult Attachment Scale-R, predict negative bonding ($p = 0.024$), and the depend dimension predict not clear bonding ($p = 0.001$) and total bonding ($p = 0.001$).
Conclusions We conclude that paternal bonding is influenced by socio-demographic, obstetric and psychological variables (father attachment). As health professionals, we must be alert to fathers with a risk profile, so we can intervene and help them in adaptation and adjustment in this new stage of their lives.

Poster Topic 1H. Vaccination

P1H01

Effectiveness of influenza vaccination in the Brazilian context: a comparative analysis of the program in the Northeast and South of the country

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Background Since 1999, the public health service has conducted the annual vaccination of the elderly against influenza in the country. Few studies have evaluated the effectiveness of the intervention specifically focusing on their contribution to the reduction in the mortality attributable to influenza outbreaks. This study aimed to compare the mortality caused by influenza and pneumonia in the elderly (65 years or more) before and after the introduction of vaccination in the Northeast and South regions of Brazil, and to compare results obtained for each region, thus seeking to refer hypotheses related to the effectiveness of the intervention in different climatic and socio-economic conditions.
Methods Official data of population and mortality caused by influenza and pneumonia were obtained from governmental agencies (IBGE and DATASUS) responsible for managing this information. Weekly rates of mortality were estimated as adjusted for gender and age distribution. The estimation of influenza outbreaks and the mortality specifically attributable to these outbreaks used the Serfling model. Rates were assessed for 1999–2009 (when vaccination was performed) and 1996–1998 (without vaccination). The magnitude of rates in each period was described and compared in both regions.
Results During the vaccination period, the yearly average number of periods with excessive mortality was reduced by 32.8 % in the South, and 4.5 % in the Northeast. In the South region, the average duration of such periods was reduced by 66.2 % and mortality was reduced by 43.9 %. In the Northeast region, no decrease was observed for the average duration of influenza outbreaks and its associated mortality.
Conclusion This study reinforces the hypothesis that influenza vaccination of the elderly was effective in Southern Brazil, although it was not in the Northeast. The mismatch between the period of the year in which the vaccination is performed and seasonal variation of mortality in the Northeast region was highlighted as a possible factor explaining this finding.

P1H02

Evaluation of tetravalent vaccine coverage in children under the age of one. Brazil, 2007 to 2010

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Univesidade Federal da Paraíba, UFPB

Introduction The tetravalent vaccine provides immunity against diphtheria, tetanus, pertussis and forms of meningitis caused by the *Haemophilus influenzae* type b (Hib). This vaccine was introduced in 2002 and is mandatory according to the Brazilian children's immunization schedule. It is administered in three doses, at the ages of 2, 4 and 6 months, though its effectiveness can only be ensured after the last administration. The monitoring of vaccination coverage (VC) is done continuously and regularly by the Ministry of Health (MS) through the National Immunization Program (PNI), and by the state and municipal health departments.
Objective The study aimed to analyze the tetravalent vaccine coverage in children under one, evaluating its temporal evolution during the period of four consecutive years and identifying the goals achieved for all five Brazilian regions.
Methods This is an exploratory and descriptive study whose data concerning the VC information were collected from the PNI's Information System, available at www.datasus.gov.br, and the established goals were collected from the SISPacto on the MS website (http://portalweb04.saude.gov.br/sispacto). The percentage of states that have achieved the pre-established goals for each region was calculated, and their individual results were compared.
Results The VC with respect to the third dose of tetravalent vaccine in children under the age of one from 2007 to 2010 remained above the target (95 %) in all Brazilian regions, except in the South in 2008 (94.46 %). Analyzing that health indicator by state, it was observed a decrease in vaccination coverage in 92.59 % of them. By observing the amount of federal units by region reaching the goals in the period, it appears that the Northeast remains the best performing region, with 100 % of the states above 95 % in 2007, 2009 and 2010, while the North had the lowest percentage of states that achieved the goals.
Conclusion The study demonstrated that the Brazilian states showed satisfactory results in the period, surpassing or staying close to the target in most years. It also highlighted the areas that had difficulties achieving the goals, showing that they need to review their strategy of action and display a greater commitment among the three government spheres so the vaccine coverage would exhibit a more homogeneous performance in the country.

P1H03

Estimation of tuberculin status among school children in Western Greece

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Background Tuberculosis is a growing international health concern, since it is the leading infectious cause of death in the world today. Vaccination using Bacillus Calmette-Guerin (BCG) discovered in the 20th century saved many lives in a period where tuberculosis was extremely widespread in the world. Nowadays, the program of BCG vaccination at schools remains one of the most important preventive measures against tuberculosis in Greece.
Objectives The aim of this cross-sectional study was to estimate the tuberculin status among first class school children in a suburban region of Western Greece.
Methods In the time period from 2001 to 2011 qualified medical and nursing personnel administered intra-dermal Mantoux test with 0.1 ml PPD to all 6 years aged primary school children. The site of the antigen injection was examined for occurrence of indurations after 48–72 h. Children with positive test results (indurations of 10 mm and more) were regarded as infected with *M. tuberculosis* and were referred to a paediatric clinic for further investigation. All children who had a response of less than 10 mm (test negative) received a BCG vaccination. Children born in foreign countries such as Albania and Bulgaria, showing a response of more than 10 mm were also considered as positive and referred to further investigation, although this fact could issue from previous BCG-vaccination at birth in the origin country.
Results During the 10 year study period 70 children out of the 3,085 screened for M. tuberculosis infection were found to be positive, giving an average prevalence rate of 2.3 % (range 0–9.2 %) and showing a significant decrease during the decade. Missed evaluation of test results ranged from 4.1 to 14.9 % due to children's absence from school. BCG-vaccination received 54.2 %, whereas 6 % of the children were already vaccinated. In 22 % of children the parents refused the vaccination and in 8.6 % vaccination was not performed due to other reasons.
Conclusions The prevalence of infection among children at school enrollment demonstrates a falling tendency, supporting the impression that satisfactory progress has been achieved in control of tuberculosis. Higher prevalence was observed in the years when children of immigrants coming from TB endemic areas were enrolled in the primary school. Furthermore, a falling tendency of parents' refusal to vaccination is observed, probably due to enhanced information about BCG vaccine. The study shows that a good organized local control and surveillance system is essential in effective disease control and prevention of tuberculosis.

P1H04

Knowledge and attitudes of public health residents to immunisation programmes from 5 European countries

Andre Peralta, Stephen Dorey, Mael Barthoulot, Laura Reques, Benedetto Simone

Public Health Unit of Amadora, Lisbon Regional Health Administration, Portugal; North London public health specialist registrar, London, UK; EuroNet MRPH, France; Medical Resident of Public Health, Escuela Nacional de Sanidad. Instituto de Salud Carlos III, Spain; Institute of Hygiene and Preventive Medicine, Università Cattolica del Sacro Cuore, Rome, Italy

Background The Council of the EU has recently encouraged Member States to increase health professionals' awareness of the benefits of vaccines and strengthen support for immunisation programmes. Public health specialists are key to involving clinical doctors in reducing the burden of vaccine-preventable disease and taking an active stance promoting the benefits of MMR vaccination.
Objective This survey was developed by EuroNet MRPH (European Network of Medical Residents in Public Health) to investigate knowledge and attitudes of public health residents towards vaccine preventable disease and immunization programmes.
Methods The survey involved public health residents of Italy, France, Spain, Portugal and the United Kingdom (UK). It was translated and disseminated via email using a web-based survey platform, running from April 2nd to April 18th 2012. It included: self-reported knowledge on vaccines, awareness of epidemics and prevention campaigns, attitudes towards vaccination (perceived importance). Questions employed likert scales, 1–5 (5 was the highest).
Results The total population of residents was 1,514, of whom 1,304 (86 %) would have received the survey achieving a response rate of 25.2 % (from 44 % Portugal to 13.8 % UK). When asked about perceived self-awareness of current/recent outbreaks 26.4 % of residents said they did not feel aware. Over 26 % of residents reported their own level of knowledge on vaccines as insufficient and only 53.6 % of residents named campaigns at any level addressing vaccine preventable diseases with 5.2 % mentioning WHO European Immunisation Week. Perceived importance of knowledge on this subject was high (mean 4.33). Considering the attitudes to specific vaccine preventable, most agents had a mean score higher than 4 (polio and tetanus scoring highest), the lowest scoring being varicella, HPV (vaccination for men) and rotavirus.
Discussion Residents seem to consider vaccination against preventable disease important and an issue they should have knowledge on, however a high proportion felt they had insufficient knowledge on the raising questions about levels of training and confidence amongst residents.
Conclusion The resurgence of vaccine preventable disease in Europe will need to be tackled, by ensuring health care workers have adequate knowledge of diseases and the options to combat them. Public health residents should be on the frontline in this work. This survey however indicates public health residents may not always feel sufficiently equipped to deal with vaccinal issues.

P1H05

Support the national measles and congenital rubella elimination plan by general hospitals. Six years experience in Trento Province, Italy

Silvano Piffer, Livia Bianchi, Anna Lina Lauriola

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Background A national measles and congenital rubella elimination plan was approved in Italy in 2003, for interrupting indigenous measles transmission and reducing incidence of congenital rubella. Specific programmes for pregnant women susceptible to rubella have been recommended for all regions. In Trento province, since 2005, MPR vaccine is offered besides to children, also each at risk puerpera after delivery, before leaving hospital.

Objectives Present paper analyzes rubeo test and MPR coverage in pregnant women who have been delivered in Trento province (north Italy) in 2006–2011.
Materials and methods In Trento province, we register about 5,000 birth/year. Since 2005 the data about rubeo test and MPR vaccination at birth are recorded in a computerized database (Attendance Birth Certificate File). This registration is compulsory in all Italian regions. However, only in Trento province data about rubeo test in pregnancy and MPR vaccination after birth are routinely collected. We calculated temporal trend of rubeo test and MPR vaccination in according to calendar year, hospital of birth, age, parity and citizenship of the mothers.
Results In 2006–2011, 26.513 pregnant women have been assisted at provincial hospitals. Rubeo test has been done to 99.0 % of women, with an increasing trend from 2006 (98.0 %) to 2011 (99.2 %) with any differences in relation to, hospital, age, parity and citizenship of mothers. Pregnant women susceptible to rubella were on average 1.632: 6.1 %. As a whole, 306 susceptible women (18.7 %) have been vaccinated: 7.1 % in 2006, 39.8 % in 2011. MPR coverage in 2011 still varies, according hospital: 6.9–87.5 %. In 2011 there are still strong differences between public versus private hospitals (53 vs. 12 %). There are any differences according age, parity and citizenship.
Conclusions Rubeo test coverage remains very high during the whole period, without any difference in relation to hospital of birth, parity, citizenship and calendar year. MPR coverage improves during the time with a statistically significant difference, without any differences in relation to age, parity and citizenship. Nevertheless the improvement, the global coverage remains low and there are strong differences among the hospital. It will be necessary to improve the performances at the delivery wards of private hospitals improving the relationship with Public Health Department.

7th September 2012

Time: 10.00–10.45

Poster Topic 2I. Gender, child and reproductive health

P2I01

Prevalence and spatial distribution of neural tube defects in the state of Sao Paulo before and after fortification of flours with folic acid

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Background Neural tube defects (NTD) are the most frequent malformations of the nervous system and represent an important cause of infant morbidity, although mortality can be prevented. Considering that folic acid reduces the risk of NTD, the fortification of wheat and corn flours with folic acid became mandatory in Brazil since 2004.
Objective To evaluate the prevalence of NTD in the State of Sao Paulo, Brazil, before and after the fortification of flours with folic acid, and to analyze them according to the characteristics of the mother and the newborn.
Methods This cross-sectional study analyzed data from the Information System on Live Births in the periods before (2001–2003) and after (2006–2008) the fortification of flours with folic acid. The presence of NTD was identified by the codes Q00-anencephaly, Q01-encephalocele and Q05-spina bifida of the 10th International Classification of Diseases. We evaluated the prevalence of NTD according to period (before/after fortification), and characteristics of the mother and newborn. We used Odds Ratio (OR) and Confidence Intervals (95 % CI) for data analysis in the software R. We analyze a temporal series from 2000 to 2009 with polynomial regress. For spatial analysis, maps were generated with empirical Bayesian smoothing before and after fortification in the Terraview software.
Results The overall prevalence of NTD decreased 35 % in the State of Sao Paulo, from 0.57/1,000 live births before fortification to 0.37/1,000 live births after fortification (OR: 0.65, 95 % CI: 0.59–0.72). Spina bifida (OR: 0.52, 95 % CI: 0.45–0.59) and anencephaly (OR: 0.79, 95 % CI: 0.67–0.92) were less prevalent after fortification, with reductions of the 48 and 22 %, respectively. The stratified analysis showed a significant decrease after fortification for women of all ages (except for <15 years old), with more than 3 years of education and with seven or more prenatal consultations. The time trend analysis confirmed the decrease of the prevalence of NTD. The spatial distribution showed a reduction in prevalence in all regions of São Paulo after fortification, except in the Western region of São Paulo State.
Conclusions Although other factors may have contributed to this decline, the results reaffirm the importance of flour fortification in reducing the occurrence of NTD. An analysis by detailed explanatory model must be prepared to justify the opposite result in the Western of Sao Paulo.

P2I02

Miscarriage occurrence related to obesity in Brazilian women in reproductive age

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Escola de Enfermagem, Universidade Federal de Minas Gerais

Background It has been more than 60 years since obesity was suspected as an important adverse effect on the results of pregnancy. In fact, recent studies have presented causal plausibility in this matter and maternal obesity has become one of the most commonly occurring risk factor in obstetric practice, resulting in maternal complications (such as infertility, hypertension disorders, gestational diabetes mellitus, caesarian delivery) likewise affecting the fetus and newborn (abortion, macrosomia, stillbirth, and admission to the neonatal intensive care unit).
Objectives This study aimed to examine the relationship between obesity and spontaneous abortion in a representative sample of the Brazilian population.
Methods Cross-sectional study which used secondary data of 6.291 women in reproductive age (15–45 years-old) from the National Demographic Health Survey of 2006, whose reproductive behavior was assessed. Obesity was defined using BMI (kg/m^2) as a continuous and categorical variable. Spontaneous abortion was reported by women and defined when occurred before or equal to 5 months of gestational age. Data analysis was performed using STATA, version 12.0. Logistic regression with robust variance estimator was used to evaluate relations between obesity and miscarriage (OR and 95 % CI). Models were adjusted for characteristics of the mother: age, parity, race and occupation.
Results Prevalence of overweight and obesity were 27.8 and 15.54 %, respectively. Obesity was associated to spontaneous abortion. Adjusted model shave shown the chance of miscarriage increased as BMI increases (OR = 1.035; 95 % CI: 1.002–1.067). Women with BMI in the 10th decile of BMI distribution also presented a higher chance of abortion (OR = 1.785; 95 % CI: 1.116–2.854). Waist circumference did not associate to miscarriage.
Conclusions This study established a positive relationship between Body Mass Index and the risk of spontaneous abortion in a representative sample of the Brazilian population, reinforcing the necessity

of obstetrical care providers to counsel the obese reproductive aged women regarding the risks, complications and importance of weight loss and weight control prior to pregnancy; which could also reverse the trends toward a higher prevalence of maternal overweight and obesity.
This study was supported by Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG).

P2I03

Gender disparities in health production through diet and physical activity in Chilean adolescents

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Background The share of child and adolescent obesity in Chile has dramatically increased over the 20 years; Western dietary patterns and sedentarism are strong environmental determinants. According to the economic Health Production Model, the level of health depends on the amount of inputs individuals allocate to the production of health. The amount of health capital may depreciate but can be restocked by investing in medical care, diet or exercise. Socioeconomic determinants influence individuals prone to produce health; however there is a lack of evidence concerning the role of gender.
Method The objective was to investigate gender-related disparities in health production through diet and physical activity. In a random sample of 1,692 high-school individuals from urban Santiago, we studied the production of health using an indicator that considered the quality of food intake and physical activity, and establishing good producer (GHP), intermediate producers (IHP) and poor producer (PHP). Then we assessed the probability of behaving as GHP after controlling by gender. Nutritional status by BMI (weight/height^2), waist circumference, socioeconomic status (SES), type of school as well as education level and activity of household head were assessed in each adolescent.
Results There was 31 % of GHP, 32 % of IHP and 38 % of PHP, with a significantly higher prevalence of the latter among obese individuals ($p < 0.01$ and $p < 0.001$). The prevalence of PHP was significantly higher in adolescent females and similarly the prevalence of GHP was significantly lower ($p < 0.001$). While keeping SES, type of school and education level of household head constant, the probability of behaving as GHP is significantly lower in adolescent women ($p < 0.001$).
Conclusions Results support the association between obesity and the quality of health production through food intake and physical activity. Gender is a strong determinant of the quality of this production. Chilean adolescent women are at a disadvantage in the production of health. We aimed at improving the understanding on young individuals' health production. Gender focused policies and project design are needed to encourage behaviors that increase the stock of health and prevent negative health outcomes.

P2I04

Food intake according to degree of processing in preschool children in a city in southern Brazil

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Background The replacement of natural homemade foods for industrially processed foods and a more sedentary daily routine may be responsible for high prevalence of overweight and obesity, which in Brazil are located around 33.5, 143 % respectively among children aged 5–9 years. The Brazilian Household Budget Survey (2008/2009) shows an excessive consumption of industrially processed foods and low consumption of fruits and vegetables, featuring a high energy-dense and low-nutrient diet.
Objectives To describe the food consumption according to their degree of processing in a population of preschool children in southern Brazil.
Methods A population-based cross-sectional study with 799 children (0–5 years of age) residing in the city of Pelotas, Brazil. Dietary intake was assessed using a 24-h recall and was analyzed according to the classification proposed by Monteiro et al.: unprocessed and minimally processed foods (group 1), processed culinary or food industry ingredients (group 2), and ultra-processed food products (group 3).
Results The average daily calorie intake was 1,693.5 kcal per child, being 53.1 % from group 1, 17.2 % from group 2, and 29.7 % from group 3. The proportion of calories from processed culinary (group 2) decreases as income increases, the opposite was observed for the group do ultra-processed foods products. About the daily caloric contribution of the component from each group, there is greater consumption of calories from rice, beans, sugar, vegetable oils and breads and fewer calories from milk and fruit among children from poorer families, compared with those belonging families with higher income. On the other hand, these high income families have a greater contribution of calories derived from sweet.
Conclusion More than half calories of the diet of preschoolers studied come from unprocessed or minimally processed foods, which is a good thing. However, almost one-third of daily calories come from ultra-processed food products, which is worrying since the habit of consuming these foods can be perpetuated in later life. Furthermore, when analyzing consumption according to family income, it is observed that children from poorer families have a higher intake of calories from the group of processed culinary. It can be seen that greater care is needed in choosing food items, and this should be focused on the poorest families.

P2I05

Recurrence risk of perinatal mortality in Northern Tanzania: a registry-based study

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Background Perinatal mortality is as high as 5 % in many countries in sub-Saharan Africa. Little is known about heterogeneity of risk reflected in the tendency of mothers to re-experience perinatal deaths in subsequent deliveries.
Objective We compared the risk of a perinatal loss between women who did, and women who did not lose their baby in a previous pregnancy.
Design Prospective cohort study.
Setting KCMC medical birth registry

Participants All women who delivered singletons in two separate births at the KCMC hospital between 2000 and 2008.
Methods A total 19,811 women who delivered for the first time at the hospital between 2000 and 2008 were followed for a total of 4,503 subsequent deliveries up to 2010. We used a unique maternal hospital number to identify these mothers. Women who had multiple deliveries, and who were referred from rural areas for various medical reasons were excluded. We estimated perinatal mortality in a subsequent delivery depending on the outcome of the previous delivery.
Main outcome measures Risk and relative risk of perinatal death.
Results A perinatal loss increased a woman's likelihood to continue with a next pregnancy in our data from 19 to 31 %. The recurrence risk of perinatal death for women who had already lost one baby was 9.1 % compared with a low risk of 2.8 for women who already had a surviving child. The adjusted relative risk was 3.2 (95 % CI: 2.2–4.7). Recurrence contributed 15 % of perinatal deaths in subsequent pregnancies. Preeclampsia, placental abruption, placenta previa, induced labour; preterm delivery and low birth weight in a previous pregnancy were also associated with increased perinatal mortality in the next pregnancy.
Conclusions Some women in Africa carry a very high risk of losing their child in a pregnancy. Strategies of perinatal death prevention may attempt to target pregnant women who are particularly vulnerable or already have experienced a perinatal loss.

P2I06

Association between breastfeeding and proportion of infants aged between 6 and 24 months reaching adequate weight under a governmental fortified-milk distribution program

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Background Studies show that breastfed infants are at lower risk of malnutrition[3]. The WHO recommends exclusive breastfeeding for the first 6 months of life and complementary feeding up to 2 years[4]. However, few studies have investigated the influence of breastfeeding on dietary supplementation programs[3]. Dewey[2] suggested that breastfeeding may prevent the extremes of over and underweight in infants. In 1999, a social project for the free distribution of liquid milk *Vivaleite* was implemented throughout São Paulo State. The milk given contained at least 3 % fat, was fortified with iron (amino acid chelate) and Vitamins A and D, and made available to children aged 6 months to 6 year 11 months from families with incomes of up to two minimum wages[1]. A follow-up study[1] showed that the Project was effective for promoting weight gain, independently of socioeconomic variables.
Objectives To study the association between breastfeeding and proportion of infants aged between 6 and 24 months reaching adequate weight under a governmental fortified-milk distribution program.
Methods A cohort study involving 835 infants enrolled on the program with low weight (Z score of Weight for Age lower than -2) but reporting no health problems, was conducted between January/2003 and September/2008. Infants were weighed at least twice and at most five times. Results were modeled using multiple mixed-effects multiple logistic regression (hierarchical), with the gllamm command of the Stata 10.2 program, enabling adjustment for repeated observations in the same child employing the identification variable for each. The response variable was weight, codified as 0 (inadequate: Z score < -2) and 1 (adequate: Z score ≥ -2). Explanatory variables were child age (months) at weight measurement, -15 (quantitative variable: $-9\ldots$, $0\ldots$, $+9$), breastfed on program entry (0: no; 1: yes) and respective age $\times$ breastfeeding interaction.
Results The model with interaction revealed no effect of breastfeeding during the course of the program.

Weigth	OR	Std. Err.	*P*	[95 % CI]
Age	1.69	.07	0.000	1.56 1.83
Breastfeeding	.52	.16	0.032	.29 .94
Interaction	.95	.04	0.217	.86 1.03

The model without interaction showed no significant difference between infants that were breastfed and non-breastfed on entry, in proportion reaching adequate weight during the program.

Weight	OR	Std. Err.	*P*	[95 % CI]
Age	1.64	.05	0.000	1.54 1.75
Breastfeeding	.71	.13	0.061	.49 1.02

Conclusions No statistical association was found between breastfeeding and proportion of infants reaching adequate weight.

P2I07

Does individual versus couple interview affect the reporting of depression, anxiety, social support and marital relationship by infertile women?

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Background Most studies in reproductive epidemiology are conducted using individual interviews with women, neglecting the focus on the couple. Guidelines on the most appropriate mode of enquiry when studying In Vitro Fertilization (IVF) couples are still absent and there is no evidence on how it might affect results.
Objectives To assess the influence of modes of enquiry in IVF studies, evaluating differences in the prevalence of depressive and anxiety symptoms, in the perceived social support and in marital relationship between women who participated in the study alone and those who participated in couples.
Methods Within an ongoing descriptive study, 133 couples and 58 women were interviewed at Hospital de São João (Porto, Portugal), between August 2011 and March 2012, and further compared for several characteristics. After blood sample collection aiming to diagnose pregnancy, couples or women (if alone) were invited to answer a structured questionnaire administered by trained interviewers and a self-administered questionnaire to gather data on sociodemographics, anxiety (State-Trait Anxiety Scale) and depression symptoms (Edinburgh Postnatal Depression Scale), perceived social support (The Multidimensional Scale of Perceived Social Support) and quality of marital relationship (The Relationship

Questionnaire). Proportions were compared using Chi-Square test and Fisher's Exact test, as appropriate. Mean differences were compared by the Independent Samples *T* Test or the Mann–Whitney Test, according to data distribution.
Results No statistically significant differences were found between women who participated individually and women who participated in couples regarding their sociodemographic characteristics. Statistically significant differences were found in anxiety symptoms: women interviewed in couples presented higher total score of anxiety (mean, ±SD = 43.84, 8.34) than women interviewed individually (mean, ±SD 40.43, 9.38; $p = 0.03$). Although not statistically significant, depression symptoms were higher in couples versus individually interviewed women (respectively, mean, ±SD = 9.71, 4.47; mean, ±SD = 9.53, 4.49; $p = 0.80$). Perceived social support was lower among women interviewed in couple (median (Q25-Q75), 75 (67.50–80.50)) versus individually (median (Q25-Q75), 76 (69–81); $p = 0.79$). Marital relationship was evaluated as being better among women interviewed in couples (median (Q25-Q75), 21 (19–23)) than individually (median (Q25-Q75), 20 (18.75–22.25); $p = 0.40$).
Conclusion Data obtained indicate that individual versus couple interviews did not affect the reporting of depression symptoms, social support and marital relationship. However, differences found in anxiety symptoms should be further analyzed. Other outcomes need to be evaluated, comparing individual versus couple interviews. This might provide information to create evidence-based guidelines for conducting epidemiological research on IVF couples.

P2I08

Incidence trend for dengue in children under the age of 15 years in Brazil (2000–2010)

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Background Epidemics of Dengue determine a major burden to health services and to the economy of a country. A study conducted in eight countries of the American and Asian continents, including Brazil, demonstrated that these countries spent nearly U$ 1.8 billion only with outpatient and hospital costs in dengue epidemics. The dengue cases reported in Brazil are moving from the adult population to children and adolescents younger than 15 years old. Experts say this change is a sign that dengue could become a "childhood disease" throughout the country. In children under the age of 5, the onset of the disease can go unnoticed, causing its first clinical manifestation to be that of an already severe condition. Furthermore, the illness evolves far more quickly among children than it does in adults, in which case it occurs gradually.
Objectives Analyze the incidence of dengue cases reported in the period from 2000 to 2010 among children under the age of 15 years living in Brazil.
Methods This is a descriptive and retrospective epidemiological study whose data was collected from DATASUS available at www.datasus.gov.br. The incidence rate of dengue (per 100,000 inhabitants) was then estimated in children under the age of 15, between 2000 and 2010.
Results The incidence rate of dengue in children under 15 years was less than 1/100,000 between 2000 and 2006. It is noteworthy that in 2007 the rate was 135/100,000, reaching 293/100,000 in 2010.
Conclusions During the period studied, the risk of children under the age of 15 acquiring the illness increased 300 times, confirming the rising trend of the disease in this age group in Brazil. Such behavior can probably be explained by the underreporting of cases in previous years and improvement in the reporting of dengue cases from 2007 onwards. It indicates the need to explore more efficient means to record the cases as well as to control and prevent this disease through the strengthening of public policies. It is critical to conduct health education activities focusing on the age group in question, as well as to improve the quality of the notification system so that the indicators are as close as possible to reality, leading to the development of effective actions.

P2I09

Beyond language: a comparative study of Portuguese and Brazilian pregnant women

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Background Besides the well-established individual and sociodemographic factors, pregnancy course and its outcomes can be influenced by the environmental background, including specificities of culture and context.
Objective To assess how unmeasured variables, as represented by the country of delivery, impact in pregnancy- and birth-related characteristics beyond individual risk factors.
Methods The analysis included a sample of women giving birth in the North of Portugal, recruited for a birth cohort study (8,647 new-borns) and women whose delivery occurred in João Pessoa (n = 414), state of Paraíba, Brazil and were invited to participate in a national study on maternal morbidity. Women were recruited immediately after birth, at five level III maternity units in 2005–2006, in Portugal, and at one reference maternity in João Pessoa, in the third trimester of 2011. Data was collected by personal structured interviews addressing sociodemographic, obstetrics, pregnancy and birth characteristics. The current analysis included singleton live birth pregnancies (8,351 PT and 370 BZ). The effect of the country on late (if the 1st antenatal visit occurred after the first trimester) or no antenatal care, caesarean section (vs. vaginal delivery), preterm birth and low birth weight was assessed by multivariate logistic regression, adjusted for individual features.
Results In Portugal, puerperae were older (≥30 years: 50.2 vs. 18.1 %, $p < 0.001$), more educated (≥12 of schooling years: 40.9 vs. 28.3 %, $p < 0.001$), less often single (6.4 vs. 20.8 %, $p < 0.001$), more often primigravida (48.3 vs. 43.5 %, $p < 0.001$) and with higher proportion of planned pregnancy (66.4 vs. 39.0 %, $p < 0.001$). They also showed a higher proportion of tobacco consumption during pregnancy (23.4 vs. 7.6 %, $p < 0.001$). Independently of these factors, Brasilian women presented a higher risk of late/no antenatal care (OR = 2.34; 95 % IC 1.76–3.11), c-section delivery (OR = 2.86; 95 % IC 2.28–3.58) and a higher risk of preterm deliveries (OR = 1.58; 95 % IC 1.11– 2.67) but similar birth weight.
Conclusions These results show significant discrepancies in pregnancy attitudes and outcomes between women delivering in Portugal and Brazil that go beyond the distinctive distribution of individual risk factors. These results suggest that individual behavioural changes might not in itself sufficiently overcome deeply rooted cultural differences and pregnancy-related policies.

P2I10

Injury and migration in Sweden: incidence of fatal and non-fatal unintentional injuries among children with foreign-born parents comparing to children with Swedish-born parents, 1961–2007

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Background Injuries are responsible for a great burden of child and adolescent mortality and morbidity in all around of the world and millions of children suffer from consequences of non-fatal injuries.
Objectives To compare the incidence of fatal and non-fatal unintentional injuries among children of foreign origin with that among children of Swedish origin.
Methods We established our cohort by linkages between Swedish national registers through personal identity number. The main exposure variable was country of birth of parents. The cohort was followed from start date of study (January 1961 for fatal and January 1964 for non-fatal unintentional injuries), or date of birth whichever occurred last, until exit date from the cohort, which was diagnosis of primary outcomes of interest (death due to unintentional injury for fatal or first hospitalization due to unintentional injury for non-fatal), first emigration, or end of follow-up (December 31st 2007), whichever came first. We calculated hazard ratios with 95 % confidence intervals adjusted for age at exit, highest attained level of parental education, and calendar period of birth Cox proportional hazards regression models.
Results In general, we found significantly lower risk of hospitalization, but, higher risk of dying due to unintentional injuries among children with foreign-background compared to that among children with both parents Swedish-born after adjustment for age, calendar period of birth and family education. The result shows that, morbidity and mortality due to burns/fire and drowning/suffocation were higher among children with foreign background compared to native children. Overall, after stratification of results by sex we did not find significant difference in risk of hospitalization, however, boys showed higher risk of mortality due to transportation-related injuries and drowning and girls showed higher risk of mortality due to burns/fire and falls compared to the opposite sex.
Conclusions Lower risk of transportation-related and fall injuries among children of foreign origin might be explained by lower exposure to injury, probably due to a more sedentary lifestyle. However, the overall lower injury rate in children with foreign background could not be explained by socio-economic position as we adjusted for family education considering the effect of residual confounding.

Higher risk of death due to unintentional injuries calls for emergent preventive actions directing towards children in immigrant families and should focus especially on poisoning and burns/fire injuries that showed highest death risk. Additional research is needed to establish the specific determinants for the increased mortality among ethnic groups and to identify ways to effectively tackle them.

P2I11

Analysing hospital discharge records for childhood obesity

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Background Italy has the highest prevalence (mean value around 25 %) of overweight among children/adolescents in Europe.
Objectives We used hospital discharge records (HDR) to evaluate the association between childhood obesity and socio-demographic characteristics; we also compared the occurrence of other pathologies among hospitalised obese children to that among hospitalised non-obese children.
Methods Using the National HDR Database, we identified 0–14-year-olds whose HDR included the ICD 9 CM code for obesity (code 278) as a diagnosis (a maximum of 6 diagnoses can be reported). The data referred to the period 2008–2010 (most recent data available) and both inpatient and outpatient healthcare facilities. Standardized rates of hospitalisation for children with a diagnosis of obesity were calculated, using the 2001 Italian population as reference. Standardized morbidity ratios (SMR) were calculated for each of Italy's 20 Regions, using the national population as reference. We studied the association with socioeconomic status by calculating the standardized rate ratio (SRR) for different socioeconomic levels, using a deprivation index as indicator. We identified the concomitant pathologies most frequently reported on the HDRs of obese children; we compared the proportion of obese children with each pathology to that for non-obese children (i.e., those without a diagnosis of obesity on the HDR) in the same period; the statistical significance of differences was calculated using Chi-square adjusted test.
Results In the study period, 30,768 HDRs of children with a diagnosis of obesity were identified; the standardized rate was 123.7 per 100,000. The two genders were equally represented. The SMRs showed a marked north–south geographic gradient (risk lower in the north). There was a significant association between being hospitalised with a diagnosis of obesity and socio-economic status, with a lower risk for higher socioeconomic levels: high level, RR = 1; medium–high level, RR = 1.27 (95 % CI = 1.21–1.33); medium level, 1.74 (1.66–1.81); low level, 2.37 (2.28–2.46); and very low level, 2.31 (2.22–2.40). For several diseases, occurrence was higher among children with a diagnosis of obesity, compared to those without obesity: circulatory system disease, cardiac disease, central nervous system disease, digestive system disease, and endocrine-metabolic disease.
Conclusions Although HDRs provide data on only a limited proportion of obese children, they can provide important information. Our results confirm that obesity is greater in the south, where children live in worse socioeconomic conditions and thus likely to be more vulnerable because of non-healthy diets and limited physical activity. The data also confirm the associations between obesity and major chronic diseases.

P2I12

"Low birth weight paradox" revisited: persisting social inequalities early in life and evolving role of maternal smoking

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Background In all European countries, infant mortality rates have fallen considerably in the past decades. However, it is unclear how social differences in infant mortality and the so called "low birth birth weight (LBW) paradox" (higher risk of death for low birth weight infants from socially more privileged families) have developed over time. An emerging LBW paradox was detected in Sweden between 1970s and 1980s and findings consistent with LBW paradox were also observed among Czech women in 1989–1992.

Methods We studied associations between prenatal social determinants and infant mortality, with special focus on exploring the "LBW paradox" in a Swedish cohort of 13,741 singletons born 1915–1929 and compared the results with more recent findings from Sweden and other European countries. Associations and potential mediation of these determinants through other maternal and birth factors were studied using Cox regression. Analyses were repeated for neonatal and post-neonatal periods.
Results Mother's single marital status, high parity, low birthweight (LBW), low gestational age and male sex were associated with infant mortality in fully adjusted models, whereas the associations of maternal social class, region of residence and maternal age appeared to be largely mediated through other variables. Contrary to studies reporting a "LBW paradox", no interactions between gestational age or birthweight and maternal social characteristics on infant mortality were observed in this study. High maternal age, LBW, and low/high gestational age were associated with neonatal mortality, whereas single marital status, high parity, LBW, low gestational age and male sex were associated with post-neonatal mortality. An association of family social class with post-neonatal mortality was largely mediated by length of gestation, birth weight and maternal parity.
Conclusions Our findings of determinants of neonatal and post-neonatal mortality in 1915–1929 are strikingly consistent with results from contemporary cohorts. On the other hand, there is no evidence of a LBW paradox in the historical cohort and we speculate that increasing rates of maternal smoking, together with its clear social patterning, might be the driving force beyond the LBW paradox observed in more recent European cohorts.

P2I13

Epidemiology of chemical poisoning among children in Arkhangelsk, Russia

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Background Acute poisoning of the chemical etiology represent a considerable public health problem in Russia. On average, 2.0–3.0 chemical poisonings per 1,000 children are registered in Russia according to the WHO. In the structure of external death this cause ranks fourth among children. Children under 3 years have been reported to have the greatest risk of chemical poisoning. In the Arkhangelsk region, Northwest Russia, in 2007–2010, every third case of poisoning results in a fatal outcome. Mortality from poisoning among children increased by 6 % in the region in 2008–2009. However, there is little information about chemical agents, circumstances and methods of child chemical poisoning in Arkhangelsk.
Objectives to study epidemiology of chemical poisoning among children in Arkhangelsk, Russia.
Methods A cross-sectional study was performed at the Center of out-patient surgery of the Arkhangelsk regional paediatric hospital. A representative sample (n = 182) of patients under 18 years was drawn. They were interviewed and all medical records were scrutinized. Bivariate comparisons were performed using Chi-squared tests.
Results More than a half of the patients were boys (52.7 %, n = 96). Children under 1 year constituted 4.9 % (95 % CI: 2.6–9.1) of the sample, from 1 to 3 years—39.0 % (95 % CI: 32.2–46.3), from 4 to 6 years—7.1 % (95 % CI: 4.2–11.8), from 7 to 15—38.6 % (95 % CI: 31.7–45.7) and >15 years—10.4 % (95 % CI 6.8–15.7). Two peaks of hospitalizations were observed: from 1 to 4 pm for infants and after 8 pm for adolescents. Significant difference between age groups was observed regarding the place of poisoning ($p < 0.001$): while in the under 5 year-olds the most common site was home (48.9 %, 95 % CI: 41.7–56.1), among those older than 15 years the most common site was outside home (25.6 %, 95 % CI 19.5–32.0, $p < 0.001$). Eighty-six percent of poisonings were accidental (95 % CI 79.9–90.1) while poisonings with suicidal purpose occurred in 14.0 % (95 % CI 9.9–20.1). By etiology, 42.0 % (95 % CI 34.8–49.0) of poisonings were caused by medicines, 35 % (95 % CI 28.6–42.3) by alcohol or its surrogates and 21.0 % (95 % CI 15.6–27.4) by household chemicals. Inaccurate storage of substances and negligence were considered as main causes of poisoning among children.
Conclusions Chemical poisoning remains to be a substantial public health problem in Arkhangelsk, Russia. The results of the study may be used for development of the regional preventive program including education of parents, access to toxic substances and suicide prevention in the region.

P2I14

Analyzing geographical patterns of infant health

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Background Infant mortality is a main adverse outcome in maternal and child health epidemiology. Reduction of infant mortality is one of the main goals in national public health programs. Such programs should be addressed particularly to geographical regions with the highest infant mortality rates. The easiest and the most popular way of selection of administrative regions with the highest mortality rates is use of deterministic method based on percentiles. But infant deaths are rather rare events from arithmetic point of view and their exact level in a given period may be a subject of chance, particularly in small regions. The other issue in intervention public health programs is that infant deaths in various periods of life (neonatal deaths, postneonatal deaths) and deaths of infants born preterm versus born at term are determined by modifiable underlying causes of infant deaths (risky behaviours, socio-economic factors, environmental factors, quality of health care during pregnancy and after birth) in various levels.
Objectives The objectives of this study was to find the best method of determining the administrative districts of middle level (poviats) in Poland, which are at the highest risk of preterm birth, neonatal mortality of infants born at term, neonatal mortality of preterm infants and postneonatal mortality.
Methods Data were based on Polish birth certificates for the period 2007–2009, aggregated according to the maternal place of residence. The administrative districts with the highest incidence rates were determined based on quartiles, frequentists' approach, Jenks Natural Break Optimisation Method and Bayesian approach. Geographical patterns were shown at maps.
Results In 'frequentists' and natural breaks approach there were more poviats estimated as significantly worse than the rest of the country than in Bayesian approach. Results regarding diversity of neonatal mortality of preterm infants as also diversity of preterm births showed, that there are clusters of the poviats with the highest rates, but they are different for both rates. Results regarding diversity of neonatal mortality of babies born at term and postneonatal mortality did not show such clustering.

Conclusions Territorial inequality of risk of death during infancy should not be analyzed using infant mortality rate only. The results confirm various geographical patterns regarding diversity of neonatal and postneonatal mortality and preterm births, which arises due to different underlying causes of particular outcome. It must be taken into account during choosing districts for intervention, deeper analysis of situation in regions at risk and planning of health programs.

P2I15

Metabolic syndrome and behabioural risk factors in a sample of girls aged 11- to 17-years

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Background Metabolic syndrome (MetS) in children and adolescents has recently gained attention as the health consequences of the emerging obesity pandemic become known. Two of the key modifiable lifestyle factors that influence metabolic health are physical activity and sedentary behaviour. Research on the metabolic syndrome and its association with lifestyle behaviours in adolescents is important for identifying subgroups of youth at whom interventions should be targeted.
Objectives This study aimed to determine the associations among MetS, physical activity and sedentary behaviour in a sample of female children and adolescents.
Methods Cross-sectional data from 522 girls aged 11–17 years were used. Height, weight, waist circumference, fasting glucose, HDL-cholesterol, triglycerides, and blood pressure were measured. A sum of Metabolic Risk Factors (MRF) was computed, and participants were classified into two groups: less than three MRF, and three or more MRF, using age- and sex-specific values for some of the criteria. Measures included moderate-to-vigorous physical activity (MVPA) and sedentary behaviour by the 3-day physical activity diary. Associations between physical activity, sedentary behaviour, and MetS were examined using logistic regressions with adjustments for age, BMI, body fat, cardiorespiratory fitness, and parental education.
Results Prevalence of MetS was negatively associated with MVPA in girls, and the association was not altered with adjustment for the potential confounding factors included in the regression model. Results showed that inactive (<60 min/day of MVPA) girls were 2.4 times more likely to be classified with three or more MRF than their active counterparts (odds ratio: 2.37, 95 % CI 1.04–5.40, $p < 0.05$). Inspection of the final regression model also indicated that girls classified as having three or more MRF were more likely to be involved in sedentary activities (e.g. TV viewing) than their peers classified with less than three MRF.
Conclusion MVPA was independently associated with an increased prevalence risk of MetS in children and adolescents. Future interventions aiming to improve metabolic health in youth should target both the promotion of physical activity and the reduction of sedentary behaviour.

P2I16

Metabolic syndrome and its association with cardiorespiratory fitness in 11- to 17-year-old boys

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Background The prevalence of metabolic syndrome (MetS) has increased over the last few decades in children and adolescents and has become an important health challenge worldwide. It is common assumed in the literature that high levels of cardiorespiratory fitness (CRF) and physical activity (PA) are associated with a favourable metabolic risk profile in adults. However, there has been no substantial exploration of the independent contributions of cardiorespiratory fitness to metabolic risk factors in children and adolescents, and existing results are somewhat controversial.
Objectives This study aimed to determine the associations between MetS and CRF in a sample of male children and adolescents.
Methods Cross-sectional data from 402 boys aged 11–17 years were used. Height, weight, waist circumference, fasting glucose, HDL-cholesterol, triglycerides, and blood pressure were measured. A sum of Metabolic Risk Factors (MRF) was computed, and participants were classified into two groups: less than three MRF, and three or more MRF, using age- and sex-specific values for some of the criteria. CRF was assessed using the 20-m shuttle run test. Measures included moderate-to-vigorous physical activity (MVPA) and sedentary behaviour provided by the 3-day physical activity diary. Associations between MetS and CRF were examined using logistic regressions with adjustments for age, BMI, body fat, MVPA, time spent sedentary, and parental education.
Results Prevalence of MetS was negatively associated with CRF in male youth, and the association was not altered with adjustment for the potential confounding factors included in the regression model. Results showed that boys classified as aerobically fit were 3.0 times more likely to be classified as having less than three MRF than their unfit counterparts (odds ratio: 3.02, 95 % CI 1.36–6.71, $p < 0.01$). Inspection of the final regression model also indicated that boys with MetS were more likely to have higher waist circumference than their peers with less than three MRF (odds ratio: 1.05, 95 % CI 1.02–1.09, $p < 0.05$).
Conclusion CRF was independently associated with an increased prevalence risk of MetS in boys aged 11- to 18-years of age. Future interventions aiming to improve metabolic health in youth should target the promotion of aerobic fitness. Further research is warranted to quantify how much CRF is needed to prevent and reduce the risk in those who already have one or two MRF.

P2I17

Active travel to school and independent mobility in Portuguese children

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Background Compelling evidence suggests that a sedentary lifestyle is being encouraged, at least in part, by environmental factors that affect individuals' physical activity choices. Encouraging physical activity early in life is crucial to positively influence current and future health. Active travel to school is one possible routine to assist children increasing daily physical activity. However, previous studies demonstrated that children may be spending less time unsupervised outside the home. Thus, children's independent mobility has been declining, which may in part explain the reported declines in active commuting to school.

Objectives This cross-sectional study investigated whether independent mobility was related to active travel to school.
Methods six hundred and twenty-five 10–14 years old boys (n = 292) and girls (n = 333) from 10 schools in a large Portuguese city were included. The independent variable in logistic regression analysis was mode of travel home to school measured by a self-reported questionnaire, asking "How do you usually travel to school". Options were walk, bicycle, car, bus or train; those travelling by car/motocycle and bus/train were merged into a single "passive transport" group and those travelling by bicycle or walking were merged into an "active transport" group. Dependent variable was independent mobility assessed using the stem "How often are you allowed to go to the following places on your own or with friends (without an adult)"; from the eleven questions, which were part of the self-completed questionnaire, one dimension (scale) was derived using categorical principal components analysis (Cronbach alpha = 0.901). Minutes of moderate to vigorous physical activity (MVPA) were objectively measured using accelerometers. The analysis was adjusted for gender, age, and MVPA.
Results Independent mobility was significantly associated with active transport to school: i.e., children with high independent mobility were 1.44 times more likely to walk or cycle (95 % CI 1.12–1.86).
Conclusions Independent mobility appears to be an important independent correlate of active transport to school. Conversely, low level of independent mobility can negatively influence physical activity, which may lead to decreased levels of social, emotional, and cognitive development.
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P2I18

Body image and anthropometric data in adolescents

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Background Body Image reflects a person path, whose perceptions are part of its unit and are determinant for its existence, at each moment. Na individuals perception about his body is affected by others comments, that most of the times leads to insatisfaction with owns body image. At the present moment, studies that correlate real measured anthropometric data, body image perception and satisfaction are not known.
Objective To evaluate the relation between real anthropometric data and body image perception and satisfaction, in Portuguese adolescents.
Methods A descriptive transversal and quantitative study was designed in na education institution located in the North of Portugal. There were evaluated 214 adolescents, with ages between 10 and 19 years. Each participants anthropometric data (weight and height) were assessed, aiming to determine BMI for age centile, according to *Centres of Disease and Control Prevention*. Body Image perception and satisfaction was determined using Gardner et al., 1999 body image scales, with ±30 % distortion.
Results The 214 adolescents (124 female and 90 male) that participated in this study, were classified according to BMI for age centiles, and 1.4 % were underweight and 22.9 % overweight or obese. It was possible to verify, using Kruskal-Walis non Parametric Test, that there is a statistically significant association between body image satisfaction and academic level, revealing that adolescents body image increases as academic level increases. The results show that there is no significant association between the remain variables: BMI, gender and body image perception).
Conclusions Although several studies, in other countries and/or age groups, show that females have lower body image satisfaction levels than males, this study failed to show coincident results. It was proved that as academic level increases, adolescents body image increases as well. It is evident that intervention projects to promote better body images perception and satisfaction are fundamental, especially in adolescents from younger age groups.

P2I19

Leptin and adiponectin effects on bone mineral density in Portuguese adolescent boys: a population-based study

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Background There is a growing body of evidence suggesting that cytokines and hormones derived from white adipose tissue may play a role in the regulation of bone turnover but the magnitude of such effects remains controversial.

Understanding factors that alter bone mass during adolescence may help to inform strategies to improve peak bone mass accrual.
Objective To quantify the associations of serum leptin and adiponectin with bone mineral density and turnover in adolescent boys.
Methods We used data from 150 boys born in 1990 (75 normal-weight and 75 overweight or obese, classified according to the age-specific percentiles developed by the United States Centers for Disease Control and Prevention), recruited in public and private schools in Porto, Portugal, and evaluated at 17 years old as part of a cohort study (*EPITeen*). Anthropometrics were obtained at school with the subject in light indoor clothes and no shoes. Weight was measured using a digital Tanita scale in kilograms to the nearest tenth and height was measured in centimeters to the nearest tenth using a portable stadiometer. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared. Bone mineral density (BMD) was measured at the non-dominant forearm by dual-energy X-ray absorptiometry. Serum concentrations of leptin, adiponectin, osteoprotegerin (OPG), receptor activator of nuclear factor kappa-B ligand (RANKL), collagen type 1 cross-linked C-telopeptide (CTX), and procollagen I N-terminal propeptide (PINP) were determined using commercially available enzyme-linked immunosorbent assays (ELISA). Appropriate transformations to create normal distributions were undertaken prior to analysis (log transformed: leptin, adiponectin, RANKL, OPG, OPG/RANKL and CTX/P1NP ratios). Linear regression coefficients (95 % confidence intervals) were used to assess the effects of leptin and adiponectin, adjusted for BMI, on bone mineral density, bone turnover markers and bone osteoclastogenic markers.
Results Adjusted for BMI, an inverse association was found between leptin and adiponectin with BMD ($\beta = -0.038$; 95 % CI: -0.055, -0.021) and ($\beta = -0.017$; 95 % CI: -0.035, 0.000), respectively. Regarding bone turnover markers, adiponectin was positively, but not significantly, associated with P1NP ($\beta = 4.896$; 95 % CI: -0.494, 10.286) and inversely associated to the CTX/P1NP ratio ($\beta = -0.132$; 95 % CI: -0.258, -0.006). Leptin was directly associated with RANKL ($\beta = 0.339$; 95 % CI: 0.009, 0.669) and inversely with OPG/RANKL ratio ($\beta = -0.352$; 95 % CI: -0.695, -0.009).

Conclusions Our results suggest adiponectin and leptin as potentially significant, although contradictory, contributors to the fat-bone relationship in adolescence.

In addition to the inverse association with bone mineral density, leptin may increase osteoclastogenesis.

P2I20

Association of obesity with sedentary beahaviors and play outdoor among children

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Background Sedentary behaviors such as television viewing is one of the major factors contributing to childhood obesity.
Objectives This study aims to analyze the association between sedentary behaviors such television viewing, passive play inside house, outdoor play and children obesity.
Methods A cross-sectional study was done in a sample of 11,554 children, aged 6.0–10.0 y. Private and public kindergartens and schools were randomly selected. Sampling was based on a sex and age-specific proportionate stratified random design with the district are the primary sampling unit. Weight and height were measured, and parents filled out a questionnaire about family and child characteristics: TV viewing, passive play inside house and outdoor play. Overweight and obesity, using cut-off points as defined by the IOTF, were used. Data was analyzed using the Chi-square test and multivariate logistic regression analysis adjusted for age, sex and the cluster of schools.
Results We found 21.1 % of overweight and 9.0 % of obese children. The prevalence of obesity increased by time of TV viewing: <2 h, 26.9 %, 2–4 h, 30.2 %, and +4 h 34.2 %, $p < 0.001$; decreased by time spent with passive play inside house: <2 h, 32.6 %, 2–4 h, 30.3 %, and +4 h 27.7 %, $p < 0.001$ and decreased by active play outdoor: <1 h/day 37.4 %, 2–4 h/day 30.1 %, >3 h/day 26.4, $p < 0.001$. The odds ratio (OR) for childhood obesity increased by television viewing (reference <2 h; 2–4 h: 1.18; >4 h: 1.39), decreased by time spent in passive play inside house (reference <2 h; 2–4 h: 0.72; >4 h: 0.58).
Conclusions We conclude that TV viewing is positive associated with childhood obesity and either passive play inside house or active play outdoor are both effective ways to decrease childhood obesity.

P2I21

Prevalence of Portuguese preschool obesity and associations with family characteristics and child behaviours

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Background Childhood obesity is a major health problem in Portugal where 1 out of 3 Portuguese children aged 7–9 years is either overweight or obese. There is a complete absence of data regarding preschool prevalence of obesity in Portugal.
Objectives The aim of this study is to analyze the prevalence of childhood obesity in children aged 3.0–6.0 years old. We also aim to study the association of parental characteristics and child behaviors with child obesity.
Methods A cross-sectional study was done in a sample of 8,089 children, aged 3.0–6.0 years. Private and public kindergartens and schools were randomly selected from the Ministry of Education database. Sampling was based on a sex and age-specific proportionate stratified random design with the district are the primary sampling unit. Weight and height were measured, and parents filled out a questionnaire about family characteristics and child behaviors. Overweight and obesity, using cut-off points as defined by the IOTF, were used. Data was analyzed using the Chi-square test and the multivariate logistic regression analysis adjusted for age and sex.
Results The prevalence of obesity (including overweight) in boys was 10.2 % and in girls was 14.0 %. The prevalence of obesity increased by time of TV viewing: <2 h, 23.2 % and ≥2 h, 25.4 %; decreased by active play <2 h, 23.6 % and ≥2 h, 28.6 %; increased with breakfast skipping, yes 24.4 % and no, 32.9 %, increased with father obesity—father overweight, 26.9 and father obesity, 36.3 %—and mother obesity, mother overweight, 31.1 % and mother obesity, 38.2 %; decreased with father educational level, 4 years, 29.0 %, 6y, 27.9 %, 9y, 25.7 %, 12y, 24.8 % and >12 years, 19.7 % as well as mother educational level, 6 y, 30.1 %, 6y, 28.7 %, 9y 26.2 % 12y, 24.4 % and >12y, 21.6 %. The logistic regression analysis showed significant associations with children obesity and all the above factors.
Conclusions We conclude that Portuguese schoolchildren showed a highest percentage of obesity what constitutes an important health problem in Portugal. Moreover, sedentary behaviors such as television viewing and unhealthy behaviors such as skipping breakfast were significantly associated with child obesity, Family factors such as parental obesity showed the strongest association with childhood obesity. These results showed that the prevention and treatment of childhood obesity must be done within a family context.

P2I22

Trends in childhood overweight and obesity in Portugal from 2002 to 2009. The role of socioeconomic factors

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Background Despite trends indicating a recent stabilization in the upward obesity trend in children in some countries Portugal still presents a high prevalence. The present values remains a huge public health problem doing the health consequences of childhood obesity in later life outcomes.
Introduction The aim of this study was to examine the overweight and obesity prevalence trends between 2002 and 2009 and assess whether these trends relate to parental social class.
Methods Two cross-sectional studies were conducted between 2002 and 2009 in Portugal in children aged 7–9 years. In 2002, 4,511 children were examined and in 2009 4,143 took part in the second study. Height and weight were measured and BMI (kg/m^2) was calculated. A family questionnaire was applied and the maternal and parental education were used to assess the social class of each family. Three categories were used: Primary school, Secondary school and University level. The International obesity TaskForce (IOTF) cutoffs to define overweight and obesity were used.
Results The prevalence of overweight/obesity changed from 31.6 % in 2002 to 30.4 % in 2009. The odds ratio (OR) for overweight in 2009 compared to 2002 was 1.02 and for obesity was 0.7. Compared to 2002, in 2009 age and sex adjusted OR for overweight was 1.12 in children with paternal education in the primary category, 1.03 in secondary category and 0.93 in university category. For obesity, OR in 2009 compared to 2002 were 0.82 in primary category, 0.73 in secondary category and 0.63 in university category.
Conclusion These results showed that children from lower socio-economic strata showed an increased in overweight prevalence and decreased less in obesity percentage than children from upper socio-economic strata. This means that it is necessary to reduce socio-economic disparities in childhood overweight and obesity.

P2I23

Children and video games

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Introduction The family in the early twenty-first century is in the process of democratic negotiation and reconfiguration between parents and children. With the proliferation of electronic games and children's early accession to them, the task of reconciling the traditional leisure habits and the breakneck development of games, is uneven. The objectives of this study centered on knowing the type of games you love and reasons associated with this preference, as well as analysis of how certain variables are associated with increased intensity of play by children and the relationship between the play and behavior.
Method A cross-sectional study, using a methodology focused on methods and triangulation of data, which was attended by eight teachers and 84 children, mostly males and 54.76 % with a mean age of 8: 32 years and standard deviation of 1.28. To measure the variables were used as techniques for collecting data, the semi-structured interview and questionnaire.
Results Regarding the taste and how often you play, it was found that: only 10.71 % of children say they like video games, not playing on the console/playstation all day 46.43 % of children, and 29.76 % on the computer, play once per day in the console/playstation 13.10 % of children and computer 33.33 % during the week 64.29 % play less than an hour, while this figure drops to 33.33 % a week-end in favor of increasing the percentage of more than an hour of use. As for the reason given for liking to play the majority of children surveyed (83.3 %), mentions the fun. The favorite type of game that usually play games with respect to the category "Sports/Adventure/Action." In the context of intensive use of video games, were classified as low intensity use of 44 children (52.4 %), 22 children with moderate use (26.2 %) and high intensity of use with 18 children (21.4 %). Greater intensity of play is associated with a less satisfactory performance in school projects developed in-house, and also the teachers recognize that a higher intensity game may have some influence on children's behavior. On the other hand, it was confirmed that greater parental supervision is synonymous with fewer hours of play.
Conclusions The evidence found in this study invite us to create and reflect on strategies to achieve a better knowledge to facilitate the design of intervention programs or information and training in schools or family. The role of society is also relevant.

P2I24

Short nighttime sleep duration in preschool children and associated maternal and children's characteristics in Geração XXI, a Portuguese birth cohort

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Background Previous studies have shown that short sleep duration may have negative influences on children's physical, cognitive, emotional and behavior development. However, the early associations between maternal and children's characteristics with short nighttime sleep duration in preschool children remain unclear.
Objectives This study aimed to estimate the associations between demographic, socioeconomic, health status and lifestyle characteristics and short nighttime sleep duration in preschool children.
Methods As part of the reevaluation of a population based birth cohort, 7,458 children participated in the 4/5 years of age follow-up. After exclusions, 5,628 children were evaluated in this study. Trained interviewers administered a structured questionnaire on demographic and socioeconomic characteristics, children's health and lifestyles. Short nighttime sleep duration was defined as nighttime sleep duration equal or lower than 9 h per night. Odds ratio and respective 95 % CI were estimated using multivariate logistic regression.
Results Short nighttime sleep duration was associated with higher maternal age (OR = 1.46, 95 % CI = 1.11–1.93, for $\geq$40 vs. $\leq$29 years of age, p trend = 0.004) and inversely associated with higher maternal educational level (OR = 0.57, 95 % CI: 0.45–0.73, for >12 vs. $\leq$6 years of schooling, p trend <0.001), being unemployed or a housewife (OR = 0.57, 95 % CI: 0.45–0.72; OR = 0.59, 95 % CI: 0.38–0.90, respectively vs. employed mothers) and presence of siblings in the household (OR = 0.75; 95 % CI: 0.64–0.88). Short nighttime sleep duration was also associated with family income of 1,001–1,500€/month (OR = 1.39, 95 % CI = 1.13–1.72 vs. $\leq$1,000€/month). Screen-based media use $\geq$2 h per day (OR = 1.40, 95 % CI = 1.18–1.65), afternoon naps (OR = 3.75, 95 % CI: 3.97–4.74, for napping every day vs. no napping), and familiar presence at bedtime (OR = 1.33, 95 % CI = 1.13–1.57) were associated with short nighttime sleep duration. Reading stories before falling asleep (OR = 0.68, 95 % CI: 0.53–0.86, for reading stories every day vs. <1 time per week, p trend <0.001), and longer mother's sleep duration (OR = 0.54, 95 % CI = 0.44–0.67, for mother's sleep duration $\geq$8 h/day vs. <7.0 h/day, p trend <0.001) were inversely associated with short nighttime sleep duration. These associations were independent of children's age, maternal educational level and presence of siblings in the household.

Conclusions Short nighttime sleep duration was associated with a heterogeneous set of maternal and children's characteristics, among preschool children, including socio-demographic characteristics, screen-based media use and maternal and children's sleeping habits. This supports the idea of complexity intrinsic to the sleep patterns acquisition.

P2I25

The use of criteria for observational studies of neonatal cohorts: the potential introduction of bias

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Objective Despite much evidence to suggest that using birth weight as inclusion criteria for neonatal cohort studies introduces selection bias and false over-estimation of survival rates in outcome prediction, it is still not unanimously acknowledged by professionals in the field. This study aims to determine whether selection bias can be identified within a cohort using different gestational ages and birth weight cut-off's as inclusion criteria and if so, does selection bias significantly affect the association of predictive variables with mortality.
Methods The BadgerNet Platform database for the Trent Perinatal Network was used in this study. Statistical analysis using the independent samples *t* test and non-parametric Fisher's Exact test were used to determine if selection bias was introduced into six different cohort groups (total cohort, ≤1,500 g VLBW, ≤1,000 g ELBW, premature [<37 weeks], very premature [<32 weeks] and extremely premature [<28 weeks][6]. Multivariate logistic regression was then performed to generate prediction models of survival in order to assess if selection bias affected the outcome predictions in each cohort.
Results Statistical significance ($p < 0.05$) was observed across all groups for gestational age and birth weight variables. No association was identified for admission temperature and birth time. Bias was detected from the VLBW and ELBW groups leading to an increased proportion of male infants excluded at each gestational age. Logistic regression showed increased survival in the VLBW and ELBW groups in comparison to the other four groups.
Conclusion For the cohort groups that have been subjected to birth weight cut-offs (VLBW and ELBW), significant selection bias was identified and caused an over-estimation of survival in prediction models. Gestational age appeared to be an extremely important predictive variable regardless of birth weight, bias, gender or temperature. Future studies should endeavour to use gestational age (in days) as inclusion criteria for neonatal cohort studies as it minimises selection bias and increases the external validity of any prediction models determined.

P2I26

The effect of socio-economic status on the cognitive outcome of children born preterm: a systematic review

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Background Socio-economic status (SES) is a potential confounder in the association between preterm birth (birth before 37 completed weeks of gestation) and cognitive deficit. The effect of SES on the cognitive outcome of preterm-born children is unknown.

Objectives (1) To systematically review the published literature for reports of the association of SES with cognitive outcome in preterm-born children; (2) to evaluate the strength and consistency of the effect of SES across different SES measures.
Methods We conducted a systematic literature search on electronic databases (MEDLINE, EMBASE, PsycINFO and Social Science Citation Index) to identify English-language cohort or case–control studies that reported the effect of at least one SES measure on cognitive outcome in children born before 37 weeks gestation after 1990.
Results Fifteen studies (from 4,162 identified) were included in this review. Thirteen SES measures (categorised into "individual-level" (6 measures), "family-structure" (3 measures), "contextual" (2 measures) and "composite" (2 measures)) were evaluated. Maternal educational level was the most frequently evaluated SES measure (by 11/15 studies) and was most consistently associated with cognitive outcome. Compared to high school education, maternal education below high school level was associated with severe cognitive deficiency (reported odds ratio (95 % confidence interval) range: 1.4 (1.0–1.9) to 2.3 (1.2–4.5)). Due to significant heterogeneity in the studies, a meta-analytic measure of the effect of SES was not calculated.
Conclusion SES is an important confounding factor in the association between preterm birth and cognitive benefit and should be adequate adjusted for in studies reporting cognitive outcome following preterm birth.

P2I27

Association between gender and childhood obesity in the city of Coimbra: the importance of formal sport

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Background The prevalence of childhood obesity is increasing globally making this a serious social and health problem. Low levels of physical activity have notable health consequences among children that include increased risk of obesity. In general girls present higher values of obesity than boys, and they are more sedentary of boys.
Objective To examine the associations between gender, formal sports and obesity among children.
Method Anthropometric measures of height and weight were taken from 1,381 children (between 6 and 12 years old) in elementary schools in Coimbra between March and July 2009. Body mass index was calculated and the International Obesity Taskforce (IOTF) cut-offs were used to determine the obesity and overweight rates. Parents filled out a questionnaire containing socio-demographic and environmental information. For data analysis the Chi Square test and the logistic regression were used.
Results The prevalence of overweight (including obese) was 28.7 %; 12.3 % boys and 16.4 % girls ($p < 0.05$). In our sample we found a statistically significant association between gender and the practice of formal sports: 56.8 % girls are active against 64.8 % of boys ($p < 0.05$). In boys the association between obesity and the practice of

formal sports was not statistically significant, but this association was significant in girls ($p < 0.05$). The logistic regression analysis showed that when girls practice formal sports the likelihood for obesity is lower than for sedentary girls (reference—no practice of formal sports; formal sports, OR = 0.62; 95 % CI = 0.45–0.85 ($p < 0.05$).
Conclusion Our study showed that not only the girls have higher rates of obesity comparing to boys, they also practice less formal sport. Moreover, we concluded that formal sports have a protective effect on girls' obesity. Our results have great impact for the prevention of childhood obesity and girls need different attention than boys.

P2I28

Sex differences of cardiometabolic risks prevalence in a Brazilian rural population

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Background Cardiovascular diseases have been considered the main causes of morbidity and mortality in the world, both in rural and urban areas. Overweight, obesity, dyslipidemia, hypertension, diabetes, smoking habits are the major modifiable risk factors which contribute to the development and progression of cardiovascular disease. Some studies have demonstrated that women could be more susceptible and affected by these risk factors.
Objectives Evaluate sex differences of cardiometabolic risks occurrence in a rural population of Jequitinhonha Valley, Brazil.
Methods Cross-sectional study with 701 adults, residents in rural area of Jequitinhonha Valley, both sexes, aged between 18 and 59 years-old. Cardiometabolic markers were overweight (BMI $\geq$25 kg/m^2), obesity (BMI $\geq$30 kg/m^2), abdominal obesity (waist circumference $\geq$88 cm for females and $\geq$102 for males), total cholesterol $\geq$200 mg/dL, triglycerides $\geq$150 mg/dL, LDL-cholesterol $\geq$160 mg/dL, HDL-cholesterol $\leq$40 mg/dL for males and $\leq$50 mg/dL for females, glycemia $\geq$100 mg/dL, systolic/diastolic blood pressure $\geq$140/90 mmHg, smoking status and metabolic syndrome (defined according to NCEP criteria). Prevalence ratios (PR) and 95 % confidence intervals (95 % CI), crude and adjusted for age and schooling, were calculated in order to estimate differences of the cardiometabolic risks between sexes.

Table 1 PR and 95 % CI for cardiometabolic risk factors, comparing female to male

Cardiometabolic disorders	Crude PR	95 % CI	Adjusted PR	95 % CI
Obesity	3.37	1.93–5.88	3.41	1.90–6.10
Overweight	1.69	1.30–2.21	1.70	1.28–2.25
Waist circumference	5.99	3.60–9.95	5.54	3.32–9.25
Total cholesterol	1.11	0.87–1.42	1.11	0.85–1.43
Triglycerides	0.90	0.59–1.37	0.87	0.56–1.35
LDL	1.21	0.81–1.81	1.22	0.80–1.85
HDL	1.32	1.05–1.72	1.28	0.99–1.66
Glycemia	0.85	0.43–1.69	0.75	0.36–1.57
Hypertension	0.86	0.64–1.14	0.88	0.65–1.20
Actual smoking	0.37	0.27–0.52	0.38	0.26–0.53
Former smoking	0.46	0.31–0.67	0.45	0.30–0.66
Dyslipidemia	1.17	0.97–1.41	1.14	0.94–1.39
Metabolic syndrome	2.07	1.31–3.26	1.92	1.21–3.04

Results Bivariate analysis have shown prevalence of cardiometabolic risks high among women, except for smoking. Prevalence of overweight, obesity, abdominal obesity and metabolic syndrome were high among women than men, even when adjusted for aged and schooling (Table 1). Actual smoking and former smoking presented 62 and 55 % less chance of occurrence in women, respectively.
Conclusions The present study demonstrated sex as an important factor associated with cardiometabolic disorders in rural areas, been women more vulnerable, following similar trends found in urban areas. Thus, treatment and prevention programs should address sex differences, as well as include rural communities, where health care is often ineffective due to lack of resources and difficult access.
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P2I29

HIV/AIDS transmission knowledge among adolescents aged 11 years from Southern Brazil

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Objective To investigate the effect of demographic, socioeconomic, educational and family variables on HIV/AIDS knowledge among adolescents aged 11 years.
Methods 3,949 adolescents born in Pelotas (Brazil). HIV/AIDS knowledge was assessed through a self-administered questionnaire and measured through five questions about HIV transmission: heterosexual intercourse, homosexual intercourse, needle sharing, open-mouth kissing and hugging someone with AIDS. All the analyses were adjusted based on a hierarchical model, using Poisson regression with robust adjustment of variance.
Results Prevalence of wrong answers to the examined questions were 17.2 % for heterosexual transmission, 44.1 % for homosexual intercourse, 34.9 % for needle sharing, 25.6 % for kiss on the mouth and 16.2 % for hugging someone with AIDS. In adjusted analysis, lower knowledge levels were more prevalent among boys, adolescents with lower socioeconomic status and with less maternal education level, among those who had not talked about sex with mother and without sexual education lessons at school. Knowledge was not associated with school type (public or private), skin color or talk about sex with father.
Conclusion Providing information to adolescents is essential to improve knowledge about HIV and other sexually transmitted infections, especially among young males, with lower socioeconomic status and with lower maternal education level. Public policies aimed to reducing HIV infection should consider maternal and school relevance to improve knowledge on adolescents.

P2I30

Rapid repeat pregnancy and stillbirth in Brazilian women: the effect of maternal age

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Background Rapid repeat pregnancy (RRP) is defined as a subsequent pregnancy occurring within 24 months of the previous

pregnancy outcome, and has traditionally been regarded as a risk factor for unfavorable pregnancy outcomes.
Objective To evaluate the effect of maternal age on the association between RRP and incidence of stillbirth in a middle-income country.
Methods A non-concurrent cohort study was carried out employing probabilistic record linkage techniques. The Rio de Janeiro live-births database (2002; N = 87,358) was linked to the Rio de Janeiro live-births (2003–2004; N = 174,687) and stillbirths databases (2002–2004; N = 3,077). The 59,400 linked records of singleton live-born infants delivered in 2002 whose mothers were under 29 years of age and lived in Rio de Janeiro City were evaluated. To analyze a possible effect of maternal age (categorized as three groups: 10–14, 15–19 and 20–29 years of age) on the incidence of stillbirth among RRP cases, a log-binomial regression model was estimated. The model was adjusted for maternal schooling (adequate or inadequate) and for type of hospital where the delivery took place (private or publicly funded; a mark of mother's income).
Results 2,214 RRP were distributed as follows: 45 cases in the 10–14 years of age group (1.9 %, confidence interval [95 % CI] 1.4–2.6), 785 cases in the 15–19 years of age group (34.3 %, 95 % CI 32.3–36.3) and 1,456 in the oldest group (63.4 %, 95 % CI 61.6-65.6). The incidence of stillbirth among these for the youngest group was 13.3 % (95 % CI 5.1–26.7), 2.42 % for the 15–19 years of age group (95 % CI 1.4–3.7) and 3.3 % (95 % CI 2.4–4.3) for the 20–29 years of age group. Compared to young adult women (20–29 years of age), the adjusted risk ratio for stillbirth for the youngest women was 9.1 (95 % CI 3.3–24.8) ($p < 0.005$).
Conclusion The higher incidence of rapid repeat pregnancy among the youngest mothers and the verification that their risk of stillbirths may be greater, even after adjusting for maternal schooling and income, reiterates the importance of programs that seek to prevent gestational re-incidence directed towards this age group.

P2I31

Health risk behaviors and sexual intercourse in early adolescence: report of a Brazilian birth cohort

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Background Sexual intercourse commonly occurs during adolescence and studies have shown that it has happened in earlier ages. In Brazil, the mean age of sexual intercourse is 14.9 years and girls begin their sexual life later than boys. When sexual initiation occurs below the mean age, it may be associated with several health risk behaviors. In our country, there are few population-based studies that evaluate these aspects in early adolescence, period between 10 and 14 years.
Objectives To describe the prevalence of unhealthy behaviors among boys and girls with and without sexual intercourse during early adolescence.
Methods A descriptive study of data obtained from the 15-year visit of the 1993 birth cohort in Pelotas, a city with 340,000 inhabitants, located in Southern Brazil. Through home visit interviews and a confidential self-administered questionnaire we obtained information about sexual activity, experimental use of alcohol, tobacco, drunkenness episode, illegal drug use and involvement in fights. The analysis were stratified by sex and consisted on determining the prevalence of unhealthy behaviors among those who had and who had not sexual intercourse in early adolescence.
Results 4,325 adolescents were interviewed, representing 85.7 % of the original cohort. The prevalence of sexual intercourse in early adolescence was 18.7 % (IC 95 % 17.5–19.9), being 21.2 % (IC 95 % 19.47–23.09) among men and 16.4 % (IC 95 % 14.8–18.0) in women ($p < 0.001$). All health risk behaviors were directly related to earlier sexual practice. Among adolescents who have had initiation in early adolescence the prevalence of episodes of drunkenness was five times higher and the experimentation of tobacco more than four times higher (35.8 vs. 8.6 %) to that observed in those sexually uninitiated. The experimental use of alcohol was the more frequent health risk behavior in both sexes and the use of illicit drugs was present in 7 % of adolescents who had performed sex.
Conclusions The frequencies of negative health behaviors are high in early adolescence and sexual initiation during this period is directly related to the observed behaviors, which seems to occur together. It is necessary to implement educational public policies focused at this age group, covering these risk behaviors jointly and not individualized.

P2I32

The Robson ten group classification of cesarean section in 7 Alpine

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Background According WHO a Caesarean section (CS) rate greater than 15 % is not justified in any country. A 10-group classification system of CS proposed by Robson is a reliable and reproducible tool for clinical audit of CS.
Objectives Present paper reports on short and long term effects of a medical audit carried out in Trento Province: 7 Maternity Units (MI) and 5,000 births per year for 500.000 total population, in north Italy, for controlling and reducing CS rate.
Methods The main audit was carried out in two phases. The aims of phase one were to retrospectively (2004–2007) collect 3 years CS delivery data from each M.U. (total 15,402; birth); each unit used the 10-group classification system based on 4 pregnancy characteristics: single/multiple, nulliparity/multiparity, multiparity with CS scar, spontaneous/induced labor onset and term gestation. Results were compared with two italian institutions (S Gherardo Hospital, Monza and Sacra Famiglia Hospital, Erba) having respectively 18 and 11 % CS rate; both had a tutoring role for the audit cycle. The aims of the phase two was to complete the clinical audit cycle with a prospective (2008–2009) phase of data collection having each unit reviewed the strategies for labor management for each Robson category. A subsequent periodic monitoring has been provided up to 7.31.2011.
Results The overall CS rates was 29 %, with a significant variability across the units. Short effects prospectively monitored from January 2008 to February 2009 showed that: 3/4 Unit with high CS rate in Group 1 reduced CS rate; 3/4 Units with high CS rate lowered CS rate in the group 2. The overall CS rate in the prospective study resulted 25 % ($p < 0.001$). No difference were founded regarding newborn mortality, APGAR score, need for intubation. As expected, in the subsequent monitoring period there has been an increase in CS rate (specially in 1–2 groups), while the overall CS rate remains below pre audit value (26.5 %).
Conclusions Robson Classification is a simple, effective method of explaining CS rate differences among our M.U. Retrospective results in Groups 1–2 suggested important differences in the management of nulliparous women among the units and the prospective phase demonstrated the margins of improvement in each Robson category. The role of tutoring by two selected standard institutions and the local

facilitators were critical to the success of the project. A periodic re-audit will be necessary for maintaining the results with the times.

P2I33

Patterns of physical activity, sleeping time, TV viewing, and body fat mass in pre-school children

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Introduction The prevalence of childhood obesity has been rising during the past decades in many parts of the world and different behavioural and physiological factors have been described to contribute to its epidemics. The aim of this study was to investigate the association between patterns of physical activity (PA): Moderate PA (MPA) and Vigorous PA (VPA), sleeping time (ST), a marker of sedentary behaviour such television (TV) viewing time and percentage of Body fat mass (%BF) among pre-school children.
Methods The study comprised 345 children (160 girls) aged 3–5 years. PA was assessed using an Actigraph accelerometer during 7 consecutive days. ST and TV viewing time were reported by parents. The %BF was estimated from four skinfolds thicknesses. Regression analysis was used to estimate the association between variables.
Results Multivariate regression analysis was performed to assess the influence of relevant independent variables (MPA, VPA, ST, and TV) to the variance in %BF (dependent variable). In both sexes, our data showed that only %VPA ($\beta = -0.26$; $p \leq 0.020$) in girls and $\beta = -0.17$; $p \leq 0.045$ in boys) contributed significantly towards %BF variation, adjusted for TV viewing time and sleeping time.
Conclusion The data suggests that vigorous PA may play a key role in the obesity development already at pre-school age. Future studies are needed to determine such as whether more sleep or better sleeping versus TV viewing patterns impact favorably/disfavor ably on body weight and other health outcomes.

P2I34

Effect of cariogenic diet on oral health of adolescents

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Introduction Being, tooth decay, the leading chronic illness in adolescence, it is justified to investigate the effect of diet on the formation process of decay. The health of the mouth and teeth is affected by determinants related to eating behavior of adolescents.
Objectives To characterize the eating styles of adolescents and to analyze the effect of diet on the index of decayed, missing and filled teeth (DMFT).
Methods An observational and transversal study on eating styles of adolescents, a random sample of 661 adolescents (56.3 % girls and 43.7 % boys), aged between 11 and 17 years, with a mean age of 13.22 years (SD = 1.139), residents in the central region of Portugal.
Material The data collection was conducted through a questionnaire on eating style. The procedure was also the evaluation of the DMFT index, through observation of the oral cavity.
Results Most teenagers do 5 meals a day (37.1 %). The intake of sweets between meals is consumed "sometimes" in 45.0 % of adolescents, 15.7 % consumed candy "almost every day" and "every day" >6.7 %. Drinking soda is made by 46.4 % of adolescents and 42.3 % for fruit juices. The rate of DMFT varied between 0 and 17, with an average value of 2.23 (SD = 2.484). The girls, on average, have a higher DMFT than boys (=2.38, =2.03), with statistically significant differences (U = 49,205.0, Z = −1.914, $p = 0.049$), implying that, girls have worse oral health with final DMFT index higher. The consumption of sweets (F = 2.953, $p = 0.012$) and consumption of soft drinks (Coke, Fanta, etc.) (F = 3.460, $p = 0.004$), influences the DMFT index of adolescents.
Conclusion The results suggest that adolescents who eat more sweets and soft drinks have a higher DMFT index, earning worstoral health.
Keywords Adolescents · Sweets · Soft drinks and the index of decayed · Missing and filled teeth (DMFT)

P2I35

Early markers of cardiovascular risk: focus on overweight preschool children

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Background One of the risks associated with overweight in childhood is the development of early markers of cardiovascular disease such as hypertension. In medium and long term, the risks to the hypertensive children and adolescents health can be substantial, so in the current context of health surveillance it is recommended the individual and familiar risk assessment and their association with child nutritional status, while strong predictors of Blood Pressure (BP) in adult age.
Objectives To determine the arterial blood pressure values and to analyze its relationship with the child's nutritional status.
Methods Cross-sectional and observational study conducted in 2011, comprising of 792 preschool children, average age 4.39 years old (±0.911), residents in a centre region of Portugal. Children's anthropometric measurement was obtained and the classification was based on the NCHS reference (CDC, 2000). Arterial blood pressure values were obtained by auscultatory method in accordance with the recommendations of the Fourth Task Force.
Results From the sample, 31.3 % were overweight, pre-obesity was higher for girls (20.5 %) and obesity for boys (13.8 %). Overall, the BP percentile was below the 90th percentile (normotensive) to 95.6 % of children (96.1 % boys and 95.1 % girls), while 2.8 and 1.6 % respectively had values considered high-normal and hypertension. The association between BP and BMI percentile revealed that in all underweight children the BP was within the normal range, while in eutrophic children, 1.9 % had high-normal BP, and 1.1 % hypertension. In the pre-obese children, 5.3 % had high-normal BP and 1.3 % hypertension and in the obese ones, 4.1 and 5.1 % respectively scored with high-normal BP and hypertension with statistical significance ($\chi^2 = 14{,}937$; $p = 0.021$). The odds ratios also indicated that the probability of overweight child having hypertension was about three times higher (OR = 2,738; IC 95 % = 1,383–5,420), with statistical significance ($\chi^2 = 8{,}985$; $p = 0{,}003$).
Conclusions Despite the cross-sectional study, the results suggest a positive and significant relationship between overweight and hypertension in the children studied, identifying as in other studies (Hachero, 1996, Santiago & Sá, 2001), a risk of about three times higher in this relationship. In the current obesogenic context this evidence reinforces the importance of promoting child and family health, and the need for effective interventions focusing on controlling the factors and modifiable risk behaviors for early cardiovascular disease and management of the risk factors identified, preventing in this way their development into adulthood.

P2I36

Severe childhood obesity in Italy

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Background Severe obesity in childhood has direct effects on physical and psychological health and is a predictor of adult obesity which is a risk factor for chronic diseases. Since 2007, a national school-based nutritional surveillance system has been active in Italy (OKkio alla SALUTE), which participates in the Childhood Obesity Surveillance Initiative of WHO.
Objective To estimate the prevalence and the socio-demographic characteristics of severe obesity in children in Italy.
Methods The surveillance system uses a stratified cluster sample design with school classes as the primary sampling units. The data collection is biennial and all regions participated at the first two rounds of data collection. The children of grade 3 (mainly aged 8–9 years) were weighed and measured at school by trained local health staff using standardized equipment. Children were classified as severely obese using age and gender specific WHO cut-off values for Body Mass Index (BMI) corresponding to 3 standard deviations from the median. The parents' information was self-reported, including height and weight. Prevalence estimates, 95 % confidence intervals (95 % CI) and regression analyses took account of the survey design. The association between the prevalence of severe obesity and children's age, gender, and area of residence, and parents' educational level, citizenship and BMI, was evaluated using logistic regression.
Results Among the 88,705 children aged 8–9, measured in 2008 and 2010 (response rate = 97 %), the prevalence of severe obesity was 4.8 % (95 % CI: 4.6–5.0). There was a slight decrease between the surveys, from 5.1 % (95 % CI: 4.8–5.4) to 4.5 % (95 % CI: 4.2–4.7). The prevalence was higher in boys ($OR_{adj} = 3.2$; 95 % CI: 2.7–3.7) and in children aged 8 ($OR_{adj} = 1.3$; 95 % CI: 1.1–1.4). Severe obesity was strongly associated with the obesity of at least one of parents ($OR_{adj} = 7.5$; 95 % CI: 6.1–9.3) and low educational level ($OR_{adj} = 2.0$; 95 % CI: 1.6–2.5). The prevalence was lower in the North of the country and increased progressively towards the South ($OR_{adj} = 2.2$; 95 % CI: 1.8–2.6). No differences were observed between children of Italian and foreign citizen parents.
Conclusions Although there is not a unique definition of severe obesity, its prevalence in Italian children seems high. It is urgent to intervene and tackle the problem when the children are overweight or obese. Because children with overweight or obese parents have a higher risk of being severely obese, prevention programs for severe obesity in childhood should be addressed to the whole family.

P2I37

Hospitalized children with dengue in a reference health care unit in Duque de Caxias, Rio de Janeiro, Brazil during the 2008 epidemic

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Background Dengue is a viral infectious disease transmitted in Brazil by the *Aedes aegypti* mosquito, which can cause asymptomatic forms to severe shock syndrome. The estate of Rio de Janeiro experienced in 2008 it's most extensive epidemic, in which 255,818 cases were notified, 252 deaths confirmed and 32 suspected. During this epidemic 48 % of the hospitalization occurred in children under 15, characterizing the chance the age group of severe onset from adults to children. In the city of Duque de Caxias 16,557 cases and 33 confirmed deaths were notified. The children hospital Ismélia da Silveira is reference for hospitalization in this area.
Objectives To analyze the clinical profile of hospitalized cases of dengue in the Ismélia da Silveira hospital in Duque de Caxias, RJ, during the 2008 epidemic.
Methods The authors analyzed the medical records of 737 children between 2 months and 15 years old, who were hospitalized between January and May, 2008. Relative frequency of age, sex, hematocrit (Ht), and measures of hospitalization period, thrombocyte count were calculated for all patients. The Spearman correlation coefficient was used to analyze the correlation between these variables.
Results In the studied cases, the most involved age group was the 10–15 years old children (47.1 %), followed by the 5–9 years old (42.1 %). The average hospitalization period was 4 days (varying 1–33 days), the average Ht was 40.5 % (varying 26–62 %) and average thrombocyte count was 30,000/mm^3 (varying 1,000–300,000/mm^3). An inverse correlation was found between Ht and Throbocyte count (-0.30; $p < 0.01$) and between hospitalization period and thrombocyte count (-0.32; $p < 0.01$) in all patients with thrombocyte count lower than 100,000/mm^3. Concerning the Ht and the hospitalization period a positive and significant correlation was found (0.16; $p < 0.01$). The medium count of thrombocyte on males was 35,576.20/mm^3, which was significantly higher than the female medium count—31,504.88/mm^3 ($p < 0.01$). There were no deaths between the studied patients.
Conclusion The hospitalized children presented a severe form of disease, with significantly association between hemoconcentration and thrombocytopenia, and between these tow and hospitalization time. These results show the need of a better understanding of the clinical profiles of dengue cases to improve the healthcare of the patients.

P2I38

Anaemia and factors associated in children from 5 to 9 years in Cape Verde

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Background Anaemia is a problem affecting a large group of school children in sub-Saharan Africa, contributing to morbidity in this region. In Cape Verde the magnitude of the problem is unknown.
Objective evaluate the prevalence of anaemia and associated factors in children 5–9 years in Cape Verde.
Methods analysis of data from a random sample of National Survey on the Prevalence of Anemia and Associated Factors in Children under 10 years, conducted in 2009 by the Government of Cape Verde. They were part this analysis, 1,106 children from 5 to 9 years old. Information was collected about housing conditions of the families and health condition of the child. We conducted anthropometric measurements and indices are estimated weight/age and height/age. The investigation of anemia was based on hemoglobin, using HemoCue, considering the anemic children with haemoglobin concentration below 11.5 g/dL. The evaluation of the association

between anemia and the possible factors associated was analyzed by logistic regression for multivariate hierarchical, and estimated the odds ratio (OR) and confidence intervals of 95 % (CI 95 %).
Results The prevalence of anemia was 23.8 % (95 % CI: 20.2 %–27.8). The factors associated with anemia were socio-environmental conditions and age, being identified as high-risk children whose conditions were more unfavorable (OR 1.92, 95 % CI: 1.10–3.36) and children under 7 years (OR 1.55, CI: 1.13–2.13).
Conclusion anemia in children 5–9 years old is a moderate public health problem, affecting mainly children under 7 years of age from families with low socio-environmental conditions. Programs to prevent and control the disease should be performed in conjunction with actions to improve housing conditions of the cape verdean families.
Grant Support: Cape Verde Government.

Poster Topic 2J. Nutrition and lifestyles

P2J01

Physical activity behavior change according to the transtheoretical model: associations with BMI and smoking behavior

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Introduction It has been well documented that regular moderate to vigorous intensity physical activity leads to a number of physiological and psychological benefits. The challenge is how to promote and maintain adherence to regular physical activity behavior on a population level. Therefore, it must be investigated which factors influence health behaviors such as moderate-intensity physical activity (pa) and exercise. Based on the Transtheoretical Model of Behavior Change (TTM) we have appropriate methods to assess as well to promote, physical activity behavior among adults.
Objectives The aim of this study was to describe the socio-demographic distributions across the stages of behavioral change for moderate intensity physical activity and excercise according to the TTM and to identify associations of the stages of change with BMI and smoking behavior.
Method This cross-sectional study is based on a sample of 482 adult Austrian residents (mean age 46.2 years) who attended a health check in a publicly accessible out-patient clinic in southern Austria (Styria). Data on physical activity behavior, socio-demographic (sex, age, educational level) characteristics and smoking status were collected in a standardized procedure via a self-report questionnaire. Height and weight were measured by physicians. Participants were categorized into moderate intensity physical activity and exercise stages of change according to the TTM (precontemplation, contemplation, preparation, action/maintenance).
Results Binary logistic regression analyses showed that smokers were significantly ($p < 0.05$) more often in the precontemplation stage with respect to exercise, than non-smokers (OR = 2.02, 95 % CI: 1.11–3.70). Furthermore, our results showed that individuals with higher BMI values were significantly ($p < 0.05$) more often not intend to perform physical activity than those with lower BMI values.
Conclusion Our findings about the relationships between stage of change for moderate-intensity pa and exercise with socio-demographic factors, BMI and smoking represent a first step in better understanding the determinants of regular pa behavior among Austrian adults. These results may prove useful for developing health promotion programs for adults in Austria, targeting the identified target groups.

P2J02

Trends in social inequalities for obesity across the Austrian population: 1973–2007

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Background The prevalence of obesity is steadily increasing worldwide. To identify major risk groups it is necessary to investigate this health problem within the wider framework of the general population. Therefore, it is important to examine trends in the prevalence of obesity in order to identify affected subpopulations and to plan target group-specific preventive measures.
Objectives To investigate long-term trends in the prevalence of obesity across different age and educational groups in various regions among Austrian adults.
Methods Self-reported data were derived from five national representative cross-sectional interview surveys (n = 178,818) in the years 1973, 1983, 1991, 1999 and 2006/07 in private homes and long-term care facilities for Austrian adults ages 20–99 years (mean age: 47.7 ± SD 17.5 years). An adjustment of the self-reported BMI was performed. Obesity was defined as BMI $\geq$30 kg/m^2. To quantify trends in obesity prevalence, we calculated absolute changes and aetiologic fractions, using the prevalence's of the first and last year estimated by logistic regression models. The magnitude of inequalities for BMI and obesity between educational groups was measured by calculating the relative index of inequality.
Results The age-adjusted prevalence of obesity was 11 % during the study period (women: 11.3 %, 95 % CI: 11.2–11.6; men: 9.9 %, 95 % CI: 9.7–10.2). Obesity and a high mean BMI were most prevalent among subjects aged 55–74 years, those with low educational status and individuals living in the Eastern region of Austria. The absolute change in obesity prevalence during the study period was significantly highest ($p < 0.001$) among women, aged 75 years and older (3.0 %), and among men aged 55–75 years (3.6 %). Concerning the educational level the largest increase in obesity was seen in those with a low educational level (women: 4.1 %, men: 2.6 %; $p < 0.001$), whereas the aetiologic fraction was highest in middle-educated men. Among women we found the highest absolute change for those living in Central Austria (2.44 %) and among men for those living in Western Austria (4.64 %). Relative inequalities for obesity showed a tendency to increase during the study period; this is especially true for men.
Conclusion Targeted preventive measures for obesity should be designed according to age, educational level and region among Austrian adults.

P2J03

Hemoglobin level in pregnant women assisted by public prenatal services in the five regions of Brazil

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Background Anemia is a major public health problem in Brazil, especially in pregnant women who are more vulnerable. Anemia during pregnancy increases infant mortality and perinatal risks for mothers and neonates. In Brazil, the strategies to increase hemoglobin-Hb level are nutritional counseling, iron supplementation and fortification of flours with iron which has been mandatory since 2004.
Objective To evaluate the Hb level in pregnant women before and after the fortification of flours with iron and to investigate associated variables.

Methods This is a cross-sectional study with retrospective data. We obtained data from medical records of 12,119 pregnant women assisted by public prenatal services in the five geographical regions of Brazil. The pregnant women were distributed into two groups: Before-fortification (women with delivery before Jun/2004) and After-fortification (women with last menstrual date after Jun/2005). Data were collected between 2006 and 2008. We included only low risk pregnant women whose records contained at least the result of Hb and the dates of first prenatal consultation and last menstrual period. Statistical analysis consisted of descriptive, univariate and multiple analysis (linear regression), with a significance level of 5 %. The study was approved by the Ethics Committee of the School of Nursing, University of Sao Paulo.
Results The fortification had no independent effect ($p = 0.325$), but it was kept as control variable. The means of Hb level were 0.149, 0.355 and 0.852 g/dL higher in pregnant women of the North, Southeast and South regions, respectively, than those of Northeast. Pregnant women who had two or more previous pregnancies had an Hb level 0.250 g/dL lower than those who had one pregnancy or had never been pregnant. Likewise, those who lived without a partner had an Hb level 0.121 g/dL lower than those who lives with a partner. An increase of 1 year old was associated with a 0.009 g/dL decrease in Hb level; an increase of one gestational week was associated with a 0.047 g/gL decrease in the Hb level and; an increase of one unit on Body Mass Index-BMI was associated with a 0.024 g/dL increase in the Hb level.
Conclusions The results suggest no significant change in the Hb level after fortification of flours with iron in Brazil. However, the study highlights differences in the Hb level among Brazilian regions and shows the most vulnerable group: pregnant women who had two or more previous pregnancies, who live without partner with lower age, BMI and higher gestational age.

P2J04

Hemoglobin level in Brazilian pregnant women according to gestacional age

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Background Hemoglobin-Hb level in pregnant women decreases in second and third trimester due to the hemodilution and the demand of iron by fetus and placenta. So, these changes should be considered when evaluating Hb level and anemia in pregnant women.
Objective To evaluate the Hb level in pregnant women according to gestational age and to create a curve of Hb levels for non-anemic Brazilian pregnant women.
Methods This is a cross-sectional study with retrospective data obtained from medical records of 12,119 pregnant women assisted by public prenatal services in the five regions of Brazil. Data were collected between 2006 and 2008. We included only low risk pregnant women whose medical records contained at least the result of Hb and the dates of first prenatal consultation and last menstrual period. Statistical analysis consisted of descriptive analysis of the Hb level according to gestational age and stratified by period (before/after the fortification of flours with iron), geographic regions of Brazil and nutritional status in the first prenatal consultation. The curve of Hb levels included 9,351 non-anemic pregnant women (Hb >11 g/dL) and it was compared to three different references: Centers for Disease Control and Prevention-CDC and two Brazilian references. Confidence Intervals 95 % CI were calculated for all measures. The study was approved by the Ethics Committee of the School of Nursing, University of São Paulo.
Results The means of Hb levels according to gestational age did not differ significantly between the periods before and after fortification of flours with iron, whereas 95 % CI intersected in all months of pregnancy. The stratified analysis by geographical regions showed higher Hb levels in South and Southeast compared to other regions. Women who began pregnancy overweight/obesity also had higher levels of Hb in all months of pregnancy. The Hb curve of non-anemic pregnant women showed a significant drop from the fourth month with a slight increase in late pregnancy. The curve was higher than the other reference curves in the first trimester. From the fourth month of pregnancy, the curve was below of the CDC reference because the pregnant women studied were not supplemented with iron. However, our curve has showed Hb levels above the national references in all months of pregnancy.
Conclusions The study highlights the evaluation of Hb level according to gestational age and shows an updated curve of Hb levels according to gestational age, which can be used to evaluate Hb level and anemia in Brazilian pregnant women.

P2J05

Food environment and fruit and vegetable intake among adults in Brazilian population

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Background Fruit and vegetable (FV) consumption plays a protective role in the onset of chronic non-communicable diseases. Environmental, social and individual factors influence eating patterns, which in turn affect the risk of many chronic diseases.
Objective Analyze the associations between so-cio-demographic factors or environmental factors and FV intake among adults.
Method A cross-sectional telephone survey was conducted with 3,868 adults (46.3 % men and 53.7 % women, mean age 39.8 years) in the urban area of Belo Horizonte, Brazil. Data from the telephone-base Brazilian surveillance system for chronic diseases was used (VIGITEL—2008/2009). The indicator of adequate intake of FV (≥5 days/week) was assessed. G*eo-referenced* variables from the built and social environment were also used. Associations between characteristics of the food environment including number of supermarkets and FV specialized food markets and adequate intake of FV were investigated. Prevalence ratios (PR) and 95 % confidence intervals were estimated by multivariate Poisson regression.
Results In this sample, the proportion of adequate intake (≥5 days/week) of FV was 38.2 % (CI 95 % 35.9–40.4). In the final model, presence of supermarkets in the neighborhood (PR = 1.23; CI 95 % 1.01–1.51), active in leisure time (PR = 1.50; CI 95 % 1.32–1.71), and marital status (marriage) (PR = 1.16; CI 95 % 1.03–1.30) were independently associated with adequate FV intake. The model was also adjusted for gender and age of the participants. The presence of FV specialized food markets in the neighborhood was not associated with the adequate FV intake.
Conclusion In urban area of Brazil the adequate FV intake was associated with active lifestyle and presence of supermarkets in the neighborhood.
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P2J06

Trends in consumption of soft drinks and artificial juices in adults by telephone survey in Brazil, from 2007 to 2010

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Background Before increase of global prevalence of obesity little attention had been given to calories consumed in liquid forms. Sugar-sweetened beverages (SSB) have a low satiety potential, low compensatory reduction in the caloric intake form solid foods. There is potential causal association between the consumption of SSB and obesity. The SSB consumption has become a highly visible and a public health problem.
Objective To analyze the trend of consumption of soft drinks and artificial juices, by adults in the years 2007–2010 in the Brazilian capitals.
Methods This is a historical series using Vigitel database of all Brazilian capitals. The data set from 2007 and 2010 was obtained from telephone-based Surveillance of chronic diseases provided by Ministry of Health of Brazil. The number of interviews was, in the years 2007, 2008 and 2009, respectively: 54,369, 54,251, 54,353, 54,367. The consumption of soft drinks and artificial juices was assessed in relation to weekly frequency and the type. The indicator of inadequated consumption of SSB ($\geq$5 days/week) was assessed. The prevalence of the indicator were stratified by sex, skin color, age, civil status, schooling and BMI categories were calculated. The trend was assessed using Poisson regression.
Results 38.7 % (2007) to 32.6 % (2010) of participants reported consuming soft drinks or artificial juices on five or more days per week. In the broadest range of frequency of consumption throughout the study period included the capital Porto Velho (43.62 %) was the capital with higher consumption. Natal (19.16 %) was the city with lower consumption. There was a decreased prevalence of SSB in all groups except in 18–24, 55–64 years age groups and overweight participants, in which the consumption were stable. Young and low education participants showed higher prevalence of consumption.
Conclusion Education and age were the variables that best differentiated the prevalence of intake SSB in five or more days per week.
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P2J07

Built environment and social environment: associations with overweight in adults

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Background Characteristics of the environment in which people live, such as neighborhoods socioeconomic status, availability and access to purchase healthy food, opportunities for physical activity and commuting on foot or by bicycle have been proposed as factors associated with epidemic of obesity in many countries.
Objective The aim of this study was to evaluate individual variables and variables within the built and social environment for their potential association with overweight in an urban Brazilian population.
Methods Participants were selected from the Surveillance of Risk Factors for Chronic Diseases through Telephone Interview (VIGITEL), organized by the Ministry of Health and conducted annually in all Brazilian state capitals. For the present study, samples from the years 2008 and 2009 for the city of Belo Horizonte were used. Individual variables were divided into two categories: sociodemographic and lifestyle. To verify and analyze the spatial distribution of variables, the VIGITEL database was geocoded using the Brazilian System of Postal Codes (CEPs) for participant residences. To characterize the built and social environment, a geocoded database was developed and it incorporated the individual data for each participant. Georeferenced information of parks, public squares, places for practicing physical activity, population density and food establishments were also used to create data on the built environment. To characterize the social environment, we used the health vulnerability index (HVI) and the data for homicide locations were used to map homicide rates by census tract. The multilevel regression showed that the data had no structure in two levels. Thus, we used five adjusted Poisson regression models with robust variance in a single level.
Results In this study the prevalence of overweight was 44.0 %. The environmental variables independently associated with overweight were the population density, the census tracts with very high HVI and the homicide rate. The individual variables that independently associated with overweight were watching television every day of the week and commuting to work by foot or bicycle. Variables related to food consumption such as the habit of consuming whole milk and the habit of consuming chicken with skin were also independently associated with overweight.
Conclusions The evidence from this study shows that characteristics of the places that people live are associated with overweight in urban Brazilian adults.

P2J09

Level of physical activity, meal consumption patterns and nutritional status in adolescents of Niterói, RJ, Brazil

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Background Understanding the factors involved in the increased prevalence of obesity in Brazil is very important to its management and prevention. Snacks' consumption substituting dinner or lunch and omission of breakfast have been associated with overweight and obesity in teenagers, as well as physical inactivity.
Objectives To evaluate the level of physical activity and frequency of meal consumption and its association with overweight in adolescents.
Methods A cross-sectional study was conducted in two public schools of Niterói- RJ, Brazil. Anthropometric measurements and questionnaires were done in 502 students aged 10–14 years in 2010. Level of physical activity was accessed by the Physical Activity Questionnaire (PAQ-C). Meal consumption pattern was classified as satisfactory or unsatisfactory according to frequency of meal consumption (breakfast, lunch and dinner). A satisfactory pattern was considered if the principal meals (breakfast, lunch and dinner) were consumed more than 3 times a week. Overweight and obesity were defined by a sex-age- body mass index Z-score greater than +1.00.
Results Excess weight was observed in 27.9 % of the students (29.0 % among boys and 27.0 % among girls). Unsatisfactory meal consumption, characterized by skipping meals or substituting by snacks was observed in 53.4 % of girls and 41.3 % in boys. Breakfast omission was more frequent among girls (28.0 vs. 16.7 %). Both unsatisfactory meal consumption ($p = 0.000$) and breakfast omission ($p = 0.02$) were associated with overweight and obesity only among

girls. Physical inactivity was not associated with overweight, although 40 % of students were inactive.
Conclusions High proportion of adolescents, especially girls, reported unsatisfactory meal consumption and breakfast omission as well as an elevated prevalence of overweight and obesity. Lack of association between physical inactivity and overweight may be due to reverse causality, as the overweight student might start to be more activity after the diagnostic. Preventive strategies must be implemented to improve meal pattern among teenagers and stimulate breakfast consumption. Moreover, it is essential to investigate others dietary and physical activity factors to better understand the rising prevalence of overweight and obesity among adolescents.

P2J10

Different patterns of association of body fat percent and body mass index with pre-adolescent and adolescent asthma: a cross-sectional study amongst Cypriot schoolchildren

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Background Many studies have reported an association between high body mass index (BMI) and asthma. However, it is still unclear whether the nature and pattern of this association differs by gender or stage of puberty. Inconsistent findings of previous studies may be at least partly attributable to exposure misclassification since BMI is only a proxy measure of adiposity and the degree of correlation with adipose tissue changes with age.
Objectives To investigate the extent to which BMI and body fat percent (BF%)—a more direct measure of adiposity—displays a different pattern of association with asthma across childhood.
Methods In this cross-sectional study, 10 981 schoolchildren from the pre-adolescent stage (aged 7–8) to completion of adolescence (aged 16–17) completed the ISAAC questionnaire and had anthropometric measurements, including BF% measured by the bio-electrical impedance technique. Logistic regression models were used to examine the association of active asthma (i.e. ever having asthma and report of wheezing in the past 12 months) across categorical and continuous levels of age-and-sex-specific z-scores of BMI and BF%.
Results In the case of BF%, there was a non-linear pattern of association where both the highest with OR: 1.68 (95 % CI = 1.21–2.30) as well as lowest z-score category with OR: 1.59 (95 % CI = 1.13–2.23) conferred a significantly increased adjusted risk for active asthma (p value of Likelihood Ratio Rest (LRT) for non-linearity <0.01). A U-shape pattern of association between BF% and active asthma was apparent in both males and females, before and during adolescence, with no evidence of effect modification by gender or age. In contrast, there was no evidence that the association of active asthma with BMI deviated from linearity (p value for LRT = 0.45) with adjusted odds of active asthma OR: 1.14 (95 % CI = 1.02–1.27) per unit increase in BMI Z score.
Conclusions In contrast to the linear association observed with BMI, BF% displayed a U-shaped association with active asthma and may be the preferred measure of adiposity in epidemiological studies of asthma in children.

P2J11

School setting and irregular lunch consumption among adolescents

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Background There is little knowledge of the association between the structural setting of the school and irregular lunch consumption among adolescents.
Objectives To study whether the structural setting of the school was associated with adolescents' irregular lunch consumption in a multilevel model controlled for factors at the individual level. Further, we investigated whether grade modified the association.
Methods We used data from the Danish 2010 contribution to the international collaborative cross-sectional study 'Health Behaviour in School-Aged Children (HBSC). Data collection were conducted in 2010 among schoolchildren aged 11, 13 and 15 years (in Denmark, equivalent to 5th, 7th and 9th grade, respectively) from a random sample of schools, i.e. cluster sampling. The schoolchildren completed the self-administered and internationally standardised anonymous HBSC questionnaire at school (response rate = 86.3 %) and the school principal completed the principal questionnaire (response rate = 94.5 %). The study sample for this study comprised 4,489 students within 275 classes within 69 schools. Multilevel logistic regression analyses were used to estimate the associations between school level variables and irregular lunch consumption. Lunch consumption was measured by lunch frequency questions.
Results We found that the school level factors, "Availability to canteen" and "Adult present in lunch breaks" were associated with irregular lunch consumption. Students with no access to canteen had a lower risk of having irregular lunch consumption OR = 0.77 (0.62–0.96). Students with no adult present in lunch breaks had a higher risk of irregular lunch consumption OR = 1.62 (1.32–1.99). Having irregular lunch consumption was associated with the following individual characteristics: boy, 7th grade, medium and low family social class, descendant, and single and reconstructed family type. In the final model 0.1 % of the total variance was explained by differences between schools and 1.8 % was explained by differences between classes in the same school. Grade did to some extent modify the association.
Conclusion The structural setting of the school was associated with children and adolescents' regularity of lunch consumption in a multilevel model controlled for individual level factors. From the findings we can conclude that availability of canteen and school stall did not promote regular lunch consumption while the presence of an adult in lunch breaks promoted regular lunch consumption. Grade did to some extent modify the association. Most of the total variance in students' lunch consumption was explained by individual level (98.2 %).

P2J12

Sex-specific profiles of consumers and non-consumers of bitter food: findings from a French cohort

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Background Nutrition has a lifelong impact on health and has been drawing attention as a critical modifiable factor in chronic disease prevention. However, many types of food with an arguably strong potential to ward off disease due to high contents of carotenoids,

polyphenols, antioxidants, folate, and fiber, tend to taste bitter and might be aversive to many individuals. Apart from taste, a number of sociodemographic, health, and lifestyle factors likely determine intake as well as compliance with dietary guidelines.
Objective We examined bitter food consumer and non-consumer profiles in order to help elucidate underlying reasons for the subpar adherence to nutrition recommendations.
Methods We carried out secondary analyses of data from the French SU.VI.MAX antioxidant trial (1994–2002). All participants provided written informed consent and the study was approved by respective ethics committees. The selected subsample (N = 2,327) included men and women aged 45–60 years at baseline with a minimum of 12 24-h dietary records provided during the first 2 years of participation. Unweighted and weighted bitter food consumption scores were computed, based on a number of vegetable and non-vegetable items. Sex-specific associations between sociodemographic, health, and lifestyle factors and bitter food consumption were analyzed with multiple linear regression. Covariates used in the final analysis included group assignment (active vs. placebo), total energy intake without alcohol, and non-bitter vegetable consumption.
Results Education, area of residence, physical activity, and alcohol use among men (unweighted score, adjusted model $F = 16.23$, $p < 0.0001$), and alcohol use and presence of diabetes among women (unweighted score, adjusted model $F = 12.70$, $p < 0.0001$) were supported as predictors of bitter food consumption. Modeling the weighted bitter food consumption score, body mass index emerged as a significant predictor in both men and women ($p < 0.002$), whereas educational level was supported only among women ($p < 0.006$).
Conclusions This study adds to the presently scarce literature on individual-level determinants of actual intake of specific types of food. Our findings support the role of sex-specific sociodemographic, health and lifestyle determinants of bitter food intake, to be considered in future nutrition education initiatives. In the context of fruit and vegetable intake below established dietary guidelines, and especially the low levels of cruciferous vegetable intake reported in many countries including France, the identification of population subgroups according to their vegetable and other bitter-tasting food consumption patterns may help in refining dietary recommendations.

P2J13

Risk factors for disagreement in self and proxy reports on physical activity of children and young adolescents

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Background Although easy accessible and relatively cheap movement instruments have been developed and are used in population studies on physical activity among children, self-report very often is the main source of information. Sometimes information on PA coming from self and proxy respondents are pooled together for later analysis. However, the comparability of information received based on self- and proxy-reports remains unclear.
Objectives The main aim of the study was to assess the level of agreement of data gathered from schoolchildren and their mothers concerning physical activity of youths and to identify factors associated with disagreement.
Methods A cohort of 91 children (66 % girls), aged 7–15 years, and their mothers were studied using a questionnaire in a cross-sectional study. Information gathered included average leisure time physical activity during the summer and winter weeks over a year prior to the interview.
Results Children, compared to their mothers (proxies), reported higher average weekly time spent on general seasonal activity, seasonal team games, time spent on TV/movie viewing, and book reading. The observed level of Lin's concordance correlation coefficient for agreement varied from 0.32 for TV/movie viewing to 0.79 for non-seasonal activity. Sedentary lifestyle (>25.5 h in sedentary activity/week) was identified as a factor associated with disagreement in reports on general seasonal activity (OR = 5.47, 95 % CI: 1.78–16.83) and on seasonal team games (OR = 5.42, 95 % CI: 1.74–16.88). Moreover, increase in categories of BMI percentiles was associated with increased risk of disagreement in these activities (p for trend 0.037, 0.041; respectively).
Conclusions The comparability of information on the level of children's and young adolescents' leisure time physical activity depends on the nature of this activity. Sedentary lifestyle and increased body mass index may be responsible for disagreement in some types of physical activity. The use of parental proxy reporting as supplementary source of information on the level of physical activity of children should be applied, if ever, with caution.
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P2J14

Association between milk intake, leisure-time physical activity and abdominal obesity in girls

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Background Diet and physical activity are recognized as important factors to prevent abdominal obesity (AO), which is strongly associated with chronic disease (type 2 diabetes, cardiovascular diseases, etc.).
Objective The aim of this study was to identify associations of AO and related diet and physical activity behaviors, particularly milk intake and leisure-time physical activity (LPA) in girls.
Methods A cross-sectional, school-based study was conducted with 893 girls, ages 15–18, from the Azorean Archipelago, Portugal. The population was selected by means of proportionate stratified random sampling, taking into account location (island) and number of students, by age and sex, in each school. In all adolescents, anthropometric measurements were recorded (weight, height, waist circumference-WC). AO was defined by a WC at or above the 90th percentile. Adolescent food intake was measured using a semi-quantitative food frequency questionnaire, and milk intake was categorized as 'low-milk-intake' (<2 servings/day) or 'high-milk-intake' (≥2 servings/day). LPA was assessed via a self-report questionnaire, and participants were divided into active and low-activity groups. The association between milk intake, LPA and AO was evaluated by logistic regression analysis adjusting for confounders (age, smoking, parental education and total energy intake).
Results The prevalence of AO was 31.3 %. 50.4 % of girls were physically active. Concerning the proportion of AO, no significant differences was found between low-activity group and active group (31.5 vs. 31.2 %, $P = 0.909$, respectively). Girls with high levels of milk intake had lower proportions of AO than who reported a low--milk intake (26.8 vs. 34.7 %, $P = 0.013$). After adjusting for confounders, high-milk intake (OR = 0.54, CI 95 %: 0.33–0.83,

$P < 0.05$) was negative predictor of AO whereas no significant associations were found with LPA.
Conclusions In our sample, milk intake seems to be protective against to AO in girls. These results suggest that milk intake may be related to body fat distribution. Although in our study, no association was found for LPA, findings from observational and intervention studies suggest that regular physical activity is one of several behavioral factors important for prevention of deposition of abdominal fat. Hence, futures researches with more accurate measures are needed on the combined effects of milk intake and/or milk products and PA on AO.

P2J15

Cardiorespiratory fitness, weight status and objectively measured sedentary behaviour and physical activity in adolescents from different geographic communities

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Background Cardiorespiratory fitness (CRF) is an important health marker that has a central role in the prevention of youth obesity. However, the aetiology of obesity is complex and is linked to some extent with environmental factors that contribute to the adoption of sedentary behaviours. It is common assumed in the literature that residents in rural communities with low population density frequently have limited access to health care, and also have socioeconomic, educational and nutritional inequities that can impact the healthy development of children and youth.
Objectives The present study aimed to analyse the associations among weight status (body mass index, BMI), cardiorespiratory fitness (CRF), and objective measures of sedentary behaviour and physical activity (PA) in a cross-sectional sample of adolescents from rural and urban areas.
Methods The sample included 362 youth 13–16 years of age (165 males, 197 females) from urban and rural regions of the Portuguese midlands. CRF was assessed with the 20-m shuttle-run test. A uniaxial accelerometer was used to obtain five consecutive days of activity behaviours including time being sedentary. Partial correlations and logistic regression analysis (controlling for sex and chronological age) were used to examine relationships among variables.
Results Rural adolescents of both genders had significantly higher levels of CRF than their urban peers. Urban males were more active than their rural peers at the weekend, whereas urban females were significantly less active than rural females on week days and across total assessed days. As expected, BMI was inversely correlated with CRF among both rural ($r = -0.35$, $p < 0.01$) and urban ($r = -0.42$, $p < 0.01$) adolescents. In addition, the logistic regression model revealed that both rural and urban youth with higher levels of CRF had a lower relative risk of being overweight/obese.
Conclusion The observations indicate important associations between weight status and CRF in both rural and urban Portuguese adolescents. Furthermore, place of residence has an important impact on weight status of this sample of adolescents. However, the results also highlighted a need to better understand the details of daily life of adolescents in urban and rural settings in order to define educational and perhaps clinical interventions.

P2J16

Nutrition transition in the Seychelles: 22-year trends

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Background In the Seychelles there is currently no explicit information about nutrition trends. The available data is limited and largely based on food consumption surveys and food balance sheets.
Objectives To assess trends in nutrition patterns in the Seychelles between 1989 and 2011 among subjects aged 25–44 years.
Methods Random samples generated from Seychelles national censuses were used in 1989 ($n = 493$), 2004 ($n = 599$) and 2011 ($n = 471$). Food frequency questionnaire data were available for all surveys and the variables were collapsed into homogenous categories.
Results Consumption of fish (5+/week) decreased from 93 % in 1989 to 74 % in 2011 ($p < 0.001$). During the same period, the following consumptions increased: meat (5+/week), 25–51 %; fruit (1+/week), 48–94 %; salty snacks (1+/week), 22–64 % and sweet snacks (1+/week), 38–67 % ($p < 0.001$ for all). Home-brewed alcoholic drinks (1+/week) decreased from 16 to 1 % ($p < 0.001$), while the consumption of wine (1+/week) increased from 5 to 33 % ($p < 0.001$). Between 2004 and 2011, rice (2/day) decreased from 62 to 57 %, tea (1+/day) decreased from 72 to 68 % and poultry (1+/week) increased from 86 to 96 % (all $p < 0.01$), while no change was found for vegetables (70.3–69.8 %, $p = 0.65$).
Conclusion Seychelles is experiencing nutrition transition characterized by a decreased consumption of staple traditional foods (fish, polished rice and tea) and of inexpensive homebrews and increased consumption of meat, poultry and snacks. There are also trends toward more varied foods likely related to a substantially broader supply in the 22-year interval. Finer analysis should be performed to examine whether secular trends in food patterns may not necessarily be detrimental for health.

P2J17

Breastfeeding practices, appetite regulation and growth in healthy children in preschool

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Background Breastfeeding shapes food intake in children, through previous experience of basic flavors derived from the maternal diet by intrauterine life, by breast milk and also by the experience during the first year of life (Vereijken et al. 2011). In food choices, children only consider their preferences, based on known basic flavors, and these same preferences are now involved in appetite regulation (Faith et al. 2004). Developing the necessary skills to make safe and nutritious choices is undoubtedly a fundamental achievement that supports healthy growth. (Vereijken et al., 2011).
Objective Evaluate the association between breastfeeding practices, the Appetite Regulation and Healthy Growth in children between 3 and 5 years old.
Methodology A total of 327 children aged between 3 and 5 years old, living in the city of Braganza-Portugal and who attend kindergartens, were included in the sample. Two questionnaire were filled by parents of children: (1) A questionnaire regarding the regulation of appetite, *Child Eating Behaviour Questionnaire*-CEBQ (Wardle et al. 2001)

adapted to Portugal (Viana et al. 2008), which includes eight scales: Food responsiveness—FR, Emotional over-eating—EOE, Enjoyment of food–EF, Desire to drink—DD, Satiety responsiveness—SR, Slowness in eating—SE, Emotional under-eating—EUE, Food fussiness—FF. (2) A Question about breastfeeding practices in the period of 0–6 months to identify if the child was exclusively breastfed or not. Finally we proceeded the anthropometric measurements (weight, height and calculate BMI) of children and them BMI were categorized according to CDC recommendations (Kuczmarski RJ et al. 2002). Statistical analysis was performed using the SPSS version 20.0 using the Kruskal–Wallis test (F) and Mann–Whitney-Wilcoxon test (Z).

Results The sample mean age was 4 ± 0.8 years old. Children were mostly girls (51.7 %) and having been breastfed minority (43.7 %). A relation was found between breastfeeding practices and the score of one of from CEBQ scales (DD): FR($F = -0.185$, $p = 0.912$), EOE($F = 2.436$, $p = 0.296$), RS($F = 1.437$, $p = 0.488$), SE($F = -0.463$, $p = 0.793$), **DD($F = 9.895$, $p = 0.007$)**, SR($F = 1.877$, $p = 0.391$), EUE($F = 1.428$, $p = 0.490$), FF($F = 5.422$, $p = 0.066$). A relation was found between the score of the scales of CEBQ and percentiles: **FR($F = 7{,}435$, $p = 0.024$)**, EOE($F = 4{,}757$, $p = 0.093$), RS($F = 1{,}473$, $p = 0.479$), SE($F = 4620$, $p = 0.099$), DD($F = 1255$, $p = 0.534$), SR($F = 0337$, $p = 0.845$) EUE($F = 2566$, $p = 0.277$), FF($F = 3038$, $p = 0.219$).

Conclusion We detected significant differences between breastfeeding practices and regulation of appetite, particularly in the desire to drink, suggesting that exclusively breastfed infants have a lower desire to drink when compared with the others. There is also the existence of a relation between relative-age percentile BMI and appetite regulation, namely the pleasure of eating. Thus, children who are overweight or obese have a greater pleasure in eating.

P2J18

Making use of all available data for monitoring trends in the prevalence of smoking in Portugal: a systematic review

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Background Understanding the dynamics of smoking at the population level is essential for the planning and evaluation of prevention and control measures. The accurate estimation of the burden of morbidity and mortality associated with smoking requires an efficient use of all available resources to obtain detailed information for different age groups and populations across the widest possible timespan.

Objective To critically summarize the evidence from studies that quantified the prevalence of current smoking and to estimate its time trends in the adult Portuguese population.

Methods Pubmed was searched up to 2011 and the bibliographic references of the review articles were screened. Two researchers independently evaluated the studies to determine their eligibility, applying pre-defined criteria. Linear regression models were used to assess the differences in the estimates of prevalence of current smoking according to the type of population sampled in the original studies (general population, occupational groups, volunteers, university students, primary health care centres users), adjusting for the mean age of the participants, the geographical coverage of the study (national/regional) and the year of survey. The prevalences of current smoking reported by the National Health Surveys were also compared with those of the remaining studies involving samples of the general population. We used linear regression models to estimate the annual percent change (APC) in the general population.

Results Twenty-eight eligible studies were identified. Samples of occupational groups, volunteers and university students yielded lower prevalences than those of the general population, independently of the participants' age, year of survey and geographical coverage. The National Health Surveys and the remaining reports of samples from the general population yielded similar prevalences. In the general population, between 1987 and 2008, the prevalence of smoking increased in women younger than 70 years, mainly among those aged 31–50 years [APC: 8.7 %, 95 % confidence interval (95 % CI): 5.9–11.6]. The prevalence did not change significantly in men aged ≤50 years (APC, ≤30 years: −0.7, 95 % CI: −1.5–0.1; 31–50 years: 0.0, 95 % CI: −1.6–1.5), and decreased in the older (APC, 51–70 years: −2.9 %, 95 % CI: −5.0 to −0.7; APC, ≥71 years: −16.5 %, 95 % CI: −27.4 to −4.0).

Conclusion This study provides a framework to critically summarize the published data on the prevalence of current smoking, as well as robust evidence to place Portuguese men at the later stages of the tobacco epidemic, and women between stages II and III.

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P2J19

Saturated fatty acids intake in relation to C-reactive protein, adiponectin and leptin: a population-based study

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Background Evidence on the relation of saturated fatty acids (SFA) with inflammatory markers and adipokines is scarce and inconsistent. Moreover, comparisons across studies are limited by differences across the specific populations investigated, lacking information from population-based studies.

Objective To evaluate the association of the intake of total SFA, their subtypes (lauric, myristic, palmitic and stearic acids), and SFA to polyunsaturated fatty acids (PUFA) ratio (SFA/PUFA ratio) with serum concentrations of high sensitivity C-reactive protein (hs-CRP), adiponectin, and leptin among Portuguese adults.

Methods We studied 395 non-institutionalized inhabitants of Porto (52.2 % women; age range: 26–64 years) who were evaluated in 2010–2011, as part of the EPIPorto study follow-up. Trained interviewers administered a structured questionnaire comprising information on socio-demographic, clinical, and behavioural characteristics. Fatty acids intake was assessed with a validated semi-quantitative food frequency questionnaire. Dual energy x-ray absorptiometry (DXA) was performed for body composition analysis. Blood was sampled after a 12-h overnight fast and serum samples were stored at −80 °C. High-sensitivity CRP concentrations were determined through particle-enhanced immunonephelometry whereas adiponectin and leptin concentrations were measured by radioimmunoassay. Regression coefficients (β) and 95 % confidence intervals (95 % CI) were obtained from linear regression models, divided by sex.

Results After adjusting for age, education, regular physical exercise (at least 30 min/week of any leisure-time activity with energy expenditure higher than 2.5 metabolic equivalents), smoking status,

and DXA-total body fat%, hs-CRP was significantly and positively associated with lauric ($\beta = 0.215$; 95 % CI 0.068–0.361) and myristic acids ($\beta = 0.216$; 95 % CI 0.069–0.363) and with SFA/PUFA ratio ($\beta = 0.163$; 95 % CI 0.014–0.311) in men, but not in women. For adiponectin and leptin, no significant associations with SFA intake were observed in both women and men.
Conclusions A detrimental role of lauric and myristic acids and of high SFA/PUFA ratio is suggested by their association with elevated hs-CRP concentrations in men. No effect of SFA intake on adiponectin and leptin was found.
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P2J20

Determinants of parental child-feeding patterns in children aged 4 years old

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Background Parental child-feeding attitudes and practices may compromise the development of healthy eating patterns and weight status in children.
Objectives To evaluate the association of mother's and children's characteristics with maternal child-feeding patterns.
Methods Participants are part of the Generation XXI birth cohort and included 4,725 mothers and their 4 years-old child. Mother's and children's characteristics were collected by trained interviewers. Weight and height were measured according to standard procedures. Parental child-feeding attitudes and practices were assessed through Child Feeding Questionnaire (CFQ) and Overt/Covert Control Scale. Five subscales of the CFQ and the overt/covert control scales were considered in a principal components analysis (PCA) in order to characterize the parental child-feeding patterns. Associations were estimated using multivariate linear regression analysis (adjusted for mother's education, Body Mass Index [BMI] and fruit and vegetables [F&V] consumption, and child's weight for gestational age).
Results PCA defined a three-factor structure explaining 58% of the total variance: pattern 1—parents with higher levels of monitoring, perceived responsibility and overt control of child-feeding; pattern 2—parents with higher covert control, restriction and concerns about child's weight; pattern 3—parents with higher levels of pressuring child to eat. Mother's employment status (β −0.115 95 % CI −0.345; −0.198), education (β −0.081 95 % CI −0.027; −0.012) and health perception (β −0.064 95 % CI −0.091; −0.032) were inversely associated with pattern 1, while F&V consumption (β 0.088 95 % CI 0.029; 0.059) and siblings living with the family (β 0.039 95 % CI 0.018; 0.138) were positively associated with this pattern. Mother's F&V consumption (β 0.118 95 % CI 0.043; 0.073), BMI (β 0.081 95 % CI 0.010; 0.022) and depression (β 0.044 95 % CI 0.031; 0.157) were positively associated with pattern 2. Mother's education (β −0.180 95 % CI −0.050; −0.035), employment status (β −0.058 95 % CI −0.210; −0.064), age (β −0.050 95 % CI −0.015; −0.004) and BMI (β −0.042 95 % CI −0.014; −0.002) were inversely associated with pattern 3 whereas siblings living with the family (β 0.049 95 % CI 0.038; 0.157), health perception (β 0.035 95 % CI 0.004; 0.063) and having a male child (β 0.039 95 % CI 0.019; 0.138) were positively associated with pressure to eat.
Conclusions Mother's socioeconomic characteristics, health conditions (obesity and depression), health perception, F&V intake and child's gender showed independent associations with maternal child-feeding patterns.
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P2J21

Determinants of dieting among Portuguese adolescents

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Background The increasing prevalence of obesity in adolescents is a major public health concern. However, dieting behaviors are prevalent in adolescence and can have harmful consequences.
Objective To evaluate the prevalence of dieting in order to lose weight in 17-year-old Portuguese adolescents and to assess how characteristics at early adolescence (13 years old) determine later dieting in order to lose weight.
Methods The study was developed in a population-based cohort of urban adolescents born in 1990 and assembled at 13 years old (EPI-Teen) in public and private schools of Porto, Portugal. We analyzed 2,383 adolescents with information of dieting at 17 years old. Dieting was assessed as self-reported frequency of dieting in order to lose weight in the previous 12 months, then categorized in never, occasionally (1 to 4 times) and often (5 or more times). Body image dissatisfaction was assessed by the Stunkard figures rating scale. Depressive symptomatology was evaluated by the Beck Depressive Inventory. Body Mass Index (BMI) was classified according to CDC references. The association between participants' characteristics and dieting was summarized using odds ratio (OR) and 95% confidence intervals (95 % CI), using multinomial logistic regression.
Results Dieting at 17 years old was more prevalent in girls than in boys (respectively 29.4 and 11.2 % for occasionally and 11.8 and 2.8 % for often, $p < 0.001$). In both genders, adolescents who were overweight and obese were significantly more likely of dieting. Adjusted for BMI, adolescents who would like to have a thinner body shape than that perceived, who smoke and who drink alcoholic beverages were significantly more likely of dieting. Among girls, the prevalence of dieting increased with increasing parents' educational level. Regarding longitudinal analysis, after adjustment for BMI, similar determinants were found and the body image dissatisfaction at 13 y was the characteristic most strongly associated with dieting frequency at 17 y. Comparing with girls who were satisfied with their body shape, girls who desired a thinner body shape at 13 y had an OR = 1.73 (95 % CI 1.16–2.59) for occasional dieting and OR = 3.44 (95 % CI 2.00–5.94) for often; among boys the results were, respectively, OR = 1.32 (95 % CI 0.65–2.68) and OR = 1.48 (95 % CI 0.35–6.31). Dieting frequency also increased with depressive symptomatology at 13 y.
Conclusions The prevalence of dieting in order to lose weight is high at 17 years old, mostly among girls, and it seems to be associated with some unhealthy behaviors. Besides BMI, depressive symptomatology and concerns with body image at young ages may predict dieting behaviours through adolescence.

P2J22

Anthropometric profile of workers with different workplaces

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Background The eating habits are acquired mostly during childhoodin. However, somes factors such as work place, meal times, reduced physical activity, prolonged sitting at work, type of activity and the possibility of free food consumption may influence eating habits and consequently change the nutritional status of people (Martins, 2010 e Fisberg, 2006). According to Martins (2010), the pattern of obesity among different types of jobs or activities differs by gender, the prevalence of this pattern is higher in people whose work involves driving a car, because it is a sedentary activity, and BMI may differ depending on the type of job.
Objectives To characterize the nutritional status of workers and verify the influence of different workplaces in the nutritional status.
Methods Data collection was collected with workers at a company from Oporto to Portugal. Workers were classified according to their workplaces: crew chief (CRC), administrative, controller dock (CD), preparer order (PO), clerk of goods (CG), charger commodity (CC), responsible for department (RD), cleaner and a driver. The anthropometric profile was measured by body mass index (BMI), waist-hip ratio (WHR), and body fat percentage (%BF) obtained from the bioimpedance. Were used reference values proposed by WHO to categorize the BMI and WHR. The %BF was categorized according Gallagher et al. (2000). Statistical analysis was performed using the Kruskal–Wallis Test in SPSS 17.0.
Results The sample was compose by 80 workers with mean age 34 ± 9 years old. Mostly workers were male (54 %) and their workplaces were: 45.0 % PO; 18.8 % CG; 15.0 % administrative; 6.3 % driver; 5.0 % CRC; 5.0 % CC; 2.5 % cleaner; 1.3 % CD and 1.3 % RD. Based on BMI, it was found that 42.5 % have Normal weight, 46.3 % Overweight and 11.3 % Obesity. Regarding the WHR, it was verified that 86 % of female and 5 % of male have central obesity. For the %BF, it was found that women is more overfat (31 ± 6 %) compared to men (19.2 ± 7.2 %). There was no difference between the median of the anthropometric measurements and the workplaces.
Conclusion Through the preliminary results we conclude that the job does not influence the nutritional status of workers because there is no relationship between the workplace and anthropometric measurements.

P2J23

Changes on physical activity and sports practice from early to late adolescence

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Introduction Childhood and adolescence are particularly relevant to achieve the maximum benefits from being physically active. It is in this phase that they acquire lasting habits of physical activity that will remain in adulthood.
Objective To investigate changes on intensity of physical activity (IPA) and sport practice (SP) from 13 to 17 years-old.
Methods The study was developed in a population-based cohort of urban adolescents born in 1990 and assembled at 13 years (EPITeen) in public and private schools of Porto, Portugal. We evaluated 1,531 (53.6 % girls) at 13 and 17-years-old. Data were collected using a structured questionnaire. Intensity of physical activity was obtained through self-perception of the activities in free time, with four possible answers, mostly of the time sit or standing (designated by low intensity) and mostly of the time walking or running (active/very active). SP was measured in terms of practicing some sport out of school curriculum. McNemar tests were used to evaluate the proportion of individuals that change of IPA or SP habits. Association between IPA and SP at 13 with IPA and SP at 17, adjusted to parents' education, were measured using odds ratio (OR) and 95 % confidence intervals by logistic regression analysis.
Results From the 281 girls that showed high IPA at 13, 51.2 % ($n = 144$) still maintained such levels at 17y and from the 449 that reported lower IPA, 29.4 % ($n = 132$) reported high IPA at 17y. Regarding SP of the 323 girls that practice sport at 13y 61.0 % (197) still practicing at 17y, while of the 460 girls that didn't practice sport 26.5 % (122) started practicing. Among boys, of the 374 that showed high IPA at 13, 69.8 % (261) still maintained such levels and from the 256 that showed lower IPA, 50.4 % (129) presented high IPA at 17y, while in SP of the 246 who didn't practice at 13, 57.3 % (141) started practicing during the follow-up and from the 431 who practice sport 81.9 % (353) still do it. In girls, the OR to had higher IPA at 17y old was 2.47 (1.81; 3.37) among those with higher IPA at 13y compared with those with lower IPA; In boys the OR was 2.29 (1.64; 3.19) respectively, at 17. Regarding SP, adolescents with SP at 13y had higher odds to practice at 17y, 3.40 (2.47; 4.67) in girls and 3.25 (2.26; 4.67) in boys.
Conclusion In both genders the probability of high IPA and SP at 17 it's at list two times more in those who showed high levels of physical activity at 13y.

P2J24

Dietary patterns and total mortality in a Spanish cohort: the SUN project

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Background Studying food patterns is acquiring an emerging role in nutritional epidemiology. There are two methods to characterize dietary patterns: the a *priori* approach and the a *posteriori* approach, which empirically derives combinations of foods or nutrients from factor or cluster analysis that explain a sizeable amount of total variability in food intake. There is little evidence on post hoc dietary patterns and all cause mortality in Southern European populations.
Objective To evaluate prospectively the relationship between a posteriori dietary pattern and risk of all-cause mortality in a large cohort of Spanish university graduates of middle age.
Methods We followed-up 15,536 Spanish university graduates (59.6 % women, mean age: 38 years) during 6.8 years (median). To assess dietary exposures, a validated semi-quantitative 136-item food-frequency questionnaire was administered. Dietary patterns were ascertained through a factor analysis based on 30 predefined food groups. Participants were classified according to tertiles of adherence to dietary pattern scores at baseline. Cox regression models were fitted to estimate multivariable-adjusted hazard ratios (HR) for mortality. Deaths were confirmed by review of medical records.
Results Two major dietary patterns were identified: the "Potatoes & Meats" dietary pattern and "Mediterranean" dietary pattern

(vegetables, fish and seafood, fruits and olive oil). During follow-up, 125 participants died. After adjustment for potential confounders, a higher adherence to a "Mediterranean" dietary pattern was associated with lower risk of all-cause mortality (adjusted HR for third tertile vs. first tertile: 0.53; 95 % CI: 0.32–0.87) (p for trend <0.001). However, a "Potatoes & Meats" dietary pattern showed no significant association with mortality.
Conclusion Greater adherence to the MDP may reduce the risk of all-cause mortality even among young adults.

P2J25

Are soft drinks, milk and fruit juice to blame for the childhood obesity epidemic?

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Introduction Childhood obesity rates have now reached epidemic proportions[1,2]. Numerous dietary factors are associated with the rising prevalence of childhood obesity[3]. The past 50 years have seen a change in children's beverage consumption[4,5]. The consumption of sugar-sweetened soft drinks and 100 % fruit juice has increased, whilst the consumption of milk has decreased[5]. Only one other cohort study has investigated the association between soft drinks, milk and fruit juice and change in weight and BMI z-score[6]. It did not report any significant findings.
Methods A child diet assessment tool, known as a CADET, was used to assess 828 children's diets over a 24 h period. Children were grouped by the number of portions of soft drinks, fruit juice or milk they consumed (0, 1, 2 or 3 or more portions) at baseline. Children's height and weight were measured by trained administrators at baseline, and then at follow up 18 months later. Regression analyses, which adjusted for total calorie intake and socio-demographic covariates, calculated the association between beverage consumption and change in weight/BMI z-score. Change in weight was calculated by subtracting weight at baseline from weight at follow up (BMI z-score change was calculated in exactly the same way).
Results There was no significant difference in weight change between children who consumed 1, 2 or 3 or more portions of soft drinks, fruit juice or milk, and children who consumed 0 portions of soft drinks, fruit juice or milk. Similarly, there were no significant differences in BMI z-score change between children who consumed 1, 2 or 3 or more portions of fruit juice or milk, and children who consumed 0 portions of fruit juice or milk. Children who consumed 1 portion ($\beta = 0.17$ BMI z-score increase, 95 % CI: −0.05–0.29, $p = 0.004$) and 3 or more portions ($\beta = 0.21$ BMI z-score increase, CI: −0.12–0.20, $p = 0.015$) of soft drinks, however, had significantly larger increases in BMI z-score between baseline and follow up compared to children who consumed 0 portions of soft drinks.
Conclusion Children in our study who consumed soft drinks had significantly larger gains in BMI z-score compared to children who did not consume soft drinks. Children should be discouraged, therefore, from drinking soft drinks. They should instead replace soft drinks with fruit juice, milk and water.

P2J26

Evidence for a gender effect in the impact of intimate partner violence victimization on health-related quality of life

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Background The effect of intimate partner violence (IPV) in women's health has been extensively studied. However, less is known regarding male victims. We aim to test gender differences on the impact of IPV in the health-related quality of life, in the European general population.
Methods Random samples of adult (18–64 years) men (n = 1,646) and women (n = 2,233), from 8 European cities were assessed using the Revised Conflict Tactics Scales and the Short-Form-36.
Proportions were compared using Chi-Square test, mean differences were compared by Independent Samples T Test. General linear models were computed to estimate marginal means of summary components extracted from the SF-36 by violence severity and to test sex interactions. Models were adjusted for country, age and education. Differences in the impact of IPV on the SF-36 summary component scores (Mental and Physical) were expressed as unstandardized Betas (Standard Error) according to gender.
Results The adjusted models revealed significant sex interaction for both mental and physical health summary components ($p < 0.001$). Unstandardized Betas showed similar negative impact of exposure to minor acts of violence for men and women in the Mental Health summary component: women = −1.210 (0.51) versus men = −1.622 (0.54), but exposure to severe acts showed higher negative impact in women compared to men: women = −5.511 (0.64) versus men = −2.924 (0.65), $p < 0.001$. For the physical health component estimates were non-significant, except for exposure to severe acts in women (−1.230 (0.61)).
Conclusion Health-related quality of life is influenced by the severity of violence, the impact being more pronounced in women's mental health.

P2J27

Prevalence of obesity, overweight and abdominal obesity and its association with physical activity in employees of a Federal University in Rio de Janeiro

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This work aimed to investigate the prevalence of obesity, overweight and abdominal obesity, and their association with the level of physical activity (PA) measured according the International physical activity questionnaire (IPAQ), in employees at a public university of the state of Rio de Janeiro. Were applied a structured questionnaire to 299 employees (selected by random sampling) during the period of April to September 2010 and anthropometric measurements of height, weight and waist circumference. The independent association between PA levels and the outcomes was estimated using Poisson

models with robust variance (Prevalence Ratio (PR) as effect measure). The prevalence of obesity was 27.4 % (22.8 % for men and 36.3 % for women), the prevalence of overweight was 63.5 % (65 % for men and 65.8 % for women) and the prevalence of abdominal obesity was 45.2 % (35.5 % for men and 63.7 % for women). The women reported a higher prevalence of low level of PA (42.2 %) compared to males (33.0 %). The men had equal prevalence in middle and high levels of PA, 33.5 % and women had a prevalence of PA in the middle level of 45.1 % and the high level of 12.7 %. Independent association was found between levels of PA and anthropometric markers related to body fat. In bivariate analyzes (qui-square) PA was significantly associated with the three outcome measures (p value <0.05). The results of multivariate models (adjusted for socio-demographic variables, different behaviors and habits related to health) showed that the low level of PA (reference high level of PA) remained associated with the occurrence of obesity (PR = 1.89; CI 95 % 1.05–3.42) and overweight (PR = 1.40; CI 95 % 1.08–1.80). For the outcome abdominal obesity, both levels of PA (low and middle) were independently associated with this outcome, with PR = 1.70 (CI 95 % 1.11–2.58) for the middle level of PA, and PR = 1.74 (CI 95 % 1.14–2.66) in low level of PA, compared with high levels (model adjusted for gender, age, self-rated health, high cholesterol or triglycerides, and income). This study reinforces the importance of physical activity practice on a regular basis as an important factor in controlling obesity and highlights the use of IPAQ in cross-sectional studies.

P2J28

Dietary habits among Italian children aged 8–9 years

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Italian National Institute of Health

Background The prevalence of childhood obesity in Italy is high. Dietary habits can play an important role. In 2007 the Ministry of Health promoted the establishment of a national school-based nutritional surveillance system coordinated by the Italian National Institute of Health (OKkio alla SALUTE).
Objectives To evaluate the dietary habits of children aged 8–9 years, the socio-demographic and familial variables associated to unhealthy eating habits and their impact on overweight and obesity.
Methods A cluster sample survey of third-grade primary school classes in all Italian regions was used. Children were weighed and measured by trained local health staff using standardized equipment. Parents, children and teachers completed brief questionnaires to study the risk behaviour of children, including dietary habits. The children's body mass index was calculated and cut-offs of the International Obesity Task Force were used to define overweight and obesity. Logistic regression analysis has been used to study the association between socio-demographic and familial characteristics and dietary habits, and the association between unhealthy eating habits and obesity.
Results 42,155 children (98 % aged 8–9 years) were measured in 2010: 23.0 % were overweight (95 % CI 22.5–23.6) and 11.2 % were obese (95 % CI 10.7–11.6). 9.0 % of children did not have breakfast the day when they were measured and 68.2 % had an excessive mid-morning snack. 23.2 % of the parents declared that their children do not eat vegetables and/or fruit every day and 48.3 % consume sweetened/gassy drinks daily. The major factors associated with unhealthy eating habits are parent's low education, being resident in the South of the country, living in a small town and having at least one parent overweight or obese. Only missing breakfast or consuming sweetened/gassy drinks daily increased the risk of childhood overweight or obesity ($OR_{adj} = 1.60$; 95 % CI = 1.44–1.79 and $OR_{adj} = 1.16$; 95 % CI = 1.09–1.23, respectively).
Conclusions The surveillance system found that unhealthy eating habits are widespread in Italian children. To change these habits will require a coordinated prevention program involving both schools and parents.

P2J29

Trends in health behaviours and body mass index of Kaunas university students between 2000 and 2010

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Background Many lifestyle factors like an unhealthy diet, lack of exercise, smoking and alcohol consumption affect students' health. Unhealthy lifestyle plays an important role in most of the chronic non-communicable diseases.
Objectives To determine the changes in students' lifestyle within the 10-year period and body mass index (BMI).
Methods The surveys were carried out in 2000 and 2010 among the first-year students at randomly selected faculties of five Kaunas universities. The self-administrated questionnaire was filled in by 1,031 students in 2000 and 1,008 students in 2010. The questionnaire contained questions on the socio-demographic characteristics, nutrition habits, smoking, alcohol consumption, physical activity and other health behaviours. Self-report body weight and height were used to calculate BMI.
Results Since 2000, the prevalence of daily smoking has decreased among men from 30 to 21 % ($p < 0.05$) and it has not changed among women. In 2010 19.2 % of women were smokers.

The proportion of persons drinking beer at least once a week has decreased from 57 % in 2000 to 49 % in 2010 ($p < 0.05$) in men and from 33.9 to 20.7 % ($p < 0.05$) in women. No changes were found in consumption of strong alcohol. In 2010 every fifth men and 13.1 % of women reported weekly consumption of strong alcohol.

In the last survey, the proportion of students consuming cereals daily, poultry and fish several times a week was higher than in the earlier survey. During 10 years frequency of meat, cheese, chips and fast food increased in men. Proportion of students eating fresh vegetable and fruits daily remains stable during the study period.

Since 2000, the proportion of men being physically active at least 4 times per week increased from 29.4 to 42.6 % ($p < 0.05$). Over 10 years the frequency of physically active women did not change. In 2010 34 % of women were physically active at least 4 times per week.

The trends in the prevalence of overweight and underweight differed between men and women. Over 10 years the proportion of overweight men has increased from 10.9 to 18.2 % ($p < 0.05$). No changes were found in women. In 2010 5.9 % ($p < 0.05$) of women were overweight. The proportion of underweight women has increased from 11.4 to 17.0 % ($p < 0.05$).
Conclusion Although, over the last decade some positive changes in students lifestyle have occur, our data highlight the need of development and implementation of health promotion programs at the Lithuanian universities.

P2J30

Role of general practitioners in primary prevention in Germany

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Background Preventive efforts have the potential to improve lifestyle factors and to reduce cardiovascular risk. This study aimed at exploring the role of general practitioners (GPs) in primary prevention and to assess what primary prevention programmes are offered to patients by their GPs.
Methods We conducted a mail survey between November 2010 and February 2011 with all office-based GPs in Berlin (n = 1,168). An initial mail-out with two reminders was conducted. All GPs in Berlin received: a covering letter, the questionnaire, a franked envelope, and a franked postcard. Anonymity was warranted as there was no possibility to connect the questionnaire with personal data. Survey items covered characteristics of GPs and their practices, frequency of addressing primary prevention in their practice, their opinion on whose responsibility primary prevention is as well as assumptions and beliefs about primary prevention, knowledge of a partial reimbursement of preventions programmes by the statutory health insurance, and prevention programmes offered. The study was approved by the Ethic Commission from the Charté Universitätsmedizin Berlin.
Results A total of 474 GPs sent back the questionnaire (response rate = 41 %). Of all respondents, 66 % were female and 63 % had additional qualifications apart from their GP training. Half of the responders were between 50 and 64 years old, and the GPs mostly had patients from the statutory health insurance companies (87 %). Regular physical activity, healthy eating, smoking cessation, and reduction of alcohol consumption were part of GPs' health care recommendations in the majority of the cases when they thought it was indicated. Most of GPs (69 %) completely agreed that primary prevention is part of their tasks as GPs. Almost all (96 %) believed that primary prevention efforts were a possibility to promote population health and that they can have a positive influence on the quality of life. More than half (67 %) provided their patients with information about their own courses in primary prevention and 63 % were aware that prevention programmes could be partially reimbursed by the statutory health insurance. Only 28 % of the responders offered in their consultation prevention programmes which could be reimbursed by the statutory health insurance (medical check-ups, nutrition, and smoking cessation). Adjusting by age, qualification, and consultation structure, female doctors are twice as likely to offer prevention programmes to their patients as male doctors (OR = 1.8; CI: 1.1–3.1; $p = 0.03$).
Conclusion General practitioners see themselves as playing an important role in primary prevention. Prevention programmes offered by GPs, as well as the awareness of the prevention programmes, need to increase.

P2J31

Intraclass correlation coefficients between nutritional intake from one 24-hour recall and two non consecutive 24-hour recalls in elderly

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The 24-h dietary recall is a retrospective method used to assess food and beverages intake and it is the most recall method used to assess dietary intake. The European Food Safety Authority recommends that to determine acute exposure, 1 day 24-h recall is sufficient, however, to the estimation of chronic exposure it is recommended the recall of at least two independent days. Also, the application of a 24-h recall in non-consecutive days is more expensive than the application of only one questionnaire or two in consecutive days.

The objective of this study was to estimate intraclass correlation coefficients between nutritional intake from one 24-h recall and two non consecutive 24-h recalls conducted under the same conditions, in elderly.

Participants were 127 adults older adults (92 women) aged between 56 and 85 years, recruited from the project "Espinho em Forma". The questionnaires were collected by trained interviewers as well as socio-demographic and anthropometric data. During the 24-h dietary recall each individual was asked to recall food and beverages consumed in the past 24 h. To estimate food portion sizes there were used household measures, parts or multiples of foods that come in natural units and a photo album with 110 coloured photos of raw and cooked foods representing 3 different portion sizes for each food. Interviews occurred in a period of approximately 3 months during winter time.

There were studied 57 nutritional variables evaluated by the SQL Food Processor®. To assess the correlation between the 24-h recalls, intraclass correlation coefficients were used both before and after adjustment for total energy intake. The coefficients between one questionnaire and the average of two ranged from −0,031 for trans fatty acids and n3-fatty acids, to 0.669 for iodine. When energy-adjusted, these coefficients ranged from 0.407 for sodium and 0.691 for zinc.

Results show that, after adjusting for total energy intake, comparing the results of a single 24-h recall and the mean of two non-consecutive 24-h recalls, there was a fair to good agreement of all variables studied.

P2J32

Comparison of the nutritional estimates from one 24-hour recall and two non consecutive 24-hour recalls in elderly

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The 24-h dietary recall is a retrospective method used to assess food and beverages intake and it is the most recall method used to assess dietary intake. The European Food Safety Authority recommends the recall of at least two independent days to determine chronic exposure. Also, the application of a 24-h recall in non-consecutive days is more expensive than the application of a single questionnaire or more than one in consecutive days.

The objective of this study was to compare the nutritional intake from one 24-h recall (day 1) and two non consecutive 24-h recalls (day 1 plus an extra 24-h recall—day 2) conducted under the same conditions, in elderly.

Participants were 127 older adults (92 women) aged between 56 and 85 years, recruited from the project "Espinho em Forma". The questionnaires were applied by trained interviewers as well as the collection of socio-demographic and anthropometric data. During the 24-h dietary recall each individual was asked to recall food and beverages consumed in the past 24 h. To estimate food portion sizes there were used household measures, parts or multiples of foods that come in natural units and a photo album. Interviews occurred between October 2011 and January 2012.

There were studied 57 nutritional variables evaluated by the SQL Food Processor®. To assess the correlation between the 24-h recalls, intraclass correlation coefficients (ICC), student t test for paired

samples or Wilcoxon's test, kappa statistics and correct classification of intake into one tertile and percentage of gross misclassification were used both before and after adjustment for total energy intake. The ICC between one questionnaire and the average of two ranged from −0,031 for trans and n3-fatty acids, to 0.669 for iodine. When energy-adjusted, these coefficients ranged from 0.407 for sodium and 0.691 for zinc, generally showing a fair to good agreement between the two methods. When comparing means, no statistical significant differences were found. As for kappa statistics, the majority of variables had a moderate agreement between methods, both before and after adjusting for total energy intake. The higher percentage of subjects categorized in opposite tertiles was 8.7 % found for trans fatty acids before adjustment for total energy intake.

Results show that, after adjusting for total energy intake, comparing the results of a single 24-h recall and the mean of two non-consecutive 24-h recalls, there was a moderate to good agreement of all variables studied.

P2J33

Alcohol consumption and incidence of metabolic syndrome and its components: the SUN cohort

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Background The incidence of the metabolic syndrome (MS) has increased over the past decades and lifestyle behaviours may play a role in its development. Alcohol consumption is one of the most prevalent lifestyle factors, and some studies on the association between alcohol consumption and metabolic disorders have reported conflicting results.
Objectives Our aim was to assess prospectively the association between alcohol consumption and the incidence of the MS and each of its components in a Mediterranean cohort of university graduates.
Methods We included 8,103 participants initially free of MS and followed-up during ≥6 years. Alcohol consumption was collected through a 136-item food frequency questionnaire previously validated in Spain. The MS was defined according to the harmonizing criteria of the International Diabetes Federation and the American Heart Association/National Heart, Lung, and Blood Institute new definition of MS. Logistic regression models were used to adjust for potential confounders.
Results We observed 344 incident cases of MS. Consumers of seven drinks or more per week presented a significantly higher risk of developing MS (adjusted odds ratio (aOR): 1.8; 95 % confidence interval (95 % CI): 1.2–2.7; p for trend <0.001) compared with non-drinkers after adjustment for potential confounders. Similarly, they presented a significantly higher risk of developing hypertriglyceridemia (aOR: .1; 95 % CI: 1.5–2.9) and impaired fasting glucose (aOR: 1.5; 95 % CI: 1.2–2.0) compared with non-drinkers. The analysis according to different types of alcoholic beverages showed that red wine consumption was not associated with any metabolic disorder; consumption of other types of wine was associated with a higher risk of elevated blood pressure (aOR: 2.6; 95 % CI: 1.4–4.9) for drinkers of ≥7 glasses per week compared with non-drinkers; finally, beer consumption was associated with higher risk of developing hypertriglyceridemia (aOR: 1.8; 95 % CI: 1.0–3.2) and impaired fasting glucose (aOR: 1.5; 95 % CI: 1.2–2.0) but was associated with lower risk of low HDL-cholesterol (aOR: 0.2; 95 % CI: 0.1–0.9) for drinkers of ≥7 beers per week compared with non-drinkers. Spirits consumption had a very low prevalence in this cohort and exhibited no apparent association with the metabolic syndrome or its components.
Conclusions Consumption of at least seven alcoholic drinks per week was associated with a higher risk of developing the MS and specific metabolic disorders after 6 years of follow-up.

P2J34

Polyphenol excretion in urine is associated with overweight and obesity in children 4–5 years old

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Background Overweight and obesity in childhood has increased dramatically in the past two decades. Polyphenols derived from many components of the human diet have been postulated as potential preventive and therapeutic factors for obesity (Scalbert, 2005).
Objective We explored the association between polyphenol excretion (PE) in urine as biomarkers of polyphenol intake and several anthropometric measurements in children 4–5 years old of the INMA prospective cohort study in Valencia, Spain.
Methods Participants were 550 children 4–5 years old from the INMA study, a prospective mother–child cohort study in Valencia, Spain. Weight, height, waist and hip circumferences were collected in medical exams following standardized protocols. Personal interview about children lifestyles and other parental data were performed with parents. PE was determined in urine samples by Foline Ciocalteu assay. Multiple regression analysis was used to explore the association with PE.
Results Prevalence of overweight was 14.0 % and obesity 6.3 % according to IOTF criteria (Cole, 200). Controlling for sex, age, energy intake of children, mother age and education and body mass index of parents, inverse significant associations ($p < 0.05$) were found between PE and several anthropometric index in children: height ($\beta = -2.99$, $p = 0.003$), weight ($\beta = -4.65$, $p = 0.002$), body mass index ($\beta = -5.18$, $p = 0.024$), weight/height ($\beta = -5.40$, $p = 0.005$), wait circumference ($\beta = -1.88$, $p = 0.056$) and hip circumference ($\beta = -2.98$, $p = 0.001$). A positive association was observed between PE and the waist to hip ratio ($\beta = 191.2$, $p = 0.023$). Compared to those normal children, overweight and obese children presented lower PE ($\beta = -19.20$, $p = 0.09$; $\beta = -26.07$, $p = 0.11$).
Conclusions Polyphenol excretion in urine as a marker of polyphenol intake was negatively associated with several indexes of overweight and obesity in a Mediterranean population of children. Further studies should explore the association with different polyphenols, their possible mechanisms of action and their main dietary sources.
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P2J35

High blood pressure in relation to body mass index and dietary factors in healthy children 4–5 years old

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Background High blood pressure (HBP) is an important risk factor for cardiovascular disease (CVD). HBP in childhood has been associated with HBP in adult life although there is limited data on the factors associated with HBP in children.
Objective We explored the association between HBP and body mass index, dietary factors and other socio-demographic characteristics in healthy children at the age of 4–5 years.
Methods Participants were 565 children 4–5 years old from the INMA study, a prospective mother–child cohort study in Valencia, Spain. BP was obtained in a sitting position after a 5 min child rest (three measurements were taken at intervals of 2–3 min with an OMRON M4-I). HBP was defined as a systolic or diastolic BP over the 90th percentile for gender, age, and height according to the criteria of the IV-TFBPC in children (Pediatrics, 2004). Weight and height were measured and body mass index (BMI) estimated as weight in kg/height in m^2. Personal interview were performed with parents about children usual dietary intake and lifestyles. Adjusted odds ratios (OR) were estimated by multiple logistic regression.
Results Prevalence of HBP was 40.2 % (14.5 % prehypertension, 25.7 % hypertension). Adjusting for sex, age, energy intake and physical activity of children, and mother age, social class, a positive association was found between HBP and children BMI; overweight and obese children showed higher risk of HBP than normal children, OR = 1.40 (95 % CI: 0.86–2.29) and OR = 2.52 (1.19–5.34), respectively. Adding salt on the meals increased the risk of HBP, children adding a pinch of salt several times week and one or more times per day showed higher risk of HBP, OR = 1.82 (1.13–2.94) and OR = 2.06 (1.27–3.34), respectively. Red and processed meat intake was also associated with high BP (OR = 1.08 per 10 g/day, $p = 0.04$). Fruit and vegetable intake showed some protective effect although it was not statistically significant.
Conclusions This study shows high prevalence of HBP in a Mediterranean population of children 4–5 years old. Modifiable factors such as overweight/obesity, a high intake of salt and read and processed meat were positively associated with higher BP.

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P2J36

Adolescents' perception on causes of obesity: unhealthy lifestyles or heritage?

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Purpose To evaluate adolescents' perception on the causes of obesity, with emphasis on differences according to nutritional status and socioeconomic position.
Methods Qualitative research including 80 adolescents belonging to the 1993 Pelotas (Brazil) Birth Cohort Study, and their mothers. Adolescent boys and girls were classified into four groups (rich-obese; rich-non-obese; poor-obese; poor-non-obese) according to body mass index for age and family income data collected at 11 and 15 years of age. Research techniques included semi-structured interviews, history of life, and informal conversations. Topics covered in the interviews included: early experiences with weight management, impact of weight on social relationships, family history, eating habits, and values.
Results Poor obese adolescents and their mothers perceive obesity as a 'heritage', caused by family genes, side effects of medication use and stressful life events. Poor non-obese adolescence, however, emphasize the role of unhealthy diets on obesity development. Among the rich, those who are obese attribute it to genetic factors and emotional problems, whereas those who are non-obese mention unhealthy diets and lack of physical activity as the main causes of obesity.
Conclusion Perceptions on the causes of obesity varied by nutritional status and socioeconomic position. The biomedical approach to obesity (i.e. unhealthy diets and physical inactivity) is embedded in the speeches from non-obese adolescents. Obese adolescents, on the other hand, mention genetics and emotional problems as key determinants of obesity.

P2J37

Trends in suicide mortality in Brazil from 1999 to 2010

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Background Suicide is a significant public health problem. The mean suicide rate in Brazil is lower than the mean for others countries. However, it is important to study the local data that contribute to the preventive actions elaboration.
Objective To describe the temporal patterns of mortality by suicide in Brazil.
Methods This was a time-series study with data from suicides deaths in Brazil from 1999 to 2010. The death statistics were obtained from the Ministry of Health Mortality Information System. Suicide rates specific for age and sex, the standardized rates (direct method) were calculated. A trend analysis was performed by means of a polynomial regression for a historic time series ($p < 0.05$, 95 % confidence interval).
Results During the study period, 9,428 suicides were registered in Brazil, most of them were male (79.2 %). The suicide standardized rate increased from 3.9 to 4.73 deaths/100,000 inhabitants or the entire period. The age group between 20 and 29 years and those above 30 until 39 years old had a strong growth tendency. The highest ratios were seen among the elderly.
Conclusions The relative risk of falling victim to suicide increased in the male population. Suicide rates increased with age. Suicides are important events in the population, and the understanding of this subject may to be useful for the planning of preventive policies.

P2J38

Some aspects of violence during pregnancy in pregnant women in João Pessoa, Brazil

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Introduction Physical and verbal aggression during pregnancy is one aspect of the very grave pattern of violence faced by women, characterized as a serious public health problem the consequences of

which can be very harmful both to the mother's health (haemorrhage and interruption of pregnancy, reduction of self-esteem) and to that of the child (risk of perinatal death, low birth-weight and premature birth).
Objective To characterize some aspects of the effects of the violence suffered during pregnancy by puerperas immediately after childbirth.
Method This analysis included data from a study regarding maternal morbidity, undertaken in a public maternity hospital of reference in João Pessoa, Paraíba, Brazil. The data were collected prospectively between September and November 2011 from the clinical case-notes of the mothers concerned/participants and complementary interviews (were conducted).
Results Thirty-two puerperas (7.73 %) of a total sample of 414 who reported having suffered physical and verbal violence on the part of their companions, family members or bosses were included. Half of the cases (50 %) concerned women between 20 and 29 years of age and occurred with greatest frequency during the third trimester of their pregnancy (43.8 %). For 18.8 % of them, this was not the first time they had suffered aggression. More than half of the puerperas (66 %) cited their companions as the aggressors and stated that the aggression occurred both at home and at work. The most common types of violence were the verbal and the physical. The emotional consequences were the most commonly quoted. In five of the puerperas who suffered violence the pregnancy terminated in miscarriage.
Conclusion Violence was seen to be a daily occurrence in the life of those women who sought out the public maternity service and adds an aggravating factor to the already unfavourable social conditions of the pregnant women who have recourse to the public health system. The importance of the treatment they receive both during the pre-natal period as also in the assistance given during labour and the post-partum follow-up is highlighted.

P2J39

Violence against residents in a university hospital

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Rationale The risk of violence directed at health care professionals in their working environment by patient's relatives has aroused widespread concern in recent years. In Turkey this type of violence is becoming so often.
Objective This study aimed to investigate the violence created by patients and their relatives among residents in a university hospital.
Methods In this cross sectional study, we used a questionnaire to collect data. Questionnaires were distributed to 373 residents and response rate was 57.1 %. They were asked to report: whether they had ever been assaulted or battered either by patients or by relatives of patients; the nature, frequency and severity of the violence and opinions on preventing the violence.
Findings Of the participants, 94.8 % reported that they observed any form of violence and 78.9 % reported that they experienced violence during the professional life. The frequency of experienced violence during the last month was 57.4 %. Types of violence were verbal insults-95.7 %, physical assaults-5.7 %. Main reasons of these violence was long waiting time/delays-47.4 %, patients' judgment on negligent physician behavior-40.8 %, patients' judgment on unsatisfactory treatment-20.2 %, false health policies-15.5 %, drunk/unconscious patients-5.6 %, and others. In order to prevent patient/relatives originated violence, the public should be informed on how university hospitals provide health services-72.2 %, amelioration in the number of physicians-67.9 %, more legal action against violence-89 %, better security at the hospital-64.6 %, developing physicians' communication skills and their ability to handle the challenges-32.1 %.
Conclusion Being young, having short duration of job life, having better economic status, working long periods in a week, complaining about the working environment, characterizing the physical conditions as bad and weak ability to handle and solve the conflicts were found risk factors in terms of exposing violence from patients/relatives. It's been recommended that more security should be established, more legal measures should be taken, number of employed residents should be increased to meet the admissions and developing the communication skills of physicians.

Poster Topic 2K. Methods in epidemiology and statistical analysis

P2K01

Non-linear selection of variables and the classification of containers with aedes aegypti pupae using neural networks

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Background The Aedes aegypti mosquito is the primary vector of dengue. The virus is transmitted to humans through the bites of infected female mosquitoes.
Objectives This paper discusses the classification of Aedes aegypti pupae in different types of containers taking into account: volume, type of material, pH of the container, among other variables using Neural Networks and Logistic Regression.
Methods A non-linear method was applied, based on Mutual Information, for selection, by order of importance, the most appropriate for identifying containers with (without) Aedes Aegypti pupae. Such variables were used for input into a Neural Network in layers for classification. Among the experiments carried out the best results obtained used the first eight variables selected by order of importance via the non-linear algorithm applied. These results were compared with those of logistic regression.
Results The first three most relevant variables in order of importance for the presence or absence of pupae takes size (categorization of volume of the deposit) into consideration, presence or absence of another type of pupa apart from Aedes aegypti and the location of the deposit (outside or inside). Eight experiments were carried out, varying the number of variables in each of these. The best result is obtained by experiment with the first 8 variables selected by the MIFS-U algorithm. The percentage of hits in containers that had no Aedes Aegypti pupae was 73 % and a percentage of hits 81 % for the containers with Aedes aegypti pupae in the containers. The accuracy was 74 %. In the same way, for the purposes of comparison, a Logistic Regression was also carried out. A percentage of 64 % of hits was found in the containers that did not have any Aedes Aegypti pupae and 72 % in the containers that had Aedes Aegypti pupae. Accuracy was 64 %.
Conclusions The Neural Network model got better results regarding the discriminant power of the logistic regression model. So, the outcomes of the Neural Networks achieved better separability in classifying the containers with pupae and those with no pupae. There are no gains for the research by using the logistic regression model in relation to the Artificial Neural Network, as there is no clear cut off point between the containers with no pupae and between those with

pupae as there was in the Neural Network Method that, especially in its capacity to emulate non-linear data, seems to be an interesting option.

P2K02

Multistate time-to-event modelling for kidney transplantation registry data

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Background In the event history data analysis, multistate time-to-event modelling approach has been widely used. For kidney transplantation data, death with functioning graft is a common cause of graft loss. The differences of the risk factors onto these competing events, death with functioning graft and other graft failure, have not been examined in detail.
Objectives To evaluate the long-term graft survival with competing risks, and the effect of the covariates on the cumulative incidence of graft failure or death with functioning graft.
Methods By using the kidney transplantation registry data in Japan from 1992 to 2009, we analysed first-time 10,517 living donor transplants and 2,792 deceased donor transplants. The association of the covariates with the outcomes was evaluated using the restricted cubic splines, and the multivariate analyses, the use of Fine and Gray proportional hazards model for the subdistribution of the competing risks. The recipient's sex, recipient's age, donor's age, the number of HLA-mismatches, pre-transplant dialysis, primary cause of end-stage renal disease (diabetes or not) and the year of the transplantation performed were examined for living donor transplants. The warm ischemia time and the total ischemia time were also included for deceased donor transplants analysis. Additionally, the acute rejection history within 1-year after transplantation was considered as the intermediate state.
Results The hazard ratios of the transplantation year showed significantly decreasing trend for graft failure and death with functioning graft. For graft failure event, male recipient and older donor were significant risk factors whereas older recipient and longer pre-transplant dialysis duration were more important factors for death with functioning graft event. The acute rejection state in the event history was also nonignorable for the future risks of the events.
Conclusions When calculating graft survival, causes of graft loss should be considered and multistate modelling approach illustrates the situation well.

P2K03

Longitudinal discrete data analysis: comparison of four statistical models applied on repeated malaria episodes data from Mali

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Background The analysis of repetitive events data in cohort studies is quite common in biomedicine. The literature review indicates that statistical models used in analyzing these data are often based on time to the first event or consider events within subject as independent, therefore ignoring the non-independence of events in the same individual. However, methods exist to analyze data taking into account the non-independence of repeated events within subjects.
Objectives This work aimed to analyze repeated malaria episodes with different models in order to advise on the best model estimating malaria risk in respective to covariates.
Methods Data were collected from July 2005 to July 2007 in Bougala-Hameau, Sikasso, Mali. The study main objective was to compare malaria incidences in 3 different artemisinin based combination therapy (ACT) arms: artesunate/amodiaquine (AS + AQ), artesunate/sulfadoxine-pyrimethamine (AS + SP) and artemether-lumefantrine (AL). The AL arm and the age group $\geq$15 years old were used as reference groups in RR computing. We used 4 different models to analyze the data using Stata®: the Poisson model, the generalized estimating equation (*GEE*) using Poisson distribution, the extended Cox models (Anderson-Gill model -AG-) and the frailty model. Model comparison was based on the magnitude and confidence intervals of relative risks (RR) in respective to relevant covariates, power and goodness-of-fit criteria.
Results The 780 subjects enrolled yield a total of 2,473 malaria episodes. The malaria episode RR for patients in the AS + AQ and AS + SP arms were respectively: 0.85 (0.77–0.93) and 0.82 (0.74–0.90) using Poisson model, 0.95 (0.84–1.08) and 0.90 (0.80–1.03) using the *GEE model,* 0.78 (0.65–0.92) 0.79 (0.66–0.94) using Anderson-Gill model, 0.61 (0.45–0.84) and 0.64 (0.47–0.88) using Frailty model. The malaria episodes RR for the patients in the age groups; 10–14 years old, 5–9 years old and <5 years were respectively: 1.60 (1.11–2.30), 2.40 (1.75–3.30) and 2.71 (1.98–3.71) using Poisson model, 1.68 (0.90–3.14), 2.15 (1.22–3.79) and 2.28 (1.30–4.0) using the *GEE model,* 1.69 (0.81–3.56), 3.22 (1.68–6.17) and 3.60 (1.89–6.84) using Anderson-Gill model, 2.47 (0.75–8.12), 7.51 (2.64–21.34) and 9.11 (3.25–25.57) using Frailty model.
Conclusion All models (except GEE for one covariate) although different in magnitude were able to detect the significant covariate effects showing the power of these models. Anderson-Gill and Frailty models estimated RR with higher magnitude and wider precision.

P2K04

Optimal control applied to tuberculosis models

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Background Most cases of tuberculosis (TB) are caused by the Mycobacterium tuberculosis, which is usually transmitted via airborne infection from someone who has active TB. Approximately 10 % of infected people with Mycobacterium tuberculosis develop active TB disease, that is, approximately 90 % of infected people remain latent. Latent infected TB people are asymptomatic and do not transmit TB, but may progress to active TB through endogenous reactivation or exogenous reinfection. The anti-TB drugs developed since 1940 have helped to reduce the mortality rates significantly: in clinical cases, cure rates of 90 % have been documented. However, TB remains a global public health emergency and following the World Health Organization (WHO) in 2010, there were an estimated 8.5–9.2 million cases and 1.2–1.5 million deaths (including deaths from TB among HIV-positive people). TB is the second leading cause of death from an infectious disease worldwide (after HIV).

Optimal control is a branch of mathematics that involves finding optimal ways of controlling a dynamic system. While the usefulness of optimal control theory in epidemiology is nowadays well recognized, results pertaining to tuberculosis are a rarity [1].
Objective and methods We apply optimal control theory to a TB model given by a system of ordinary differential equations. There are

several mathematical dynamic models for TB. We consider a mathematical model for TB which considers reinfection and postexposure interventions. We alter this model by adding control functions associated with measures that help to reduce the number of active infected and persistent latent TB individuals. Some of these measures are the supervision of the patients, helping them to take the TB medications regularly and to complete the TB treatment, and the alteration of the fraction of persistent latent individuals under treatment with anti-TB drugs. Our aim is to study how these control measures can reduce the number of active infected and persistent latent individuals, taking into account the cost associated with their implementation. This objective is attained through theoretical computations and numerical simulations.
Results and conclusion The numerical computations show that the optimal control strategies lead to a substantial reduction in the number of active infected and persistent latent individuals with reduced costs.

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P2K05

Calibration: effect on the misclassification of NYHA

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Background The New York Heart Association (NYHA) system was designed for translation of the clinical assessment of patients by physicians into 4 functional classes on the basis of the patient's limitations in physical activities caused by cardiac symptoms. The class a clinician decides to assign a patient to depends on the clinician's interpretation. Previous studies showed an inter-observer agreement for the NYHA classification of approximately 55 %. Thus, the calibration of the NYHA classification system between different observers is expected to increase its validity, reducing misclassification.
Methods At the standardized clinical interview subjects who reported to have breathlessness (n = 265) were presented to a 4-item questionnaire on functional capacity to characterize the severity of symptoms. The questionnaire was administered by 7 physicians who also classified the subject's functional capacity according to NYHA. Each subject was assessed by one physician. Calibration of NYHA classification across each set of individuals assessed by each physician was performed by the concurrent method using the four patient items as anchor items. We estimated the area under the ROC curve (AUC) and likelihood ratio using the calibrated and non-calibrated NYHA class I versus II-III to predict the presence of a series of objective structural of functional cardiac abnormalities as assessed by echocardiography at rest.
Results The prevalence of NYHA II-III in the sample was 170 (66.7 %) and 143 (56.1 %) without and with calibration, respectively. From the non-calibrated to the calibrated NYHA class, 16 and 43 individuals changed from I to II-III and from II-III to I, respectively. Almost half of this sample of community participants reporting troubled breathing had at least one of the objective cardiac structural or functional abnormalities considered.

In general, the likelihood ratios showed that NYHA class changed pre- to posttest probability of cardiac abnormalities very little (higher than 0.3 for NYHA I and below 1.5 for NYHA II-III).

With regard to the calibration effect, the area under the ROC curve (AUC) for NYHA class to predict the considered outcomes showed an overall improvement in discrimination of NYHA class after its calibration, largely at the expense of the likelihood ratio of NYHA I.
Conclusions The calibration methodology can be useful to improve the validity of NYHA classification in clinical practice and research settings, and can be used to calibrate a large number of observers on the same scale. It provides a way to minimize the misclassification of NYHA classification.

P2K06

Survival analysis methods using competing risks and time-dependent covariates: an example in peritoneal dialysis

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PDMA-UP; ICBAS-UP; ISPUP; CHPHSA

Background In epidemiological data, competing events can prevent the occurrence of the event of interest and survival analysis methods taking competing risk into account should be used. Considering an example of peritoneal dialysis programs, several competing events can be observed: death, transfer for haemodialysis or renal transplantation. Moreover, survival analysis can incorporate various types of covariates: time-independent, internal time-dependent and defined time-dependent covariates. Different types of time-dependent covariate can be considered: internal time-dependent covariate (covariate that changes during the study) and defined time-dependent covariate (artificial time-dependent covariate, which represent the effect in different time periods of a covariate whose value is unchanging over time). The purpose of this study is to discuss survival analysis taking competing risks into account in the presence of internal and time-dependent covariates, considering as example peritoneal dialysis data.
Methods The sample comprises patients, included in a university hospital peritoneal dialysis program, between October 1985 and June 2011 (n = 449). The events of interest were death or transfer to haemodialysis, and the competing event was renal transplantation. Patients without any of these outcomes were censored at the date of their last recorded visit or at the end of the study period. Regression modeling of competing risks was used to investigate the influence of internal and defined time-dependent covariates.
Results Failure to account for competing events results in an overestimate of the cumulative incidences—Kaplan–Meier estimates were always higher. Analyzing the covariate peritonitis as an internal time-dependent covariate, the hazard of the event of interest for patients who has already experienced a peritonitis episode was higher than the hazard for a person who has not yet experienced a peritonitis episode by that time (but may experience one later). Considering the covariate age group as a defined time-dependent covariate, there was not a significant increase in the hazard ratio between the two groups (<65 vs. ≥ 65 years) at baseline but the hazard ratio significantly increases with time in a linear trend.
Conclusions The correct analysis and interpretation of epidemiological and clinical data will help to improve diseases surveillance and quality control of therapy strategies. Time-dependent covariates are critically important in epidemiological and clinical studies. In the presence of competing events, a competing risks approach, guided by the scientific questions and type of variables involved, is recommended and may provide an improved understanding of risks and benefits of interventions under different settings.

P2K07

Competencies on epidemiological research: methodological details of an ongoing national study about training and education needs

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Background The increase of epidemiological research and related activities require a proper identification of epidemiological professional competencies. This set of required competencies has become more complex due to the scientific updating of epidemiology, the enlarging scope of epidemiological research and its' multidisciplinary and growing social responsibilities.
Objectives To characterize Portuguese national epidemiological practice, through the evaluation of perceived experience and training needs on core competencies on epidemiology, by Portuguese practicing epidemiologists.
Methods In the first phase of the project, an adapted Delphi panel was conducted to define the core competencies in epidemiology. Based on a comprehensive literature review, the competencies were listed and grouped into sub thematic domains. Portuguese researchers in diverse epidemiology areas were identified as experts by leading epidemiologists, and invited to review the list through a confidential questionnaire. After two consensus rounds, an experienced coordinator of educational programs was asked to verify the formal definition of each competency.

In a second phase, the list of core competencies and questions about academic and professional experience were combined into an online questionnaire, to be fulfilled by professionals using epidemiological methods in their clinical, research or teaching practice. Participants will be invited from public and private Portuguese institutions related in any way with epidemiology. A snowball sampling process will be conducted: each participant will be asked to forward the questionnaire link to all contacts within their institution and to at least two additional contacts outside their institution. Descriptive statistics, interrater reliability with kappa statistics and bivariate analysis ($\alpha = 0.05$) will be conducted to explore differences and agreement between training, practices and competencies on epidemiology.
Preliminary results In the first phase, 19 (90.5 %) of the 21 invited experts, agreed to participate. The 87 competency list was reviewed by the expert panel that suggested 15 new competencies and the exclusion of 8. After the verification of the competencies' formal definition, the final questionnaire includes 76 competencies grouped into 8 domains. In the second phase, 432 Portuguese institutions were invited to participate. Currently, 80 (18.5 %) agreed to participate, 4 (0.9 %) have refused and 31 (7.2 %) declined the invitation since they do not practice epidemiology. The online questionnaire will be applied during May 2012.
Conclusions While promoting a strong participation through diverse areas where epidemiology may play a relevant role, we expect to provide a first characterization of national practice on epidemiology and the identification of training priorities in this area.

P2K08

Burden of disease attributable to risk factors in the northern region of Portugal

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Background For strategies and policies to improve population health and the allocation of resources, it is important to know not only the disease burden, but also the burden attributable to various underlying risk factors that cause disease and injury.
Objectives This study aimed to estimate the burden of disease attributable to selected risk factors in the Northern Region of Portugal for the period 2003–2005.
Methods The methods used in this study are similar to the ones used on the "*Global Burden of Disease and risks* factors" study published by the World Health Organization (WHO). To estimate the burden of disease attributable to each risk factor, we used updated information delivered by WHO for Portugal, for attributable fractions (AF), defined as the percentage reduction in disease or death that would occur if exposure to the risk factor were reduced to zero. Data on DALY (disability adjusted life years), and its components, were displayed by the Northern Region Public Health Department.
Results Tobacco smoking, with 9.4 % of the total burden of disease, is the risk factor responsible for the greatest amount of healthy life years lost in the North of Portugal (first cause in men and third cause in women). High blood pressure is responsible for 8.1 % of total DALYs (third cause in men and first cause in women). Alcohol consumption is responsible for 7.6 % of the overall burden, but the burden attributable to this disease risk factor in men (10.8 % of DALYs) is more than twice the one observed in women (3.8 %). High BMI, with 6.6 % of total DALYs and high cholesterol, with 4.3 % of total DALYs come next on the list of the main risk factors which were studied. Illicit drugs consumption (2.8 % of total DALYs), physical inactivity (2.4 %), low intake of fruits and vegetables (1.6 % of total) and unprotected sex (1.4 % of total) also appear in the top 10 risk factors, responsible for more years of healthy life lost.
Conclusions By quantifying the burden associated with a range of risk factors, this study provides valuable insight into the possibilities of health gains in this Health Region, which will help to inform health planning and decision-making. Its main limitation is the access to reliable morbidity data for the Northern Region of Portugal. This study of the overall Burden of Disease attributable to Risk Factors is the first of its kind conducted in Portugal.

P2K09

Variability in the treatment of acute coronary syndrome. A multilevel methodological approach

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Background Variability in medical practice is an important issue that concerns to Health Systems currently. The lack of consensus or scientific evidence before a health problem can provoke the existence of differences in the application of procedures and interventions, which can provoke heterogeneity in decision-making by health professionals.

Despite protocolized actions in clinical practice guidelines, may result in a large variability in the management of diseases.
Objectives To analyze the variability in the treatment and management of acute myocardial infarction (AMI) and to identify possible sources of heterogeneity between hospitals.
Methods Observational, retrospective cohort study of AMI patients included in the multicenter ARIAM registry (Análisis del Retraso en el Infarto Agudo de Miocardio-Analysis of Delay in Acute Myocardial Infarction). For this study, 17,130 patients from 34 Andalucian hospitals, registered from 2001 to 2010 were selected. Multilevel logistic regression models with random intercept were used for statistical analysis. Outcome variables were drug treatment with beta blockers, ACE inhibitors or hypolipidemic agents. Individual-level variables used were sex, age, obesity, dyslipidemia, location (anterior, inferoposterior or indeterminate), extension (Q, non-Q or not-definable), severity (killip score) and drug treatment. Contextual-variables at the hospital level considered were type of hospital (regional or local), total MI volume, population which attended and number of hospital beds. Variance at hospital level an intraclass correlation coefficient (ICC) were calculated. Also, we calculated de medians odds ratio (MOR) and the percentage of change that was explained by including individual or contextual characteristics in the model (PVE), using the variance obtained in the empty model as reference.
Results Administration of beta-blockers were related to younger patients, location of AMI, extension, severity and patients taking ACE inhibitors and statin ($p < 0.001$). Variability between hospitals in the use of beta-bloquers was high in the empty model (variance 0.4006: standard error 0.1065). Part of this variability, 10.85 %, is due to differences between hospitals (ICC = 0.1085). VPE was 15.23 % y the model including individual and contextual variables, compared with the empty model as reference, but none of the OR for contextual variables were statistically significant. Similar findings for ACE inhibitors model, with variance 0.9833 an ICC = 0.2301 in the empty model and VPE 15.75 % for the final model. The variability in statins use, between hospital was higher for the empty model, ICC = 0.2545, but this variability was not explained for the considered contextual variables.
Conclusions Treatment of AMI patients varied substantially between hospitals, in some part due to characteristics of the centers. Further models must be studied in order to explain non-explained variability.

P2K10

Legislative acts concerning research and research ethics committees in the European Union: similarities and differences

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Background Epidemiological research includes a wide scope of studies, including clinical trials, nursing studies, health service studies, stem cell and gene technology studies, registry-based research, etc. These are varyingly regulated by international and country-specific codes and legislation. Frequently, before initiating a study, the study protocol is evaluated by a research ethics committee (REC).
Objectives In order to facilitate cross-country research and multicenter studies, an overview of the European regulative acts and working rules of medical REC-s was carried out.
Methods Published reports and web-resources were used to analyse the situation in research governance in European Union (EU). Legislative acts concerning medical research in different EU member states were described. The number of REC-s, timelines for acquiring permission, and general rules for acquiring informed consent from vulnerable groups were reported. The latter was chosen from the viewpoint to analyse the harmonisation process of research practice.
Results Legislation concerning medical research in the Member States (MS) varies across countries: there are countries with regulative acts concerning only trials on medicinal products and medical devices; countries that regulate also other type of research, but by legislation different from trials; and countries in which all medical research is handled in a uniform way. The number of REC-s in different MS varies from one to 264. The members of REC-s are appointed by different bodies in different MS (research or healthcare institutions, universities, ministries of health, boards of medical associations). The timelines for obtaining the research permission vary from 15 to 90 days. In some countries, the same rules are applied for all types of research, in others timelines depend also on the type of research. Although ethics committees in most countries have the approval power, some have also advisory power. The rules for acquiring informed consent from vulnerable persons is regulated differently by each country: in some countries, more or less the same rules are applied to all vulnerable groups; in others, different rules apply for different vulnerable groups; there are countries which do not demand informed consent in certain specific cases; and countries in which direct involvement of REC is needed for obtaining consent from vulnerable groups.
Conclusions There is a need for a fundamental debate on the need and the principles of further harmonisation of research governance in Europe.

P2K11

Modelling and prediction incidence of stomach cancer in the south of Portugal

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Background The Portuguese population is characterized by low mortality and birth rates, where the oldest population reaches a significant proportion. The high incidence rates, in the overall cancers, take place just in these age groups. Stomach cancer is the fourth most common cancer and the second leading cause of cancer-related death worldwide. In cancer epidemiology, studies that lead to an understanding of factors that originate cancer incidence trends are of utmost importance. With the knowledge of tendencies in cancer incidence rates determined by Age-Period-Cohort (APC) models, it has been possible to do projections. Such projections are an additional tool in the definition of policies in oncology.
Objectives The present study, on basis of the population based cancer registry of the Southern of Portugal (ROR-Sul), has the objective to model the incidence cancer rates of stomach in the follow-up period, 1998–2006, as well as to do short term projections.
Methods From the follow-up period, were considered the registers of diagnosed cases in ROR-Sul. For each case was registered the following data: age to the date of the diagnosis, date of the diagnosis and date of birth. For the calculation of the population at risk, expressed in persons-years (py), was considered the estimate of population to the half of each year in the area of the register, in annual groups of age, supplied by the National Institute of Statistics. The information was classified according to the triangles in the Lexis diagram. The APC model adopted, used smooth functions. The number of diagnosed cases was adjusted through a generalized linear model with Poisson link function and the offset was the logarithm of the py. The deviance was the measure used to check the goodness-of-fit of the model.

The projection was based on the extrapolation of the period and cohort effects, taken as references the median period and the cohort with more diagnosed cases. The alpha adopted was 5 %.

Results In the follow-up period, were considered 9,770 cases, with ages between 25 and 84 years. The model that reveal the best fit was an age-drift model (deviance = 92.1; 95 df; p value = 0.56), charging a descent in the incidence rates of 3.8 % for 10^5 py. For the period 2007–2010, the projections point to a decrease in the incidence rates.

Conclusions The decrease in the projected rates will be related to a better conservation of the foods, given that the helicobacter pylori were the main risk factor.

P2K12

Assessing spatial patterns of severe pneumonia incidence using Bayesian models for non-referral cases

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Pneumonia represents a significant public health problem across the developed world and it is associated with significant morbidity and mortality. However, as in many infectious diseases, direct information about incidence is difficult to obtain. Knowledge of how severe pneumonia cases vary geographically may provide clues to understand the determinants of this illness, and may provide a more effective management of health-care resources.

Information systems used as a source for communicable disease surveillance suffer from potential problems of under estimating the true incidence of disease.

The aim of this study was to estimate the severe pneumonia cases incidence rates in the Northern region of Portugal from 2000 to 2006, using hospitalisations rates as surrogates of incidence rates. In this study a Bayesian model for small-area disease rates that allows for censoring of case detection in suspect municipalities was used.

Distance may be a key factor in referring patients to hospital. Then, methods were applied to pneumonia hospitalisations using a distance indicator as the basis for considering data from certain municipalities to be censored. Spatial models were fitted to the pneumonia hospitalisations data with the public domain software package WinBUGS.

From 2000 to 2006, a total of 63,751 pneumonia hospitalisations were registered in the study region, representing a mean annual regional rate of approximately 277 per 100,000 inhabitants. Overall rates were higher for males and highest rates were seen among the elderly.

Municipality-level data reveal marked differences between municipalities. Controlling for age and sex the municipalities with the higher rates were in the north-eastern municipalities of the region. The municipalities with the higher modelled hospitalisation rates remained in the north-eastern municipalities. On the other hand the municipalities that present lower modelled rates were in the north-western part.

One possible approach to improve the estimated incidence in the censored municipalities is the use of a censored Bayesian model. Approximately 26 % of the municipalities were considered as suspected areas.

After smoothing severe pneumonia risk remained higher in the east inner municipalities and in some municipalities in the north-western. The censored model predicts an overall number of 64,994 severe pneumonia cases.

The present study provides a practical example of the usefulness of this technique to improve estimation of disease incidence and allowing a better public health planning in these suspect municipalities. This methodology could be useful to apply to other diseases in order to get a better understanding of their incidence.

P2K13

Information on educational level from hospital discharge registry: an analysis of validity

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Background Educational level is frequently used in epidemiological studies, as a proxy of individual socioeconomic position. Actually, the information on education at individual level is available for all the admission registered in the Hospital Information System (HIS). This is a potentially precious resource, but there is no evidence about its validity yet.

Objective To analyze the validity of information on educational level from HIS, by comparison with the 2001 Census and to develop a hierarchical algorithm to improve its validity.

Methods 35+ years old patients hospitalized between 2000 and 2009 in Lazio Region, living in Rome and registered at 2001 Census were selected. For each person discharged from hospital, the information on educational level stated on Census, was collected. Agreement between Census and HIS data was measured using Cohen's Kappa (k).

A hierarchical algorithm, based on the results of agreement analysis, was developed. For each patient, the most valid admission in order to find the most accurate information on education, was selected. The algorithm was tested on two cohorts of acute care hospitalizations and two of planned admissions selected between 2008 and 2009.

Results A good agreement on education from HIS and Census (k between 0.5 and 0.6) was found. Information on education was better for planned admissions in hospitals with a volume of care lower than 4,000 or greater than 12,000 admissions per year (18 % k increase). The agreement between HIS and Census in Hip Fracture and Acute Myocardial Infarction cohorts was "sufficient" (k = 0.3), while a "good/excellent" agreement in Cholecystectomy (k = 0.6) and Coronary Artery Bypass (k = 0.6) cohorts was found.

The algorithm picked out information on educational level from a planned admission possibly stated in hospitals with a specific volume of care, for patients having at least another admission in the study period. Its application to the acute care cohorts, improved the agreement to a level of "good" (19 % k increase), while the gain was much lower if it was applied to the planned admission cohorts (4 %).

Conclusions The overall agreement is good, but it depends on the hospital admission characteristics. However, these differences may be reduced by properly applying the proposed hierarchical algorithm, that allows a better use of the HIS information on educational level.

Poster Topic 2L. Migration & International health

P2L01

Adults oral health: a cohort Brazilian study

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This study investigates the clinical oral health status in a Brazilian adult population using a representative sample.
Methods Cross-sectional household probability sample of 248 adults, representing a population 149,635 adults (20–64 year-old) residing in Piracicaba-SP, Brazil. Socioeconomic and demographic data were collected and clinical oral exams were conducted following the WHO criteria for oral diseases (DMFT and CPI). We used descriptive analyses for studied conditions.
Results The mean age was 47.55 (SE 0.99). Most participants were female between 45 and 64 years-old. 54.8 % had studied at least until high school and had a monthly income between $300 and $500 USD. The mean DMFT was 20.37 (SE = 0.50), being different between age groups mainly due to missing teeth. The mean of missing teeth was 3.34 (SE = 0.33) among young adults and MT = 13.41 (SE = 1.45) among old adults. The prevalence of attachment lost greater than 4 mm was 20.5 (95 % CI: 14.2–28.7) among young and 53.0 % (CI 95 % 40.9–64.8) among older adults. Regardng prosthetic needs, 37.8 % wore prosthesis in one arch, but needed prosthesis in the other arch and 20.9 % needed prosthesis in both arches. Conclusions: Oral health status differed between age groups in this population with regards to caries experience and periodontal disease. Oral health promotion strategies should consider the age of the target population and their prosthetic needs when planning dental services. FAPESP 2011/00545-1.

P2L02

Epidemiological profile evaluation of dengue hemorrhagic fever in Brazil from 2007 to 2011

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Background Dengue is considered one of the major public health issues in Brazil. Although its incidence is not uniform, it affects all Brazilian states, while being concentrated mainly in the North, Northeast and Southeast parts of the country.
Since the 1980s, dengue has been drawing the attention of the Brazilian government. Over the past 20 years, Brazil has experienced four major epidemics of this disease: 1998, 2002, 2008 and 2010. The manifestations can vary from a benign form to a severe dengue hemorrhagic fever (DHF), which can progressively lead to death if not treated. The virulence of dengue, individual factors such as previous infections with the virus, the existence of several different serotypes and deficient urbanization conditions are all related to the spread of dengue in Brazil, and consequently of DHF.
Objectives Provide a comprehensive evaluation of the epidemiological profile of DHF cases, addressing gender and age categories between the years of 2007 and 2011.
Methodology This is an exploratory and descriptive study whose data were collected from the Information System for Notifiable Diseases (SINAN NET), available at www.datasus.gov.br, and ported to a Microsoft Office Excel 2007 spreadsheet, where they were analyzed and obtained the intended percentages.
Results The number of DHF cases oscillated between the years 2007 and 2011. Increase factors of 110.5 and 41 % compared to previous years were observed in 2008 and 2010 respectively, whereas the number of cases decreased by 32.8 % in 2009, and 18 % in 2011. Over that period, women were the most affected by DHF, accounting for 55.8 % of the cases in 2007, 54.2 % in 2008, 50.7 % in 2009, and 53.3 % in 2010. In 2011 the number of cases on women lowered to 49.9 % of cases. The age groups most affected were: 5–14 years (34.5 %) and 20–59 years (42.35 %).
Conclusion The number of Dengue Hemorrhagic Fever cases follows the same behavior pattern of dengue, with higher prevalence in epidemic periods of the disease, such as the years 2008 and 2010. With regards to gender, women represent a larger proportion of the cases of DHF. Despite reaching all age groups, the growth rate of DHF among children and adolescents demands increasing attention. It indicates the need to strengthen public policies focusing on these age groups.

P2L03

Cognitive function of Turkish migrants in Germany using the Montreal Cognitive Assessment (MoCA) in a community-based sample: preliminary results

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Background The Montreal Cognitive Assessment (MoCA) is a measure to detect cognitive impairment in each of the 6 main cognitive domains, including attention and concentration, speech, memory, praxis, gnosis, and executive functioning. It has been widely used in patient populations, less often in community-based samples but not in studies focusing on migrants.
Objective To evaluate cognitive function in Turkish migrants living in Berlin, Germany.
Methods For this cross-sectional study, we drew a random sample of persons with Turkish first and/or last names from the residents' registration office in Berlin with the aim to include 300 participants in total. We assessed medical history and sociodemographics by self-reported questionnaires and cognitive function using the MoCA (a 30-point screening tool) in a face-to-face interview. Median and mean ± standard deviation (SD) of the MoCA sum score (0 = worst, 30 = best) were compared regarding sex, age and education and a correlation analysis (Pearson) between age and MoCA sum score was conducted.
Results In this preliminary analysis, we included the first 205 participants (112 men, mean ± SD age 44.7 ± 11.1 years; 93 women, 40.5 ± 12.3 years). Median and Mean ± SD of the total MoCA sum score were 24 and 23.7 ± 3.9, respectively. Median and mean were significantly different among the three age groups 18–30, 31–50 and 51–69 years: 26/26.1 ± 2.4, 24/24.0 ± 3.1 and 22/21.3 ± 4.6 respectively; $p < 0.001$. Correlation analyses between age and MoCA sum score resulted in a statistically significant Pearson correlation coefficient of −0.45; $p < 0.001$. Persons with 12 or less years of education had a significantly lower score than persons with more than 12 years: 23/22.0 ± 3.9 versus 26/25.8 ± 2.6; $p < 0.001$. Results of the total study population will be presented.
Conclusions This is the first study of the MoCA instrument to assess cognitive function in a Turkish migrant population living in Germany. The only investigation with a healthy Turkish study population (all aged 50 years and older) living in Turkey showed a slightly higher mean score (23.5 ± 3.7) than preliminary analyses of our study for participants over 50 years. However, these findings should be interpreted with caution as our study is still ongoing.

P2L04

Availability of emergency obstetric care in the Brong Ahafo region of Ghana

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Background The availability of high quality, accessible emergency obstetric care (EmOC) is paramount to the reduction of maternal and neonatal mortality. Difficulties inherent in measuring maternal mortality have led to the use of EmOC as an indicator of progress towards the 4th and 5th Millennium Development Goals. The 2009 UN handbook on obstetric care recommends a minimum of 5 EmOC facilities per 20,000 births, while the 2005 World Health Report (WHR) suggests at least 2–3 such facilities per 3,600 births.
Objectives To describe the availability of emergency obstetric care in the Brong Ahafo region in Ghana.
Methods Using a structured questionnaire, we categorized the level of EmOC provided in all 86 facilities in a demographic surveillance area in the Brong Ahafo region based on performance of nine EmOC signal functions in the previous 6 months. We triangulated functions with necessary drugs and equipment, and included requirements on opening hours, referral capacity as well as minimum numbers of trained providers.
Results Of 86 health facilities in the area, 64 provided delivery maternity care. The most frequently performed functions were provision of injectable oxytocics for post-partum hemorrhage (70 %) and neonatal resuscitation with bag and mask (63 %). Manual removal of retained products of conception (36 %), and instrumental delivery (13 %) were the least frequently reported basic EmOC functions. Of 11 hospitals providing delivery services, nine conducted caesarean sections and blood transfusions in the past 6 months.

According to our classification, there were six EmOC facilities, two of which provided comprehensive EmOC (CEmOC), in this region in 2010 where approximately 15,000 babies are born annually. This meets the UN benchmark (3.75 EmOC, 0.75 CEmOC), but does not meet the WHR benchmark (between 8.3 and 12.5 EmOC facilities, 1 CEmOC). The remaining 91 % of facilities were categorized as non-EmOC due to non-performance of specific functions, lack of necessary equipment or drugs or the inability to meet the requirements for a minimum number of skilled staff.
Conclusion With a maternal mortality ratio of 350 per 100,000 and a neonatal mortality rate of 26 per 1,000 live births, mortality remains high in Ghana. However, the UN benchmark for a minimum acceptable level of EmOC facilities is met in this region, although the WHR benchmark is not. This discrepancy suggests that using these benchmarks, even at a subnational level, may be insufficient to track progress on MDGs. Consideration of facility size, geographic accessibility and birth density in addition to EmOC density have been suggested to improve their discriminatory power.

P2L05

Associations between illegal alcohol consumption and the incidence of tuberculosis in northwest Russia in 1975–2009

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Background There was a set of dramatic social changes during the period 1975–2009 in Russia accompanied by decrease in life expectancy, increase in the use of alcohol, including illegal alcohol and increase in the incidence of tuberculosis and other infectious diseases. Tuberculosis incidence and prevalence are high among people with high alcohol consumption. However, no studies on the association between tuberculosis and alcohol consumption, based on official statistic data for long time-period, have been performed in Russia so far.
Objective To perform time-series analysis of the associations between the use of illegal alcohol and the incidence of tuberculosis in Northwest Russia using the data for the 35 years.
Methods We collected the data on the incidence of tuberculosis in Arkhangelsk, Vologda and Murmansk regions from 1975 to 2009 on the absolute numbers and causes of death from the regional offices of the Federal statistical bureau of the Russian Federation. All the data are age- and sex standardized. We used all forms of tuberculosis incidence, and the level of sales of illegal spirits per person. We analyzed possible correlations between tuberculosis incidence and the level of illegal alcohol. An analysis of time series data using ARIMA with the transfer function was used to study the relationship between illegal alcohol consumption and tuberculosis incidence in the three regions.
Results Positive correlation between total alcohol consumption level and tuberculosis incidence was identified for those >15 years of age ($r = 0.70$; lag = 5; SE = 0.18) in Arkhangelsk and Vologda regions. Moreover, positive correlation between the incidence of tuberculosis and illegal alcohol consumption (coefficient = 6,941, SE = 1,053, $p < 0.0001$) was found in the ARIMA model for the Arkhangelsk region.
Conclusion Significant associations between total alcohol consumption and illegal alcohol consumption and the incidence of tuberculosis was identified in Arkhangelsk and Vologda regions.

P2L06

Daily variations in ambulance calls for selected causes in Arkhangelsk, Russia: potential role of excessive alcohol consumption on weekends

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Background Russia has the highest cardiovascular mortality in the world and very high mortality from external causes. Previous studies linked these outcomes with hazardous alcohol consumption, particularly during weekends in Russia. However, these studies were performed during the 1990s during the time of economic crisis. No studies on the topic have been published after beginning of economic growth in Russia.
Objectives To assess day-to-day variations in ambulance calls for cardiovascular diseases, mental and behavioral disorders, and external causes in Arkhangelsk, Northwest Russia in 2000–2008.
Methods Data on all ambulance calls during 2000–2008 were obtained from the Arkhangelsk ambulance station. Information about patient's gender, age, reasons for calls (diagnosed by physicians after serving the calls) according to International Classification of Diseases (10th revision) and the date of call were recorded. Pearson's Chi-squared tests were used for comparing proportions of ambulance calls across the week for cardiovascular diseases (I00-99), mental and behavioral disorders (F00-F99), and external causes (S00-T98, V01-Y98). Ratio of incidence of ambulance calls on Saturday, Sunday and Monday versus the rest of the week was also calculated to estimate excessive mortality during weekends and Mondays to ensure comparability with previous studies.

Results Altogether, there were 1,018,217 calls. Calls for cardiovascular diseases followed a weekly pattern with the peaks on Sundays and Mondays for both genders. For mental and behavioral disorders an increased number of calls on weekends and Mondays were registered in women at the age 18–59: Ratio: 1.05 (95 % CI: 1.02–1.08). For men 18–59 years old the peak was also observed on Monday. For external causes, ratios showed that there is a statistically significant increase in ambulance calls during Saturdays, Sundays, and Mondays, varying between 1 and 19 % excess calls compared to the rest of the week. In both women and men 60 years and older similar pattern of variations in ambulance calls was also determined for cardiovascular diseases and external causes, although less pronounced and not reaching the level of statistical significance.
Conclusions Daily variations in ambulance calls for cardiovascular diseases, mental and behavioral disorders, and external causes with an increased number of calls on weekends and Mondays were observed at the age 18–59 for both genders. Assuming that binge drinking in Russioften occurs during weekends, we speculate that excessive alcohol consumption may contribute to the observed variation in the number of ambulance calls for selected causes in Arkhangelsk.

P2L07

Precipitation, mean monthly temperature and monthly counts of Hepatitis A in Northern Kazakhstan in 2000–2010

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Background Several studies have reported associations between enteric infections and climatic factors, but most of them were conducted in Europe, North America and Australia warranting further research in other settings. While associations between ambient air temperature and food poisoning or salmonellosis are well-established, less is known about associations between temperature or precipitation and Hepatitis A. The objective of the study was to investigate associations between monthly counts of Hepatitis A and ambient air temperature and precipitation in Northern Kazakhstan.
Methods Data on all laboratory-confirmed cases of Hepatitis A in the county of Northern Kazakhstan (regional centre—Petropavlovsk) from 2000 to 2010 were obtained from the national infectious diseases surveillance centre. Associations between monthly counts of cases and climatic variables with lags 0–2 were studied by negative binomial regressive models with dichotomous indicator variables for each year and month to control for long-term trends and seasonality. The model was adjusted for first- and second order autocorrelation. "Hockey-stick" models were also applied to logarithmically transformed monthly counts to detect a threshold of the effect of mean temperature on monthly counts of Hepatitis A.
Results We observed a linear association between the number of reported cases of Hepatitis A and mean monthly precipitation with lag 2 across the whole range of precipitation. An increase by 1 mm was associated with a 1.0 % (95 % CI: 0.3–1.7) decrease in the number of cases 2 months later. No associations between mean monthly temperatures and the number of cases of Hepatitis A were observed. No thresholds were detected by the "hockey-stick" models for either temperature or precipitation.
Conclusions Greater mean monthly precipitation seems to be associated with lower monthly counts of Hepatitis A 2 months later in Northern Kazakhstan. No associations between mean monthly temperatures and the number of cases of Hepatitis A were found. Potential mechanisms behind the associations and further implications of the results in relation to climate change will be discussed.

P2L08

Imported malaria: still a contemporary issue

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Background WHO declared malaria eradicated in Portugal in 1973. However the travelling related to extensive international relations with portuguese speaking african and asian countries and exponential increase in international travel worldwide makes imported malaria a national public health and epidemiological issue. WHO reports around 40 yearly cases of malaria which is probably underestimated due to generalized under reporting. Knowledge about malaria is useful to plan the strategy for disease prevention and management at national and local levels.
Objectives Describe the malaria hospitalizations in Portugal during 2000–2009; analyse mortality and length of stay.
Methods Data were provided by the Central Administration of Health System (ACSS) and refer to the Portuguese national database of the diagnosis related groups (DRG). Between 1st January 2000 and 31st December 2009 there were 2004 discharges registered in National Health Service hospitals with malaria diagnosis. The data were selected using international classification disease 9 clinical modification (ICD-9 CM), the codes were 084 (malaria) and 647.4 (infectious and parasitic conditions in the mother classifiable elsewhere, but complicating pregnancy, childbirth, or the puerperium). The data are anonymous and available from the ACSS for scientific research. The variables analysed were: gender, age, district of residence, length of stay and death. A descriptive analysis was carried out, using the usual indicators of frequency synthesis, and hypothesis testing, including *t* tests and Pearson Chi-square tests.
Results We studied 2004 hospitalizations, with decreasing annual frequency between 314 and 130 cases, with a relatively similar monthly distribution. Most cases were males (70 %) and aged 18–64 years (82.3 %) with mean age of 38 years. Lisbon, Porto and Setubal were the most common districts of residence (70 %). In 40 cases (2 %) the outcome was death. The mean length of stay was 9.4 days. There was no statistical significant difference on proportionate analysis of annual in hospital lethality. There were no statistical different between length of stay and gender. Those that died had a significantly longer length of stay ($p < 0.05$). Those whose main diagnosis was malaria had a significantly shorter length of stay ($p < 0.05$).
Conclusion Between 2000 and 2009, 2004 individuals were hospitalized in Portugal with malaria. Lethality was 2 % and median length of stay 9.4 days. Most were male young adults living in the Lisbon area. These data collide with the underestimated national and WHO notification data. The national database of the diagnosis related groups (DRG) may be an unexplored source for better estimates on imported malaria.

P2L09

Prevalence of diseases during pregnancy: a comparative study on Portuguese and immigrant women

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Background Immigration is usually associated with difficulty in the access to general healthcare and specifically obstetric surveillance.
Objective Quantify the prevalence of diseases during pregnancy in Portuguese and immigrant mothers.
Methods We conducted a cross-sectional study involving 2,407 mothers, 753 (31.3 %) immigrant and 1,654 (68.7 %) Portuguese. The Portuguese mothers have a minimum age of 15 and a maximum age of 44 (mean age = 29.99 ± 5.42) and the immigrants have a minimum age of 16 and a maximum of 45 (mean age = 29.30 ± 5.76). The data collection consisted of observing medical records and a face-to-face interview conducted by midwives in training. Data collection occurred on the second day of delivery, from 2010 to 2011, in 30 *Portuguese maternity wards*. We considered "Adequate Obstetric Surveillance" (AOS) if mothers had six or more appointments and the first had occurred during the first trimester. The prevalence was expressed in proportions. We used the Chi-square test to compare proportions.
Results The prevalence of toxoplasmosis was 11.6 % in Portuguese women and 5.2 % in immigrants ($p < 0.01$). The prevalence of threatened abortion was 12.4 % in Portuguese women and 7.4 % in immigrants ($p < 0.05$). The prevalence of hyperemesis was pregnancy is 13.8 % in Portuguese women and 19.7 % in immigrants ($p < 0.05$). The prevalence of urinary infections was 25.5 % in Portuguese women and 34.6 % in immigrants ($p < 0.01$). The prevalence of hepatitis B was 0.7 % in Portuguese women and 3.0 % in immigrants ($p < 0.05$). Immigrant women without AOS presented less prevalence of diseases during pregnancy (38.0 vs. 30.0 % $p < 0.05$). Portuguese women without AOS presented less prevalence of diseases during pregnancy (34.2 vs. 26.9 % $p < 0.01$). About half of the total sample (53.2 %), which made prenatal surveillance, did not develop diseases during pregnancy. The result also showed that 17.9 % from the total sample did not have their pregnancy monitored, of which 5.1 % developed diseases (3.5 % of Portuguese mothers and 8.5 % of immigrant mothers) ($p < 0.001$).
Conclusion The prevalence of toxoplasmosis and threatened abortion was higher among Portuguese mothers. The prevalence of hyperemesis, urinary infections and hepatitis B was higher among immigrant mothers.

Poster Topic 2M. Spatial epidemiology

P2M01

Geographical differences in all-cause mortality among incident cases of ischemic heart disease. A register-based study

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Background The incidence and mortality due to Ischemic Heart Disease (IHD) is decreasing in Denmark. However, great differences are seen between regions, age groups, educational level, gender and municipalities.
Objectives To evaluate geographical differences in mortality among incident cases of IHD adjusted for the effect of age at IHD diagnosis, education level and gender.
Methods Data were extracted from individual-level national registers. Each individual in Denmark has a unique personal identification number making individual-level linkage of registers possible. Incident cases of IHD were identified using the Danish National Patient Register in the period 1.1.1990 to 31.12.1999. Individuals with IHD prior to the study period were removed. Level of education, age at IHD diagnosis (35–44, 45–54, 55–64 years) and gender were extracted from the Education and Population registers. Information on death during the study period was extracted from the Cause of Death Register for the period 1.1.1990 to 31.12.2006. The mortality rate among IHD incident cases was calculated as number of death divided by number of person-years at risk. Geographical differences in mortality was analysed using an accelerated failure time frailty model with death being the event and time-to-event being years from IHD diagnosis to either death or end of study alive (censoring). A Weibull hazard function was used. Municipality was included as a random effect and age, gender and education level were included as fixed effects. The empirical Bayes estimates of the random municipality effect were mapped and clustering was evaluated.
Results The mortality rate was 29.4 per 1,000 person-years (range: 8.6–53.5 at municipality level). The mortality rate increased with age group. A higher educational level decreased the risk of death. Geographical differences in mortality between municipalities were seen. Clustering in mortality was seen between different regions of municipalities.
Conclusions Geographical differences in mortality among incident cases of IHD were seen adjusted for differences in educational level, gender and age group.

P2M02

Excess winter cardiovascular diseases throughout Europe

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There is an uneven distribution of cardiovascular morbidity and mortality throughout the year. Excess winter cardiovascular mortality may be the result of several causes, and among them is cold exposure.

The aim of this study is to identify and assess the incidence trends of cardiovascular disease, both cerebrovascular and ischemic, and the excess winter mortality (EWM) pattern for the 15' European Union countries.

From the national statistics institutions, it was gathered two decades of monthly death by cerebrovascular (ICD 10:I60-I69) and ischemic heart diseases (ICD 10: I20-I25) in order to calculate the number of excess winter deaths (EWD) and the excess winter deaths index (EWDI) and the respective 95 % confidence intervals; this was calculated by using the Office for National Statistics methodology.

Countries were analyzed separately and merged into four distinct groups according to geographical criteria. The winter death burden was compared between Mediterranean (Portugal, Spain, Italy and Greece), Scandinavian (Sweden and Finland), Central (Germany, Austria, Belgium, Luxemburg and France) and Britain Islands (England and Ireland).

In general, there has been a decreased in the cardiovascular mortality. Since 1990, in the Europe 15, both cerebrovascular and the ischemic heart diseases standardize death rate (SDR) have decreased; the first was 50 % and the second 53 %.

There is a clear declining trend of the EWD; however, the EWDI due to these causes is not following the same evolution. The Mediterranean countries present a EWDI much higher than the other countries; and, since 1990, Portugal is the country with the worst results (reaching 58 % in 1997/1998). The other European regions present similar and much better outcomes and among them are the Scandinavian countries which, usually, have the lowest rate.

These findings highlight that although significant efforts have been developed in order to reduce cardiovascular determinants in Europe, their effects on the disease seasonality are still far from being achieved. One of the possible explanations for this it is that other aspects of the epidemiology of these diseases need to be addressed, such as the indoor environment and the reduction of cold exposure.

P2M03

Winter vulnerability due to emergency hospital admissions in Portugal

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During the 2011/2012 winter, the cold spell that have hit Portugal have led to an increase of hospital emergency admissions and mortality; the media has reported 3,000 death, in only 6 days, and an extra flow in hospital emergency rooms that led to chaotic situations. The cold impact is more important to cardiovascular (both ischaemic and cerebrovascular) and respiratory diseases.

The aim of this study is to identify the excess emergency hospital admissions (EHA) due to cardiovascular diseases in Portugal, featured by their geographical incidence; and, as well, to assess the risk of hospitalization during the winter. So, it was possible to identify the population at risk and also the situations that is urgent to act.

From 2000 to 2010, it were assessed the monthly EHA by NUT III, due to cardiovascular diseases. In order to use standardized 30 days values, it was applied a normalizing factor upon monthly data. Then, using the UK Office for National Statistics methodology which was later adapted as the Portuguese winter seasonality last for five instead of 4 month, it was calculated an excess winter hospitalizations index (EWHI) and the respective 95 % confidence intervals. The incidence was evaluated by standardize EWH rates.

Unlikely other countries, in Portugal winter burden of hospital admissions are present over 5 months (since November until March) instead of four. During the last 10 years, the EWHI kept around 10 %, excepting on the years of 2004–2005 and 2005–2006; in those it has reached 15 %.

All regions have excess winter hospitalizations (floating from 3.0 to 17.3 %) and three of them have significantly worse results than national average. When studying only the incidence on elderly the results are similar; the EWHI varies between 4.2 and 20.1 % but, now, there are four regions significantly worse than national average. Though the most developed area is the coastal margin, the highest rates are recorded here, as well as the regions with significantly worse results than the national average.

Although Portugal is the European country with higher winter burden, the impact of cold on health is not yet thoroughly studied; there are still some results that, due to its complexity, are still difficult to explain. The regions that are usually featured as poor or undeveloped have higher resilience to cold; this may be due to cultural, socioeconomic and biophysical causes; but which of these are the most relevant it will need more research.

P2M04

Spatiotemporal epidemiology in the identification of critical areas: an application to tuberculosis

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Introduction The increasing relevance of spatiotemporal epidemiology, enhanced by a greater availability of geographical information and the growing importance of knowing where, when and how the health phenomena occurred in a spatiotemporal context, promotes more scientifically robust and effective early intervention. The identification of critical areas, either in terms of their higher incidence of a disease, on the degree of endemy or their intensity of determinants, is crucial to assess them for priorities setting.
Objective To define and evaluate methods for identification of critical areas based on spatiotemporal clustering techniques. The relevance of this work is also increased by the importance of the case study: defining critical areas and years regarding incidence of Pulmonary Tuberculosis (county-year, 2000–2009).
Methods As a development of spatial epidemiology, the use of the spatiotemporal clustering processes for the identification of critical areas has been widely reported in scientific literature, complementing and enriching the classical mapping and spatial correlations approaches. These clustering processes have specific characteristics that strongly influence the results.
We propose an approach based on four different methods, three for identification and one for validation, based on the Spatial Scan Statistics, in concepts of spatial correlations (variogram) and on geostatistical simulations: (1) spatiotemporal clustering procedure, using all spatial and temporal data simultaneously. This process allows to identify an area-time (e.g. Great Lisbon between 2003 and 2007); (2) spatial clustering procedure, performed independently for each time period: validate if the areas identified as critical, were consistently identified over time, or were only temporary situations with less importance in terms of future intervention, (3) determination of risk areas through a spatiotemporal anomalous concentration of risk factors already identified in the literature, an independent process from incidence of the outcome under study, (4) geostatistical validation of identified clusters.
Results Lisbon and Oporto metropolitan areas were consistently identified by the three processes as critical areas of high incidence of tuberculosis between 2000 and 2009 and were also confirmed by the validating geostatistics technique ($p < 0.001$). Other identified clusters were not confirmed by all of those processes and, in the validation process, showed no statistical evidence of their existence ($p > 0.05$).
Conclusions Methods (1) and (2) showed similar results, although they have different objectives. The results obtained by method (3) had major fluctuations, as expected, and showed very useful for local interventions, but more effort and complexity associated (in terms of information and analysis). Geostatistical simulations proved powerful as a validation process.

P2M05

Overweight and obesity, places and people. A multilevel analysis in Lisbon metropolitan area

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Background The increasing trend in overweight and obesity prevalence in the Portuguese population has made this issue a leading health concern for Portugal. Although individual factors have been shown to predict weight gain, contextual determinants have also attracted attention, with some authors stressing the role played by deprivation, urban sprawl, social capital and safety. A deeper understanding of these mechanisms is critical if we want to tackle the obesity epidemic, and that policies aimed at weight control and obesity reduction must address people and places in order to bear fruit. It is therefore important to identify the factors involved in the emergence of these environments, using a multidisciplinary approach.
Objective This study aims to highlight the associations between residential (physical and social) environment and the risk of weight gain and obesity, over and above individual attributes. Assessing which indicators are the best predictors of Lisbon Metropolitan Area

residents excess weight, specifically factors more related to urban planning and therefore potentially changeable.
Methods The study involved data from 7669 individuals, aged 18 and over, from 143 neighbourhoods, collected by the National Statistics Institute. Self-reported body height and weight were used to define overweight body mass index (BMI $\geq$25). BMI and individual (socio-demographic and behavioural) characteristics were linked to contextual data and analysed in a multilevel framework.
Results Our findings show that different environmental factors are significantly associated with excess weight and obesity, either directly or indirectly (e.g. health-related behaviours such as eating patterns and physical activity, which are key mediators), after adjustment for individual characteristics. Adjusting for individual attributes, urban sprawl (lower population density), inadequate housing (shanties) and unsafe environment (violence measured through crimes against property and traffic accidents involving victims) show a positive association with BMI; the higher these area disadvantage characteristics, the higher the individual BMI. The availability of supermarkets and post offices reduces the odds of being overweight, as do social cohesion and public health services. In addition to the positive relation between urban sprawl (low population density) and excess weight, reported above, the interaction between living in the higher population density tercile and more deprived areas showed the opposite trend, increasing the odds of being overweight.

P2M06

Parents' perceptions of residential neighborhood, children's sedentary behaviors, and outdoor play in school children

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Background Despite trends indicating a recent stabilization in the upward obesity trend in children in some countries such as Portugal, the present values remains a huge public health problem. Although the causes of this epidemic are multifactorial, environmental factors such as unsafe neighborhoods are one factor that has been thought to increase obesity risk in younger children by limiting their outdoor play and increasing sedentary indoor activities such as television, computer use and play electronic games.

Recent studies have pointed to associations between parental perceptions of neighborhood and their children's health.
Objectives The main purpose of this study is to analyze the association between sedentary behaviors, children's outdoor play and parents' perceptions of some characteristics of the built environment.
Method A cross-sectional study was done in a sample of 1,466 children, aged 6.0–10.0 years living in Oporto. Private and public schools were randomly selected. Parents filled out a questionnaire about family and child behaviours such as TV viewing, PC use, electronic games and outdoor play during weekdays and at the weekend. They also filled out the "Environmental Module" standard questionnaire of the International Physical Activity Prevalence Study (IPS, 2002). Environmental characteristics were combined into two neighborhood dimensions—factor 1—neighborhood built environment, factor 2—neighborhood social environment and safety. A Multivariate Logistic Regression analysis adjusted for age, parental education and the cluster of schools was used.
Results A negative parental perception of the residential environment was positively associated with the following behaviors: more time watching Television, among boys (>2 h/day, OR = 1.66, CI 1.18–2.33, $p < 0.05$); more time spent using the computer, in boys and girls respectively: (>1 h/day, OR = 2.17, CI 1.31–3.6, $p < 0.05$; OR = 1.13, CI 0.84–1.9, $p < 0.05$); more time spent playing electronic games, in boys and girls: (>1 h/day, OR = 2.97, CI 1.56–5.6, $p < 0.01$; OR = 1.66, CI 1.12–2.45, $p < 0.01$); less time playing outdoors, in boys and girls: (activity outside <1 h/day, OR = 1.69, CI 1.22–2.33, $p < 0.01$; OR = 1.31, CI = 1.01–1.7, $p < 0.05$).
Conclusion When parents have a negative perception of their residential environment the children tend to spend more time inside house watching television, using the computer and playing electron games and less time playing outside. Our results point out for a need to improve the urban design and promoting mixed land uses—as well as the social environment, especially, safety.

P2M07

Standard hospitalization for Dengue in a Brazilian city between 2009 and 2010

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Introduction Dengue is an important viral disease that represents one of the most serious public health problems in the world. Currently, over 97 % of the municipalities of Bahia have dengue cases, with over 121 thousand notifications and 67 confirmed deaths. Despite the great impact of Dengue in Brazil provides, it was observed that few studies have been directed to the State of Bahia (BA).
Objective To describe the pattern of hospitalizations for Dengue in the city of Salvador, Bahia between 2009 and 2010.
Methods This was an ecological study of spatio-temporal aggregated, driven from the State of Bahia's hospitalizations of dengue of the reported in the information system of illnesses Brazilian—The SINAN (Sistema de Informação de Agravos de Notificação). The annual mortality coefficients, rates of hospitalization and lethality, according to the clinical form of the disease, were the effect variables analyzed. The existence of an association between the exposure variable (age) and the effect variables was evaluated by estimation of relative risk, with reference to the group under 15 years. The statistical program EPIINFO® was used for data analysis.
Results It was found that in 2009, the Subúrbio Ferroviário was the sanitary district with the highest number of hospitalizations (22 %), and Dengue With Complications (DCC)—17.7 %—as the most relevant clinical form. The following year, the sanitary district Liberdade took the lead of hospitalizations (14.6 %), with the predominance of Dengue Fever (FD) −9.5 %. Minors under 15 years, in 2010, have higher rates of hospitalization for Dengue (79.8 %), with emphasis for the FD and the DCC, which amounted respectively to 318 and 240 hosp/100.000 habitants. Children also starred, in both years, the occurrence of hemorrhagic manifestations, especially petechia, gastrointestinal hemorrhage, epistaxis and gingival hemorrhage, particularly in patients with DCC. Among adults, prevalent signs and symptoms such as thrombopenia (37 %) and effusions (18 %) in 2009, and hemoconcentration (12.2 %) in 2010. In 2009, the risk of death among hospitalized children was 21 times higher than adults hospitalized for Dengue. In the year 2010, this risk among

children under 15 years decreased to 17.5, accompanied by a significant decrease in lethality, from 3.2 to 0.8 %.
Conclusion The sudden increase in the risk of severe forms of children hospitalized was probably caused by the rise of serotype DEN-2 for which a significant proportion of adults was already immune.

P2M08

A spatial statistics approach to dynamic modeling of dengue diffusion in Rio de Janeiro city

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Background Dengue threatens Rio de Janeiro city since the first epidemic in 1986. Successive epidemics in 1992, 2002 and 2008 have made thousands of victims and raised concerned about future epidemics especially in the rainy-summer season. Actually, risk of severe form of dengue fever is increased with circulation of four serotypes DEN 1, DEN 2, DEN3 and DEN4. Virus circulation is a complex process because it depends on both the dynamics of mosquito Aedes aegypti and human factors. Several researches have adopted an ecological model to map and correlate dengue incidence cases with human and environmental variables. A common assumption in these studies is that infection occurs at case home address which can be misleading in indicating risk areas.
Method Rio de Janeiro has 6.323.037 habitants and covers an area of 1.260 km^2. Its tropical climate and high density population supports Aedes aegypti's life cycle. This study use a spatial explicit simulation approach to capture the likelihood of human and mosquito contact and model dengue diffusion in Rio de Janeiro city. A cellular space with cells of 200 m side is used to represent Rio de Janeiro city area. Each cell receives estimated indicators of human population, land use type, mosquito population and socioeconomic status, among others. The model considers dynamic and static variables. Temporal unit of the simulation is a day. Human population is divided in immunity status as susceptible, infected and recovered. In each time step, human population changes its immunity pattern as a function of human mobility and local characteristics of a cell. Simulation process is design to run over the epidemic period in Rio de Janeiro. Simulation algorithm and data manipulation are based on statistical program R and Quantum GIS.
Expected results In particular, it is of interest comparing the results of simulations of the dynamics of Dengue using this approach and other approaches. Test if maps based on case home address are significantly different from the proposed approach.

P2M09

Object-oriented remote sensing image classification to characterize land cover features and land surface temperature to study the epidemiology of visceral leishmaniasis in the city of Teresina, Brazil

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The use of remote sensing technologies (RS) brings new perspectives and also methodological challenges for the analysis of vector-borne diseases in particular those closely related to environmental conditions, such as visceral leishmaniasis (VL). The objective of this study is to evaluate the applicability of object-oriented classification of remote sensing imagery to characterize land cover features and land surface temperature correlated to the incidence of urban VL in the city of Teresina, Brazil. Average annual incidence rates of VL for the periods of 1993–1996 and 2001–2006 were calculated at the level of census tracts (CT). Landsat 5 Thematic Mapper (TM) scenes from 1990 and 2003 we used to capture environmental information and temperature for each period. An object-oriented classification approach was used to extract land cover features such as water, densely occupied areas, green areas, bare soil, dense vegetation and grass/pasture. We used the Spearman correlation coefficient to evaluate the association between the incidence of VL and environmental features and mean temperature for both periods of analysis (1993–1996 e 2001–2006). For the period of 1993–1996, the incidence of VL was positively correlated with the census tract's area covered by dense vegetation, grass/pasture and bare soil (all p values <0.01) e negatively associated with the area covered by water and densely occupied areas (p value <0.05 for both). In the subsequent period (2001–2006), positive correlations were found for dense vegetation, grass/pasture, bare soil and densely occupied areas (all p values <0.01); and negative correlation was detected for green vegetation ($p < 0.01$). The average land surface temperature was negatively associated with the incidence of VL in both periods ($p < 0.05$). Understanding the complexity of urban space and how it may affect the occurrence of VL requires a multiplicity of tools. In this setting, object-oriented classification of remote sensing images showed to be useful to identify landscape features associated to VL that might be helpful in defining risk areas for prioritizing the delivery of health interventions against the disease.

P2M10

Association between neighborhood fast-food restaurants and childhood obesity in Coimbra

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Background Nowadays there is an increasing public attention to the contribution of the food environment features to the epidemic of childhood obesity. Environment has been identified as a potential source of influence on eating behaviors and thus risk of obesity. Urban design, related to factors that affect food intake like density of fast food restaurants and convenience stores, has been found to be related to the prevalence of obesity.
Objectives The purpose of this cross-sectional study was to examine the associations between the presence of fast-food restaurants and obesity (including overweight) among children.
Methods Anthropometric measures of height and weight were taken on 1,013 children age 3–10 years old in kindergartens and elementary schools in Coimbra, Portugal. Body mass index (BMI, kg/m^2) was calculated and the International Obesity Taskforce (IOTF) cut-offs were used to define overweight and obesity. Additionally, parents filled out a questionnaire where was asked the street where they live.

Locations of the fast-food restaurants (including snack-bars) were geocoded (N = 257).

A geographic information system (GIS) was used to determine the availability of fast-food restaurants within a 500 m buffer around participants' homes.

For data analysis were used the Chi Square test and the logistic regression model adjusted for age, gender, parental education and the school clusters.

Results In this sample 27.3 % of the children were obese (including overweight). Logistic Regression Analysis showed a statistically significant association between obesity (including overweight) and the existence of fast-food restaurants (OR = 1.70, $p < 0.05$, CI = 1.12–2.59).

Conclusion We concluded that in this particular environment and child population the presence of fast-food restaurants in a 500 m buffer around child's house increase the likelihood of obesity in 70 %. In a public health perspective, these results have a great importance in future location of fast-food restaurants.

P2M11

Association between neighborhood mini markets, grocerys stores, supermarkets and childhood obesity in Coimbra

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Background Nowadays there is an increasing public attention to the contribution of the food environment features to the epidemic of childhood obesity. Environment has been identified as a potential source of influence on eating behaviors and thus risk of obesity. Urban design, related to factors that affect food intake like the presence of supermarkets, minimarkets and grocery stores, have been found to be related to the prevalence of obesity.

Objectives The purpose of this cross-sectional study was to examine the associations between the presence of supermarkets, mini markets, grocery stores and obesity (including overweight) among children.

Methods Anthropometric measures of height and weight were taken on 1,013 children age 3–10 years old in kindergartens and elementary schools in Coimbra, Portugal. Body mass index (BMI, kg/m^2) was calculated and the International Obesity Taskforce (IOTF) cut-offs were used to define overweight and obesity. Additionally, parents filled out a questionnaire where was asked the street where they live.

Locations of the supermarkets (N = 44), minimarkets and grocery stores were geocoded (N = 239). A geographic information system (GIS) was used to determine the availability of these amenities in a 500 m buffer around participants' homes.

For data analysis were used the Chi Square test and the logistic regression model adjusted for age, gender, parental education and school clusters.

Results In this sample 27.3 % of the children were obese (including overweight). Logistic Regression Analysis showed a statistically significant association between obesity (including overweight) and the existence of minimarkets and grocery stores (OR = 2.40, $p < 0.001$, CI = 1.52–3.81), and supermarkets (OR = 1.40, $p < 0.05$, CI = 1.03–1.92) in the residential area.

Conclusion We concluded that in this particular environment the presence of features of the built environment related to food purchasing (mini markets, grocery stores and supermarkets) in residential neighborhoods increases the likelihood of childhood obesity. This fact results from the great amount of processed foods that we can find in our supermarkets and their lowest price compared to fresh and healthy foods.

P2M12

Geographical variations in Salmonella incidence in Israel 1997–2006; the effect of rural residency

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Background The overall incidence and serotype distribution of non-Typhi Salmonella (NTS) may vary between geographic localities and a geographical correlation study might give a clue to determinants in the etiology.

Objective To evaluate regional differences and the effect of demographic factors on NTS infection in Israel.

Methods Laboratory-confirmed 15,865 episodes of NTS infection for 1997–2006 were retrieved from the Central Laboratories of the Israeli Ministry of Health and were geo-coded to the 15 Israeli administrative sub-districts. Demographic characteristics of the sub-districts-population size, nationality and age distribution, density and rural residency, were obtained from the Central Bureau of Statistics. Poisson models were employed to study the effect of sub-district and demographic characteristics on the average annual incidence rate of NTS.

Results We found significant variation in the average annual incidence rate of NTS among the sub-districts, which was inversely associated with the percent of rural residency (RR = 0.75, 95 % CI: 0.65–0.86). Variation was also found in the relative incidence of the most prominent serotypes (Enteritidis, Virchow, Typhimurium, Hadar and Infantis), which was associated with rural residency and the percent of non-Jewish population in the sub-district and mostly not with age-distribution.

Conclusion Rural residency was found to have a major effect on salmonellosis rates in Israel. Further research is needed to study whether decreased incidence in rural areas is an under-detection bias or reflects true differences in NTS illnesses.

8th September 2012

Time: 10.00–10.45

Poster Topic 3 N. Mental health

P3N01

Seasonality of births of schizophrenics in the tropics: report of a Brazilian sample

Fernando Volpe

Hospital Foundation of Minas Gerais

Background Seasonality of births in schizophrenics has repeatedly been reported in the Northern Hemisphere, especially in Europe and North America. Typically, there is an excess of births in spring-summer as compared to autumn–winter. However, there are few studies from other regions of the globe. Hypotheses of the underlying causes involve viral/inflammatory effects on brain development and specific fluctuations of fertility and procreative behavior.
Objective To investigate the occurrence of seasonal variation of births of schizophrenic patients.
Methods Data sources: (1) Hospital Galba Velloso's registry (Belo Horizonte, Brazil, 19°55′S, 46°53′W, tropical savanna climate) of 30,300 patients (2002–2009), 3,769 schizophrenics; (2) National System Information on Births from Belo Horizonte (2002–2009). Statistics: Monthly distribution of births was compared between schizophrenics and the general population, using Chi-square. Cosinor analyses regarding a circannual period were performed. Catatonic, undifferentiated, and hebephrenic subtypes comprised the deteriorated subgroup (ICD-10), for which separate analyses were performed.
Results Schizophrenia births peaked in March–May (autumn) and had a trough in October-December (spring), following the general population seasonal pattern. The amplitude of seasonal variation of births was much higher (48 %) in schizophrenics than for the general population (19 %). Deteriorated subtypes were more frequently born in July–August (winter) than other psychiatric patients ($P < 0.001$), but this was not the case for non-deteriorated subtypes ($P = 0.930$).
Conclusion Seasonality of births for schizophrenics was confirmed in a tropical region, and showed a more pronounced variation than in the general population. Neurobiological and behavioral explanations for this finding shall be further explored in future studies.

P3N02

Determinants for psychiatric admission and readmission in a Brazilian public hospital

Fernando Madalena Volpe, Eliane Mussel da Silva, Carina Ribeiro de Aquino, Felipe António Gontijo, Poliana Bergamaschine Giovani, Rodrigo José Silva de Souza, Terezinha Neila dos Santos

Hospital Foundation of Minas Gerais

Background Psychiatric reforms in the last two decades have altered the dynamics of mental health care in Brazil, mostly by means of decentralization of care. However, no objective evaluations of risk factors for psychiatric admission and readmission have been conducted in the context of this new public mental health scenario.
Objective To investigate the determinants of admission and readmission in a public psychiatric hospital of Belo Horizonte, Brazil.
Methods Analysis of hospital registry of Hospital Galba Velloso, Belo Horizonte, Brazil, from 2002 to 2009. Readmission was defined as any subsequent hospitalization, for the same diagnosis, up to 1 year after last discharge. Multivariate logistic regressions were performed considering two sets of subgroups: (a) admitted versus not admitted patients, among all emergency department consultations; (b) readmissions versus single admissions in 1 year.
Results Male gender (OR = 1.06) and residing outside Belo Horizonte (OR = 1.78 for the metropolitan area, and 7.15 for other cities) were significant independent risk factors for admission, while older age was a protective factor (OR = 0.99). Patients with psychotic disorders were at higher risk of admission (OR = 2.21), followed by mood disorders (OR = 1.49), substance abuse/dependence (OR = 1) and neurotic disorders (OR = 0.30). Global readmission rate was 20.5 %. Male gender (OR = 1.23), age (OR = 0.99), and living outside Belo Horizonte (OR = 0.69 for the metropolitan area, and 0.15 for other cities) were all significant independent determinants of readmission. Patients with psychotic disorders (OR = 1.68) were at higher risk of readmission, compared to those with substance abuse or dependence (OR = 1), mood disorders (OR = 0.76), and neurotic disorders (OR = 0.58).
Conclusion Younger age, male gender, a diagnosis of psychotic disorder, and residing far from the hospital were significant risk factors for both admission and readmission for psychiatric patients. Community and primary health care centers, especially in smaller towns, may presently not be apt to retain the most severe and violent psychiatric cases, which still demand hospitalization.

P3N03

Anxiety and depression in elderly in three Croatian counties: are they associated with socio-demographic characteristics?

Draženka Vadla, Jadranka Božikov, Luka Kovačić

Institute of Public Health Koprivnica-Križevci County; Andrija Štampar School of Public Health, School of Medicine, University of Zagreb

Background The number and proportion of elderly is growing and their mental health is deteriorating with ageing.
Objectives The aims were to investigate the prevalence of anxiety and depression in elderly from three Croatian counties and their association with socio-demographic characteristics: age, gender and living alone/not living alone.
Methods A cross-sectional study was carried out in one mainly rural county (Koprivnica) and two mainly urban counties (Dubrovnik and Pula), as a part of a broader study *Second Decennial Survey of the Health Needs and Health care for Older People in Europe* within the European network *Tipping the Balance Towards Primary Health Care*. A sample of 1,469 people aged 70 or more were derived from the counties' population registries and interviewed in 2006. The Hospital Anxiety and Depression Scale (HAD) was used to screen for self-reported symptoms of anxiety and depression and findings were expressed as normal, borderline or probable which were further associated with socio-demographic characteristics. Data were analysed descriptively and non-parametric tests (Kruskal–Wallis, Pearson's c^2) were used for comparisons.
Results High prevalence of probable and borderline anxiety (20 and 24 %) and depression (31 and 23 %, respectively) was found, with differences between counties ($p < 0.001$). The highest prevalence of probable and borderline anxiety (28 % each) was recorded in Koprivnica and the lowest in Dubrovnik (16 and 19 %, respectively). The findings for depression in Koprivnica showed the prevalence of 40 and 23 % for probable and borderline respectively, while in Dubrovnik that was 26 and 20 %. The prevalence of both disorders, anxiety and depression, were slightly above in Pula than those from Dubrovnik. The level of anxiety was higher in women (24 % probable, 25 % borderline) than men (14 and 21 %, respectively), $p < 0.001$; while for depression gender-based difference was not statistically significant. The prevalence of probable depression increases with age (from 26 % in the age group 70–74 to 43 % in the age group 90+; $p = 0.034$) and that of probable anxiety decreases (from 21 to 12 %, respectively; $p = 0.028$). Living alone does not affect the prevalence of anxiety and depression.
Conclusions The prevalence of anxiety and depression in elderly is high, particularly in rural areas. The prevalence of anxiety decreases with age while that of depression increases. Women are more likely to

show sings of anxiety than man; living alone was not a significant risk factor. These should be taken into account while planning provision of health care for elderly at a local level.

P3N04

Posttraumatic stress disorders are associated with type 2 diabetes mellitus but not with pre-diabetic conditions: Results from the population-based KORA F4 study

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Background Symptoms of posttraumatic stress disorder (PTSD) are among the main disturbances in the aftermath of a traumatic event and might lead to the development of serious diseases. For instance, several recent studies have indicated an increase in risk of type 2 diabetes mellitus (T2DM) in subjects with PTSD symptoms.
Objectives The aim of the present study was therefore to evaluate the association between T2DM or pre-diabetic conditions (PDC: impaired fasting glucose, impaired glucose tolerance or both) and participants with PTSD symptoms compared to participants without PTSD symptoms or who reported no traumatic event.
Methods The study population consisted of 2,970 participants aged 32–81 years drawn from the population-based KORA F4 study conducted in 2006–08 as part of the MONICA/KORA Augsburg cohort study covering the Augsburg region in Southern Germany. PTSD conditions were measured by the Impact of Event Scale, the Posttraumatic Diagnostic Scale and interview data. The exposure variable, PTSD symptoms, was classified into the four categories; no traumatic event, and no, partial or full PTSD. Type 2 diabetes ($n = 333$) and pre-diabetic conditions ($n = 498$) were assessed by an oral glucose tolerance test and by a physician's validation. The associations of PTSD with T2DM or PDC were estimated by multinomial logistic regression analyses with different adjustments for sociodemographic characteristics, metabolic risk factors or psychosomatic complaints.
Results Participants with full PTSD were significantly more often women, older, not living alone, normotensive and suffering from additional psychosomatic complaints. In multinomial logistic regression, full PTSD was significantly associated with T2DM indicated by an odds ratio of 3.90 (95 % confidence interval 1.61–9. 45, p value 0.003) compared to subjects with no traumatic event in a model adjusted for sociodemographic characteristics and metabolic risk factors. In contrast, no significant association was found between PTSD symptoms and PDC. Significance with T2DM remained after additional adjustment for further psychosomatic complaints (p value 0.006). Associations with T2DM or PDC were very similar and did not differ significantly for participants reporting no traumatic event compared to those participants having experienced a traumatic event but reporting no PTSD symptoms.
Conclusions Full PTSD conditions were associated with T2DM even after controlling for sociodemographic characteristics and metabolic risk factors as well as other psychosomatic complaints. Suffering by a high amount of PTSD symptoms might activate chronic stress symptoms and trigger adverse physiological mechanisms that lead to the development of T2DM. Future cohort studies are needed to confirm temporal and potential causal relationships between PTSD and T2DM.

P3N05

Prevalence and risk factors for depression in older people in Cyprus

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Department of Public Health, Medical School, University of Patras, Greece; Postgraduate Program Health Management, Frederick University, Nicosia, Cyprus

Background Depression in older adults is a common mental health disorder, leading to serious functional impairment and reduced quality of life.
Objectives The aim of the present study was to estimate the prevalence of depressive symptoms, to estimate possible under-diagnosis of depression and to investigate the association with socio-demographic variables and chronic diseases in a community sample in older people in Cyprus.
Method Cross sectional study including individuals in the community and residential care in Cyprus during the time period from September to November 2011. A structured questionnaire was administered to 206 older adults (110 in the community, 65 in outpatient clinics, 31 in nursing homes) including socio-demographic characteristics, chronic diseases and three questions from the European Health Interview Survey (EHIS) questionnaire, regarding self-reported and/or by a physician diagnosed depression. Depression was assessed using the Greek version of the 15-item Geriatric Depression Scale (GDS-15). The scores of the GDS were compared to the corresponding answers of the EHIS questions and associated with the various recorded basic parameters. Statistical analysis was conducted using the SPSS v. 17.0.
Results The overall prevalence of depression according to GDS-15 was 19 % (18 % moderate, 1 % severe depressive symptoms). Highest prevalence with 30.9 % was observed in the community, followed by 16.1 % in the residential care, whereas no depression was present among patients visiting the outpatient clinics. In a univariate analysis, the following variables were significantly associated with depression: female gender ($p = 0.003$), being not married, including divorced and widowed ($p = 0.041$), living in rural/remote areas ($p = 0.036$) and living in the community compared to outpatients or nursing home residents (($p < 0.001$). None statistically significant associations were observed with educational level, income and chronic diseases. Out of the 94 individuals reporting never had been affected by depression, 18.1 % screened positive for moderate depression and out of the 15 individuals who reported not to know if they have/had depression, 47 % revealed depressive symptoms using the GDS-15. Most of the participants stated depression derives mainly from loneliness (80.6 %) and serious medical conditions (69.4 %).
Conclusions According to GDS estimates, 30 % older adults in the community of the studied area in Cyprus had depression symptoms. A remarkable percentage of those declaring not to have depression screened positive for moderate depressive symptoms according to GDS-15. Detection and management of older adults with depression should be a high priority when designing prevention programs in the community, including the systematic use of the GDS-15 in primary care practices.

P3N06

Prevalence of depressive symptoms in Health Science College students of the University of Beira interior

Filipe Coutinho, Carlos Leitão, Vítor Oliveira

University of Beira Interior, Covilhã; Centro Hospitalar da Cova da Beira, Covilhã

Background The presence of depressive disorders leads to a high negative impact on the population at various levels. Several studies described the university population as susceptible to the development of depressive symptoms, demonstrating a progressive increase in recent years.

This study was created to supply the limited epidemiological investigation in Portugal in Mental Health field and provide an overview of this reality in a Portuguese university sample.

Objectives (1) To determine the prevalence of depressive symptoms in students from the Faculty of Health Sciences of the University of Beira Interior and analyze its relation to certain factors; (2) Contribute to the validation of the Portuguese translated version of the Beck Depression Inventory (BDI) in a university sample.

Methodology It is presented as a cross-sectional research, drafted in a descriptive and analytical component of data. Based on the application of an anonymous questionnaire via online, which consisted of two parts: (1) socio-demographic data and (2) BDI. The results were analyzed using SPSS® software—version 17 for Windows® and were considered significant at $p < 0.05$. We resorted to the test of independence Chi-square to analyse the relationships between variables. In the validation of the BDI, was evaluated the internal consistency and factorial analysis.

Results In total, 359 (36.2 %) students have joined this investigation and most of them were single and female. In the presence of 26 (7.24 %) students with previous psychiatric illness, 19 (73.1 %) referred Depression as a disease in cause. The prevalence of symptoms (cutoff point >10 points in BDI) was 42.1 %. Among students of each course, it was found that 50 % of Pharmaceutical Sciences, 46 % of Biomedical Sciences and 37 % of Medicine had depressive symptoms. The highest prevalence of symptoms was significantly associated with: low social and economical status, lower satisfaction with the course, a decrease in leisure activities and regular consumption of caffeine. In the validation of the BDI, we obtained a Cronbach's alpha of 0.89; the 21 BDI items were reduced to four dimensions: cognitive, affective, somatic and depressive deviant functioning.

Conclusion As can be seen in this research, the presence of depressive symptoms in college students is a reality which can not be ignored. It is crucial to improve programs of psychological support for earlier detection and prevention of future negative consequences, such as suicide. The BDI version showed good psychometric properties for the studied population.

P3N07

Dependency in Portuguese older people with mental disorders through the EASYcare

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Secção Autónoma de Ciências da Saúde da Universidade de Aveiro; Escola Superior de Saúde da Universidade de Aveiro; Centro Interdisciplinar de Investigação Marinha e Ambiental, Porto; Departamento de Matemática da Universidade de Aveiro, Centro de Investigação e Desenvolvimento em Matemática; Unidade de investigação e Formação sobre Adultos e Idosos, Porto

Background Mental health and functional (in)dependence are major issues to older people, their families and support systems. Physical illness, functional incapacity, mental disorders and social problems prevalence usually increase with age. Assessment is crucial to older people care, especially those with mental disorders.

Objective To evaluate the functional dependency in activities of daily living of older people with mental disorders.

Methods We conducted a cross-sectional and retrospective observational study of elderly users (>64 years) with mental disorders, admitted at the Psychogeriatrics Department in Psychiatric Hospital Magalhães Lemos. Data were obtained from clinical processes from that service. A sample of 157 (45.4 %) users was established. Functional dependency was assessed using EASYcare (Assessment System for the Elderly) scale. We performed a detailed analysis of the socio-demographic and clinical variables, a factor analysis of EASYcare scale items and a cluster analysis to identify groups with different functional (in)dependencies.

Results The instrument showed very good internal consistency (alpha = 0.95) and two factors were found: IADL—Instrumental Activities of Daily Living (0,92) and BADL—Basic Activities of Daily Living (0.88). Cluster analysis identified four groups: "independent" (44.7 %), "light dependent" (36.8 %), "moderate dependent" (13.2 %) and "severe dependent" (5.3 %). Independents have the lowest age average (72.8 years) with a higher prevalence of depressive (64.0 %) and anxiety disorders (100.0 %) than other groups. Cognitive impairment was not present in independents. Severe dependents have highest age average and high scores of functional disability (89.2/100). Functional disability showed significant differences between all groups ($p < 0.001$), and it was higher according higher dependency ($p < 0.001$).

Conclusions Around half of the elderly showed independence considering their functional capacity even in the presence of mental disorder. The data show that older people with mental disorder are classified into different levels of functional dependency and tend to start at a younger age compared with other studies for older people without mental disorders. The assessment of functional disability is an important indicator for the health and social services in planning activities that promote independency, autonomy, welfare and quality of life.

P3N08

Child abuse and mental health in adulthood

Jutta Lindert, Martha Csoeff, Diogo Costa, Henrique Barros

Protestant University of Ludwigsburg, Ludwigsburg, Germany; Harvard School of Public Health, Boston, USA; University of Porto

Background Domestic violence is one of the major Public Health problems, worldwide. To understand better the factors associated with domestic violence in adulthood we conducted a multisite study in Europe.

Method Multi-center observational study of community dwelling persons aged 18–64 in Ghent, Belgium; Stuttgart, Germany; Athens, Greece; Budapest, Hungary; four boroughs in the United London, United Kingdom; Granada, Spain; Porto, Portugal; Ostersund, Sweden.

Results Total number of participants was 3,879. Abuse in early life was significantly associated with past 12 months physical violence among men (physical violence: OR = 1.75; sexual violence: OR = 1.75; psychological violence: OR = 3.28; neglect: OR = 3.84) and among women (physical violence: OR = 1.83; sexual violence: OR = 2.50; psychological violence: OR = 2.30; neglect: OR = 3.27).

Conclusion Abuse in early life is significantly associated with domestic violence which might suggest that prevention of domestic violence is related to interventions to prevent child abuse.

P3N09

Anthropometric data, energy consumption and psychotropic therapy in psychiatric patients

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Background In the last year, one in five Portuguese (23 %) suffered from a mental illness and almost half (43 %) has suffered, once in a lifetime, of these disorders. (Furtado et al., 2010) Data indicated that patients with persistent mental illness have higher obesity prevalence, comparing with general populations (Daumit et al. 2003).
Objectives It aims to study the patient profile related to Anthropometric data (body mass index–BMI, body fat percentage–BF%), Energy consumption and Psychotropic Therapy of patients with psychiatric disorders treated with psychotropic drugs. It aims also to verify the correlation between Energy consumption and Anthropometry data with Psychotropic therapy.
Methods We conducted a cross-sectional and observational study, included as preliminary sample 21 patients with psychopathology, treated pharmacological with psychotherapy, aged over 18 years, following in the *Julio de Matos* Hospital, Lisbon—Portugal, on 2012 February. We accounted number of Psychotropic drugs consumption, by interview, between the follow drugs: Antidepressants, Anxiolytics, Mood stabilizers and Antipsychotics. The Anthropometrics data were: BMI, categorized according WHO guidelines; and BF%, evaluated by bioelectrical impedance and categorized according Gallagher et al. (2000). To calculate the energy needs, it was used the Harris-Benedict equation and physical activity habits, assessed by IPAQ8 (Craig et al., 2003). The Energy consumption was collected through the previous day recall and categorized, by energy needs comparison, in: Hypocaloric, Normocaloric and Hypercaloric. Statistical analysis was performed by Spearman's correlation coefficient (R), using SPSS.
Results The sample was mostly females (52 %) and the mean age was 42 ± 14 (20–64) years old. Regarding the BMI, 38.1 % was Normalweight, 28.6 % Pre-Obesity, 14.3 % Obese typeI, 14.3 % typeII and 4.8 % typeIII. Regard to the BF%, 4.8 % was Underfat, 28.6 % Healthy in fat and 66.7 % was Overfat. The Energy consumption was 23.8 % Hypocaloric, 33.3 % Normocaloric and 42.9 % Hypercaloric. The Psychotropic Therapy used was 80.9 % Antidepressants, 47.6 % Anxiolytics, 14.3 % Mood stabilizers and 52.4 % Antipsychotics. There was a moderate positive correlation between the Energy consumption with BMI ($R = 0.588$; $p = 0{,}005$) and with BF% ($R = 0.470$; $p = 0.032$). There was a strong positive correlation between Energy consumption with number of Psychotropic drugs consumption ($R = 0.717$; $p < 0.001$). Regarding the Psychotropic treatment and BMI or FM%, no correlation was found.
Conclusion These results suggest that patient's Anthropometry data is not directly related to the Psychotropic treatment, but with the Energy consumption. Energy consumption is higher in patients who consume a large number of Psychotropic drugs. Energy consumption is the main factor for the anthropometric parameters change in this sample.

P3N10

Determinants of insomnia in a sample of Portuguese teachers

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Background Insomnia is the most common form of sleep disorders that originates considerable direct, indirect and intangible costs. Insomnia is an exceedingly common sleep disorder. Several epidemiologic studies have linked the occurrence of insomnia with the individual's profession. Insomnia has been associated with socio-demographic characteristics, working conditions, lifestyles, mental disorders and physical illnesses. In Portugal, teachers live a specific socio-economic situation caused by the distance between home and the workplace, unstable job situation and student's misbehavior problems.
Objectives The aim of this study was to determine the prevalence of insomnia in a sample of Portuguese elementary teachers.
Methods In a cross-sectional study we evaluated all teachers of sixteen public elementary schools of the district of Viseu, Portugal. Data was collected using a self-administered questionnaire. We obtained a final sample of 864 elementary teachers (638 female, 73.8 %), age = 43.7 ± 7.6 years. Insomnia was defined, according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), as the presence of one or more of the following symptoms: (1) difficulty initiating sleep, (2) difficulty maintaining sleep, (3) early morning awakening and difficulty getting back to sleep, (4) non-restorative sleep, that lasts for a period of 1 month. Prevalence was expressed in proportions with 95 % confidence intervals (CI), and compared by the Chi-square test.
Results The prevalence of insomnia was 36.0 % (95 % CI = 30.9–41.4). The prevalence of difficulty initiating sleep, difficulty maintaining sleep, early morning awakening with difficulty getting back to sleep, non-restorative sleep was 14.1 % (95 % CI = 11.4–18.0), 19.3 % (95 % CI = 13.5–21.6), 17.2 % (95 % CI = 15.8–23.5) and 20.3 % (95 % CI = 17.0–24.6), respectively. Insomnia was associated with gender (female, OR = 2.5, 95 % CI = 1.4–4.5), marital status (married, OR = 1.6, 95 % CI = 1.1–2.7), use of any medication in the previous 12 months (OR = 3.5, 95 % CI = 2.1–5.7); depressive symptoms (OR = 3.2, 95 % CI = 1.7–5.9); sports practice (OR = 0.6, 95 % CI = 0.4–1.1); have a second residence (OR = 1.7, 95 % CI = 1.0–3.2); smoking habits (OR = 1.8, 95 % CI = 1.0–3.3); sports practice (OR = 0.65, 95 % CI = 0.40–1.0) and alcohol consumption (OR = 0.7, 95 % CI = 0.42–1.0).
Conclusion Portuguese elementary teachers present a high prevalence of insomnia, higher than reported for other professionals. Insomnia was associated with socio-demographic characteristics and occupational variables. The implementation of health promotion programs directed to elementary teachers should be developed and included in occupational health programs.

P3N11

Mental health of schoolchildren in Vojvodina

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Institute of Public Health of Vojvodina

Background Mental health in young people is a topic of increasing importance. Facing the magnitude of the burden of disease related to young people's mental disorders, WHO declared that young people's

mental health was "a key area of concern" to which professionals and policy-makers must direct their attention.
Objectives To analyze mental health of children age 7–19 in Vojvodina, Northern Province of Serbia.
Methods Research was conducted as a cross-sectional study on representative sample of 672 children age 7–19 years in Vojvodina. It was part of the National study: Health of the population in Serbia. For the purpose of this paper we analyzed part of the questionnaire about mental health of the children age 7–19 and two complex indicators for age 15–19 years recommended by EUROHIS, Indicator of mental health (Mental health indicator 5—MHI5) and Vitality scale, both part of the SF-36 questionnaire. Scales range from 0 to 100, with higher results indicating better mental health.
Results Showed that 22.2 % of children age 7–19 years in Vojvodina felt tension and stress in the month prior to investigation, significantly more among older age group 15–19. Every fifth child reported having emotional problems, also significantly more frequent in older age group. The average value of the MHI5 was 71.86 with significantly better score for children with higher family affluence. Lower values of MHI5 (below 58), indicating psychological distress, were found for every sixth young person age 15–19, significantly more in lower family affluence group. Better score (above 78) had 32.1 % of young persons, significantly more males and those from more affluent group. The average score value on Vitality scale was 64,76. Poorer values (equal or less than 62.5) had 44.4 % of young, significantly more in the less affluent group. Better score (equal or greater than 72.5) had 30 % of young.
Conclusions The mental health of young people in Vojvodina is generally good. Emotional problems and feeling of tension and stress were found in every fifth child. Poorer values of complex indicators, MHI5 and Vitality scale had those with lowest socioeconomic status. Socioeconomic status, gender and age differences should be reflected in policy considerations and intervention and prevention programmes.

P3N12

Assessing the determinants of the use of different marital conflict management styles

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Background Seeing conflict as a human condition, as a natural phenomenon and a potentially positive interpersonal situation is the basis to improve our behavior when we are dealing with it. Thus, understanding conflict is the most important step toward its resolution productive and positive.
Objective To describe the main management styles in marital conflicts and its determinants.
Methods According to the Rahim and Bonoma's (1979) model of five styles of conflict management (integration, avoidance, domination, servility and commitment), we have applied *ROCI-II* (Rahim Organizational Conflict Inventory) to a sample composed by married individuals and people living in conjugality for at least 6 months. Information on gender, age, education, gender of the partner, occupation, working situation and condition, household income was enquired to the participants. We evaluated 364 participants using snow ball sampling method. Associations between the management styles and gender, age education and working situation were quantified with coefficients obtained using linear regression.
Results The sample is composed by 69 % of women, the mean age is 35 years old, participants live together for at least 8 years, 68 % are employed and 20 % had a monthly household income more than 3,000€. The style integration is negatively associated with education ($\beta = -1.23$; CI 95 %; -2.09; -0.37), and the style avoidance is negatively associated with female gender ($\beta = -1.70$; CI 95 %; -2.49; -0.91). The use of the domination style is positively related with age, being the youngest more dominating in the conjugal relation than the oldest ($\beta = 2.37$; CI 95 %; 1.01; 3.72). Results also highlight that servility style is negatively associated with the female gender ($\beta = -2.25$; CI 95 %; -2.99; -1.51). Finally, the style commitment is positively associated with female ($\beta = 0.54$; CI 95 %; 0.13; 0.95).
Conclusions In our sample, the styles of conflict management seem to be significantly associated with the variable gender, however the variables age and education are also associated with the use of the different styles of conflict management. Men and women manage conflicts in the conjugality differently. Men face the conjugal conflict in a way that gives more attention to the interests of the companion than females. This can be seen as a strategy for better operation of the relation. The youngest participants (independently of the gender) use more the domination style in their relations, what can be explained by the fact of the couple is in a very early phase of formation.

Poster Topic 3O. Cancer

P3O01

Incidence and mortality patterns of the top 5 cancers in Martinique island from 1984 to 2008

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Background Since 1984, Martinique has undergone significant changes in economic development, along with increased life expectancy, lifestyle modification and dissemination of new medical technologies. Cancer risk on the island is the resultant of different endogenous and exogenous factors, with an increase in exogenous factors in recent years. The present paper examines the incidence and mortality patterns for the top 5 cancers in Martinique (prostate, breast, colorectal, stomach and cervix cancers) between 1984 and 2008.
Methods Data on incident cancer cases from 1984 to 2008 were obtained from the population-based Martinique Cancer Registry. Age-standardized incidence and mortality rates were obtained for each 5-year period. An age-drift model was used to determine average annual percent changes (APC).
Results Age-adjusted incidence rates increased significantly for prostate, breast and colorectal cancers between 1984 and 2008. Prostate and breast cancers rank first in terms of incidence and mortality in men and women. A spectacular increase was noted for prostate cancer incidence rates which evolved from 54 to 202 cancer cases per 10^5 men-years (APC: +5.04 %). Martinique actually registers record incidence rates for this cancer in the Caribbean and worldwide. Breast cancer incidence rates in women went from 27 to 61 cases per 10^5 women-years (APC: +3.92 %). Mortality trends were on the decline for both prostate and breast cancers (APC: -7.14 and -6.51 % respectively). As for colorectal cancer incidence, it has known a sharp increase, placing it as the second cancer in men and women. The observed incidence APC, between 2004 and 2008, is 14.56 and 3.61 % in men and women respectively, while the mortality APC between 1984 and 2008 is -7.63 % in men (-7.21 % in women). In contrast, the burden of stomach and cervix cancers has known a steady decrease, with the most notable decline observed for cervix cancers (APCs: -3.76 % for incidence; -12.31 % for mortality).

Conclusion Study results highlight the epidemiological transition that began in the 90s on the island with decreased incidence for cancers having an infectious etiology (stomach, cervix) and increased frequency for cancers whose evolution is strongly influenced by "modernity" and lifestyle changes (prostate, breast, colorectal). The dual status of Martinique as a French overseas department and West Indies territory, along with its unique geographical, ethnic and environmental characteristics, make of it an interesting model for describing and analyzing cancer trends and disparities. In this context, the Martinique Cancer Registry, performing continual cancer registration since 1983, has an essential role to play.

P3O02

Occupational exposures contribute to educational inequalities in laryngeal cancer risk among men: the use of an occupational index

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Introduction Previous studies tried to quantitatively assess the association between socioeconomic status (SES) and laryngeal cancer. Alcohol and tobacco consumption explain a large part, but not all, of the social inequalities. Occupational exposures might explain a part of the remaining proportion but the components and pathways of the socioeconomic effect have yet to be fully disentangled.
Materials and methods A population-based case–control study on laryngeal cancer conducted in South-West Germany in 1998–2000, included 236 male cases and 702 controls. Information on occupational history, smoking, alcohol consumption and education was collected with face-to-face interviews. Job-history was coded according to ISCO68. A recently developed job-classification index covering physical and psychosocial dimensions was used to account for the occupational burden. Odds ratios (OR) and their 95 % confidence intervals (CIs) were computed using conditional logistic regression. Additionally, we followed a hierarchical concept to interpret these results.
Results When adjusted for smoking and alcohol consumption, higher ORs were found for lower education (OR for primary vs. tertiary = 7.9, 95 % CI: 3.8–16.4). This OR decreased after further adjustment using the physical job index (OR = 5.7, 95 % CI: 2.5, 13.0), similar to the OR using a sub-index which focuses on jobs involving potentially carcinogenic agents for the upper aero digestive tract. Following the hierarchical model approach, around 32 % (physical job index) or even more (job sub-index: 40 %) of the effect attributed to education might be allocated to the occupational burden. Additionally, detailed exposures listed in a substance check list were compared to the exposure ranking of the carcinogenic agents sub-index.
Conclusion Smoking and alcohol consumption do not totally explain the social differences in laryngeal cancer risk. A large percentage but not all seems to be allocated to occupational exposure. We suggest to additionally using a recently developed job-index, easy to apply to occupational job histories, to better differentiate educational effects. To have an order of magnitude of a potential response bias, we compared control group and census data.

P3O03

Factors associated with mammography screening in Patras, Western Greece

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Background Breast cancer is one of the most common cancers in women both in the developed and developing countries. The incidence is estimated to be about 421,000 new cases and 129,000 deaths for the entire Europe in 2008 (Ferlay et al., 2010). Despite advances in medical and surgical treatments, the mortality rate has not markedly declined in recent years. Screening is one of the most effective methods to detect cancer at initial stage when it is easily manageable and can be treated by using a number of treatment options, reducing thus the risk of death from breast cancer by approximately 30 % in women over 50 years old.
Objectives The aim of this study was to identify the proportion of women (n = 490), aged over 40 years, living in the city of Patras, Western Greece, who reported having had a mammography for the early detection of breast cancer and to assess the factors associated with mammography screening uptake.
Methods Data was collected and analyzed from a representative sample of 490 women, aged over 40 years, who were interviewed through a multipurpose questionnaire, including questions on screening practices as well as a set of explanatory demographic, clinical and lifestyle variables. Age-weighted prevalence estimates of ever having had a mammography and having had one in the past 3 years was calculated and Chi-squared and multiple logistic regression analyses were used to examine factors associated with screening.
Results 60.5 % had ever had a mammography test, with 48.6 % tested in the previous 3 years. Women aged 50–59 years were more likely to have had a mammography compared to younger and older women ($p < 0.001$). Mammography testing shows a statistical significant association with the educational level, increasing the rates from 32.7 % in women with lower education to 73.0 % in highest educated women ($p < 0.01$). Employed women were more likely to have had mammography than the unemployed (75.9 vs. 54.8 %, $p < 0.001$) as well as women with higher monthly household income (>3,000€) compared to those with income under 500€ (77.6 vs. 28.8 %, $p < 0.001$).
Conclusions The prevalence of mammography screening in Patras is rather low. Factors associated with higher rates of mammography screening are middle age, higher education, higher household income and employment. Our findings support the necessity of implementation of national screening programs or targeted screening interventions mainly in the identified under-screened population subgroups, i.e. women with socioeconomic disadvantages.

P3O04

Trend analysis of gastric cancer incidence in Iran and its six geographical areas during 2000–2005

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Objective Gastric cancer is the fourth most common cancer worldwide. While it is one of the most common cancers in Iran, there is still no data regarding its incidence trend in the country. This study is the first of its type to investigate trends in incidence of gastric cancer in Iran and its six geographical areas during 2000–2005 using data from Iranian cancer registry.

Materials and methods The registered data for gastric cancer cases in National Cancer Registry System were extracted from the Ministry of Health and Medical Education, Center for Disease Control & Management, code C16. First, according to WHO population, the sex-standardized incidence rate in both sexes and then the trends of incidence rate during 2000–2005 were investigated separately for different geographical areas of the country.
Findings the incidence rate of gastric cancer in Iran and its six geographical areas during 2000–2005 was increasing albeit with differences in their slopes. The overall incidence rate of the country had increased from 2.8 in 2000 to 9.1 per 100,000 persons per year in 2005. It had increased from 4.1 to 13.2 per 100,000 persons per year in men. The average 6-years incidence of gastric cancer in the central and northwestern border of Caspian Sea was 7.8 per 100,000 persons per year, while it was 0.9 per 100,000 persons per year in the border of Persian Gulf. Generally the incidence rate in men was higher than in women.
Conclusion Iran is one of the high-risk areas for gastric cancer. The increase in incidence of gastric cancer might continue in the future partly because of improvement in cancer registry system as well as increase in risk of this cancer.

P3O05

Monitoring cancer care: a model for breast cancer care in central Italy

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Background Breast cancer care is a complex pathway and specialized breast cancer care leads to significant reductions in mortality. Specific quality indicators are essential to monitor effectiveness and to guide improvements in health care. Although cancer registry data are the gold standard, Hospital Discharge Records (HDR) can be used to evaluate cancer care.
Objectives To construct evidence based specific quality indicators for assessing breast cancer care.
To assess quality of care in diagnosis and treatment of female breast cancer in Latina Health Unit (LHU) by means of the indicators selected.
Methods Using HDR of Latium Region, female residents in the 500.000 inhabitants Latina province were selected provided they had a principal or secondary diagnosis of invasive or in situ breast cancer (ICD9CM 174.0-9 or 233.90) and a related breast surgery procedure in 2008–2009. Selected cases were compared with Cancer Registry cases for the year 2008 to verify the accuracy of selection. Specific indicators were defined to monitor and assess the breast cancer care process. To construct indicators HDR were linked with outpatient and inpatient selected procedures (breast biopsy, conservative and reconstructive surgery, chemotherapy, radiotherapy, lymphadenectomy) for the period 2007–2010 using name, surname, date and place of birth as linkage criteria.
Results 742 patients were selected from HDR for the years 2008–2009. 346/377 (91.7 %) of the cases for the year 2008 matched with cancer registry cases.
Indicators and percentages:
Preoperative diagnosis 27 % of patients with diagnostic procedure before surgery. Cases detected through screening were excluded.
Primary tumor surgery 70.8 % with conservative surgery.
Axillary surgery 74.5 % underwent lymphadenectomy but only 22.4 % of conservative surgery underwent sentinel node biopsy.
Reconstructive surgery reconstructive surgery in 21.2 % of patient with radical surgery.
Adjuvant chemotherapy 40 % of patients with adjuvant chemotherapy within 27 week, 67 % below 40 years of age.
Adjuvant Radiotherapy 71.3 % of conservative surgery patients.
Conclusions According to cancer registry data the sensitivity of the model to select eligible patients for cancer care monitoring was 92 %. The low rate of preoperative procedures is probably due to incomplete information on HDR while the low rate of sentinel node biopsies points to incorrect coding procedures. Strengths and weakness of the breast cancer care process in our LHU have been identified by the model. Administrative databases can be used in addition to cancer registry data to monitor and improve cancer care in local health units.

P3O06

Epidemiology of and survival from gastric cancer in the Arkhangelsk region, Russia, in 2000–2010: a registry-based historical cohort study

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Background Gastric cancer (GC) incidence has been increasing both in Russia and worldwide. The Arkhangelsk Regional Cancer Register (ARCR) was established in 1997. From 2000, all new cases of stomach cancer with patients' demographic and clinical data, tumor characteristics and outcomes are registered in the ARCR.
Objectives To assess the incidence of and mortality from GC in the Arkhangelsk region, Northwest Russia in 2000–2010 and to study factors influencing survival.
Methods All new cases of stomach cancer in the Arkhangelsk region in 2000–2010 and their characteristics were extracted from the ARCR. Population size was obtained from the Regional Bureau of Statistics. Incidence and mortality were calculated per 100,000 standardized to world population. Survival was assessed by Kaplan–Meier analysis, life-tables and Cox regression.
Results Altogether 5,926 new cases of GC occurred in the region during the study period. Females and males constituted 44.9 and 55.1 % of cases, respectively. Stages 1, 2, 3, and 4 were detected in 3.7, 14.1, 21.4, and 42.8 % of patients, respectively; while in 18.0 % of cases the stage of GC was not identified. The incidence of GC decreased from 32.9 per 100,000 in 2000 to 25.2 per 100,000 in 2010. Mortality increased from 13.3 per 100,000 in 2000 to 20.5 per 100,000 in 2010. One-year survival was 27 %, 5-year survival was 17 %. There was no difference in survival from GC by gender (log rank test $p = 0.89$). Median survival was 6 months (95 % CI: 5.6–6.4). Only the stage of the disease was significantly associated with survival both in univariate (log rank test <0.001) and multivariate models ($p < 0.001$).
Conclusions Incidence of GC in Arkhangelsk region of Russia decreased during the last decade while the mortality increased. Most of the patients are males. One- and five-year survival rates were similar among men and women. Only stage of cancer influenced the survival in GC patients while neither age, place of residence or gender were not associated with survival.

P3O07

Lung cancer incidence trends in the Central region of Portugal (1990–2009)

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Introduction Lung cancer has been the most common cancer in the world for several decades and is the first leading cause of cancer death worldwide. Changes in the incidence of lung cancer have been observed worldwide.
Objectives We aimed to describe lung cancer incidence trends in the Central region of Portugal, between 1990 and 2009.
Materials and methods Data on 6,735 lung cancer cases diagnosed between 1990 and 2009 were collected from the Registo Oncológico Regional do Centro. Data was extracted by gender and 5-year age groups. Population data was obtained from the Instituto Nacional de Estatística. Age-standardized rates were computed by the direct method (European standard population). The annual percentage changes (APC), and 95 % confidence intervals (95 % CI), were achieved by Poisson regression.
Results Lung cancer incidence increased 2.6 %/year (95 % CI: 0.9–4.4), between 1990 and 2009, for patients aged between 34 and 74 years. This increase was more pronounced in women (APC = 4.0 %/year, 95 % CI: 1.2–6.9) than in men (APC = 2.2 %/year, 95 % CI: 0.9–3.5). For younger individuals (aged between 35 and 44 years), considering both genders, no significant changes in incidence were found during this period (APC = 0.5 %/year, 95 % CI: −3.2–4.4); although women presented an increase of 7.9 %/year (95 % CI: 2.1–14.0). When considering individuals aged between 45 and 54 years an increase of 2.7 %/year (95 % CI: 0.7–4.8) was observed for both genders, with an increase of 2.6 %/year (95 % CI: 1.0–4.2) for males and no significant changes for females (APC = 2.2 %/year, 95 % CI: −0.9–5.4). For individuals with more than 54 and less than 65 years, an increase of 3.1 %/year (95 % CI: 1.7–4.5) was found for both genders; again, with women having a more pronounced effect with an increase of 4.0 %/year (95 % CI: 1.6–6.4), while men presented an increase of 2.8 %/year (95 % CI: 1.7–3.9). For older individuals (65–74 years), an increase of 2.5 %/year (95 % CI: 1.4–3.6) for both genders: 4.3 %/year (95 % CI: 2.4–6.2) for females and 2.1 %/year (95 % CI: 1.2–2.9) for males.
Discussion and conclusions Even with some possible bias, resulting from non-systematic registration procedures over this period, an increase in lung cancer incidence was found in this region of Portugal between 1990 and 2009, with a marked incidence increase in women. Considering the extreme lethal nature of lung cancer, our data suggests that lung cancer mortality, in this region, will remain high for the next decades, especially among women.

P3O08

Survival analysis of childhood cancer diagnosed in the central region of Portugal between 2000 and 2006

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Background In Portugal, oncological diseases represent the second leading cause of death, among children, after accidents. Survival estimates can be regarded as an indicator of the care provided to cancer patients.
Objectives We aimed to compute the survival of children diagnosed with cancer between 2000 and 2006, who lived in the catchment area of the Registo Oncológico Regional do Centro (RORCENTRO) and were registered in the database.
Methods In this study, 377 children aged less than 15 years old were followed until 31 December 2011. Cancers cases were classified in 12 groups, and corresponding subgroups, according to the International Classification of Childhood Cancer 3rd Edition (ICCC-3). Observed survival (S_o) was calculated through the actuarial method and estimates were presented according to sex, age group, place of residence, for each one of the 12 groups and for each one of the 10 most frequent subgroups. Comparisons across groups were performed by the Log-rank test.
Results Overall survival was 92.5, 83.0 and 79.0 %, 1, 3 and 5 years after diagnosis, respectively. No differences were observed in survival according to sex (5 years after diagnosis: $S_o = 78.1$ % and $S_o = 79.6$ %, for females and males, respectively, $p = 0.531$). Although non significant ($p = 0.421$), children older than 9 had a poorer survival than the younger's (5 years after diagnosis: $S_o = 80.0$ %, for children aged less than 5 years old, $S_o = 80.2$ %, for children aged between 5 and 9 years old and $S_o = 76.4$ % for children with more than 9 years old). No differences were found across districts of residence ($p = 0.054$). Although, children living in the district of Coimbra presented the higher survival ($S_o = 87.0$ %) and those living in the district of Guarda the lowest ($S_o = 70.0$ %). When considering each one the 12 ICCC-3 groups, 5 years after the diagnosis, Germ cell tumors, trophoblastic tumours, and neoplasms of gonads and Other and unspecified malignant neoplasms presented the higher survival ($S_o = 100.0$ %) and the Hepatic tumours the lower ($S_o = 50.0$ %). When considering each one of the 10 more frequent ICCC-3 subgroups, 5 years after the diagnosis, Hodgkin's lymphomas have the higher survival ($S_o = 96.2$ %) and rhabdomyosarcomas the lower ($S_o = 50.0$ %).
Conclusion In Portugal, overall childhood survival is high, with no differences according to sex, age and district of residence. Hodgkin's lymphomas are the tumours with a higher survival and rhabdomyosarcomas with the lower. Our results are not different from other European studies.

P3O09

20 years of the breast cancer screening programme in the central region of Portugal (1990–2009)

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Background Breast Cancer Screening (BCS) is known as an efficient tool for the reduction of breast cancer mortality. It's organization, management and monitorization must follow international standards, namely the European Guidelines for Quality Assurance in Breast Cancer Screening. The central region programme started in 1990 and reached the total coverage of the population in 2001, a target population of about 337,000 women in 2009.
Objectives The study present the major results of the breast cancer screening programme in the central region of Portugal, for the period 1990–2009.
Methods The central region BCS programme started in 1990 and reached the total coverage of the population in 2001. Uses the GP's lists for universal invitation of the 45–69 years old target population, designed as a decentralized programme, using, at present, 1 fixed unit and 9 mobile units, equipped with digital mammography, double

view, double blind reading with a final radiological classification, assessment at a dedicated clinical diagnosis unit and agreement with the 3 Coimbra's hospitals for dedicated final diagnosis and treatment for women found to have a suspicious malign lesion.
Results In the period 1990–2009, a total of 333,316 women had their initial screening, with a positive mammography rate of 7.8 %, a positive assessment rate of 0.62 % and a detection rate of 3.6 per thousand (990 invasive, 224 in situ and 34 non-classified malign lesions). Concerning subsequent screening, a total 723,943 mammographies were performed, with a positive mammography rate of 2.2 %, a positive assessment rate of 0.32 % and a detection rate of 2.3 per thousand (1,447 invasive, 261 in situ and 30 non-classified malign lesions). The global participation rate of the 2005–2009 period was 58.3 %).
Conclusions Since 1990, the central region BCS programme follows the European Guidelines in terms of organization and implementation. The performance indicators are comparable with the other European programmes, and the differences must be explained by some few organizational differences and by the lower incidence rates of breast cancer seen in the central region.

P3O10

A systematic review and meta-analysis of the current knowledge on the putative association between mucosal human papillomaviruses and breast cancer in women

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Background In recent years the involvement of human papillomaviruses (HPVs) in non-genital cancers has been discussed. Controversy exists particularly on the possible association between HPVs and breast cancer.
Objectives The purpose of this systematic review and meta-analysis was to investigate the current knowledge of the potential association between infection with the most common mucosal HPVs and the development of breast cancer in women and to assess the quality of this knowledge.
Methods A systematic review of articles published in English was conducted, using Pubmed Medline, Web of Science, Academic Search Premier, The Cochrane Library and Google Scholar. Additionally relevant journals and literature lists of the studies identified was considered. Search terms included human papillomavirus (hpv), breast cancer, breast carcinoma, breast neoplasm, and breast tumor/tumour. Case–control and case-only studies published between 2000 and 2011, which analyzed female breast tissues for the presence of mucosal HPVs by PCR-analysis using either type-specific primers only or in combination with general primers were included in the review.
Results A total of 17 studies (n = 1,416) were eligible for inclusion. Pooled analyses revealed that 19.3 % (95 % CI: 17.1–21.5) of breast cancer tissues were infected with one or more HPVs. The proportion of HPV-positive breast cancers was found to vary according to the geographical region of the study ($p < 0.001$) and the type of tissue sample used in the analysis (fresh or frozen vs. paraffin embedded, $p < 0.001$). Additionally assessments were conducted in order to determine the risk of bias of each study. Analyses revealed that studies with higher risks of bias were significantly more likely to report either very high or very low proportions of HPV-positivity compared to the group of studies with the lowest risk of bias. Meta-analysis of only 5 relevant case–control studies showed a 14.67 fold (95 % CI: 2.76–77.78) increased risk of breast carcinoma by HPV-infection. Existing heterogeneity however limited the interpretation of the results.
Conclusions The current body of knowledge suggests that although HPVs have been detected in a significant subset of breast cancers, the risk of bias in the original studies hinders any robust conclusions on to the exact role of HPVs in the development of breast cancer. Further research in this area is warranted.

P3O11

Breast cancer screening programme in the south region of Portugal (2002–2011)

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Background Breast Cancer Screening (BCS) is known as an efficient tool for the reduction of breast cancer mortality. It's organization, management and monitorization must follow international standards, namely the European Guidelines for Quality Assurance in Breast Cancer Screening. The south region programme started in 1997, aiming to cover the population of Health Regional Administration (ARS) of Alentejo and the population of ARS of Lisboa e Vale do Tejo and reached the total coverage of the population of ARS Alentejo in 2009.
Objectives The study present the major results of the breast cancer screening programme in the south region of Portugal, for the period 2002–2011.
Methods The south region BCS programme started in 1997. Uses the GP's lists for universal invitation of the 45–69 years old target population, designed as a decentralized programme, using, at present, 1 fixed unit and 7 mobile units, equipped with digital mammography, double view, double blind reading with a final consensus radiological classification, assessment at a dedicated clinical diagnosis unit and agreement with the district hospital of the region for complete diagnosis and treatment for women found to have a suspicious malign lesion. A distinct characteristic of the south programme is the execution of biopsy at the assessment unit.
Results In the period 2002–2011, a total of 127,813 women had their initial screening, with a positive mammography rate of 4.7 %, a positive assessment rate of 0.76 % and a detection rate of 5.3 per thousand. Concerning subsequent screening, a total 226,447 mammographies were performed, with a positive mammography rate of 1.6 %, a positive assessment rate of 0.39 % and a detection rate of 3.2 per thousand. The global participation rate of the 2005–2011 period was 47.1 %.
Conclusions The south region BCS programme follows the European Guidelines in terms of organization and implementation. The performance indicators are comparable with the other European programmes. Though the difficulties in obtaining final diagnosis from hospitals, the execution of biopsy at the dedicated assessment unit allows a quick monitorization of the programme.

P3O12

Breast cancer in younger women

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Background There are few studies examining breast cancer in women under the age 40, particularly in western European populations. Such

tumors are reported to be more aggressive, compared to older patients, with a predominance of unfavorable prognostic parameters.
Objectives To assess demographic, biological, clinicopathological characteristics and prognostic factors in young patients with breast cancer.
Methods We performed a retrospective review of all 634 consecutive female breast cancer patients who were admitted to the Clinical Centre Nis, Serbia, between January 2003 and December 2006. Demographic, biological and clinicopathological features were determined in patients under and over 40 years of age.
Results 56 (8.8 %) patients were under and 578 (91.2 %) were over 40 years. The mean age was 35.9 years (range 23–39 years) for those under 40 and 58.3 years (range 41–85 years) for those older than 40 years. Most patients were urban dwellers (67.9 vs. 61.2 %) and left breast was most commonly involved (53.6 vs. 52.1 %) in younger and older groups, respectively. In both patient groups, the most common primary tumor site was the upper lateral quadrant (51.8 vs. 55.0 %); the most common histological type was ductal carcinoma (71.4 vs. 72.0 %); histological and nuclear grade 2 was most common. In the younger group of patients, the proportion of patients with T3 and T4 disease was higher (12.5 vs. 9.0 % and 16.1 vs. 11.9 %), the number of patients with histological and nuclear grade 3 disease was higher (26.8 vs. 24.2 % and 37.5 vs. 33.0 %), the proportion of patients with 4–9 and >10 positive lymph nodes was higher (23.2 vs. 18.0 % and 7.1 vs. 4.0 %), and the percentage of family history of breast cancer was higher (5.4 vs. 2.9 %), without statistically significant differences between the two age groups. Patients in the younger age group exhibited higher estrogen/progesterone receptor negativity (32.1 vs. 24.0 %) ($p < 0.05$). During follow-up of all the cases, tumor recurrence was observed in 21 from the younger and 189 patients from the older age group. Metastatic sites and incidence were similar in both groups. Young age, positive lymph nodes and having ductal rather than lobular tumors were found to be independent predictors of the recurrence. Younger patients had a worse progression-free, overall, median and 5-years survival, compared with older patients.
Conclusions Our findings demonstrate the significance of breast cancer in young women, and draw attention to the need for appropriate investigation of the underlying cases of the disease in large population-based studies in the future.

P3O13

Quality of life and patients' satisfaction with care in colorectal cancer: a prospective cohort study

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Background Colorectal cancer (CRC) remains a significant cause of morbimortality. Patient-reported outcomes had become well-established outcomes in CRC patients, along with tumour response and survival.
Objectives To assess, in a prospective cohort of incident CRC patients: Quality of life (QoL); Patients' satisfaction with care; Patients' performance status; To evaluate the impact of a permanent stoma on patients' QoL.
Methods
Design Prospective follow-up study of incident CRC cases diagnosed in A Coruña Hospital (Spain) between February 2011 and February 2012 (n = 181).
Subjects Incident cases with anatomopathologic confirmation of CRC (ICD-9[a]: 153–154).
Measurements Information from clinical records regarding sociodemographic variables, comorbidity, tumour characteristics and treatment. For patients candidates to curative surgery, an interview was performed in the following month. Patients subjected to palliative procedures were interviewed within 3 months of diagnosis. QoL was evaluated with EORTC QLQ-C30 and QLQ-CR29 questionnaires. Patients' satisfaction with care with EORTC IN-PATSAT32.
Analysis Scores were transformed to a 0–100 scale. For functional scales, global QoL and satisfaction, higher scores reflect more positive response, whereas higher scores for symptoms reflect more problems. A descriptive analysis was performed. Univariate analysis (*t* Student or Mann–Whitney test) was completed to compare results in patients with or without colostomy.
Results Most patients (44.8 %) had a Karnofsky index (KI) ≥90 (normal activity, minor signs/symptoms), 92.8 % being able to care for most needs (KI ≥60). Mean score for the global QoL scale was 71.7 ± 21.7. The most impaired dimension was Functional Role (66.9 ± 30.5). Symptoms that most affect QoL were insomnia (30.8 ± 34.9) and fatigue (27.8 ± 24.6). The most affected dimension in the QLQ-CR29 was anxiety (65.0 ± 31.7). The symptom that most affects QoL in patients with stoma was dry mouth (24.7 ± 30.8), and stoma care problems (27.6 ± 34.8) in patients with colostomy. Patients with stoma presented lower scores regarding body image (88.6 ± 20.1 vs. 94.4 ± 16.7; $p = 0.017$), and their QoL was more impaired in relation to dysuria (9.5 ± 23.7 vs. 2.6 ± 9.7; $p = 0.047$), hair loss (8.6 ± 16.9 vs. 4.1 ± 13.5; $p = 0.036$), faecal incontinence (12.4 ± 19.9 vs. 4.6 ± 14.5: $p = 0.035$), sore skin (14.7 ± 23.5 vs. 5.0 ± 15.8; $p = 0.027$) and embarrassment (19.1 ± 23.3 vs. 2.8 ± 11.5; $p < 0.001$). Patients were more satisfied with doctors' technical skills (76.8 ± 19.1) and nurses' information provision (77.0 ± 18.5). Less valued aspects were hospital access (45.7 ± 23.4) and waiting time (66.2 ± 21.9). The overall satisfaction score with care was 75.4 ± 18.9.
Conclusions CRC patients have good performance status, with some detriment to their QoL. QoL was more impaired in patients with colostomy. Patients are satisfied with care, scoring worst on hospital access and waiting time for medical results.

P3O14

The unattainability of bladder cancer biomarkers: utility-based assessment of a hypothetical non-invasive surveillance tool for bladder cancer recurrence

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Introduction Approximately 86,366 people are estimated to have been diagnosed with bladder cancer in 2008 in the European Union, of which about 75 % will have had non-muscle invasive tumours. Due to high risk of recurrence, regular cystoscopic surveillance is needed for early detection; cystoscopy is invasive, costly and increases the burden of the disease significantly. A non-invasive substitute, such as urinary biomarkers, could help reduce the economic, psychological, and physical burden of bladder cancer.
Currently available biomarkers lack sensitivity. Implementation of these biomarkers would only be feasible if the patient would accept the reduced sensitivity. We therefore studied patients' preference for a

urinary biomarker at different levels of sensitivity in relation to sex, age, marital status, general health, and social support.
Methods Patients were part of the West Midlands Bladder Cancer Prognosis Programme, an ongoing multi-centre cohort study in the West Midlands (UK) with over 1,500 patients. A demographic questionnaire, the quality of life questionnaire-C30, and the Duke-UNC Functional Social Support Questionnaire were used to obtain the independent variables. A standard gamble questionnaire was used to obtain the minimal accepted sensitivity (MAS) of the biomarker.
Results 430 patients were included, of which 348 male and 82 female. The mean age of the patients was 69 (range: 33–90) years. 305 patients had a partner, 111 did not, and 14 patients did not answer this question. The median general health was 75/100. Median self-reported social support was 100/100 (IQR: 87.5–100). 183 patients (43 %) would not change from a cystoscopy to a biomarker unless it was 100 % sensitive. In fact, the median MAS was 99.9999 % and nearly 85 % of the patients wanted a sensitivity of at least 99 % before preferring a urinary biomarker over a cystoscopy.
MAS was not associated with age ($p = 0.11$), sex ($p = 0.10$), marital status ($p = 0.38$), general health ($p = 0.16$) or social support ($p = 0.53$). No effect modification could be identified.
Discussion Patients in the current and previous research demand more sensitive urinary biomarkers than currently available. Interestingly, we did not replicate the associations between age, sex and MAS from previous research, nor did we find statistically significant associations of MAS with other demographic and health variables.
Conclusion The biomarker industry would need to make large improvements in sensitivity in order for urinary biomarkers to be implemented in patients' surveillance strategies.

P3O15

Inequalities in female breast cancer survival: a study using the population-based cancer registry of São Paulo, Brazil

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Inequalities in cancer mortality rates reflect differences in incidence, mortality and prevalence of the disease among different populations. It has been observed in many developed countries an increase in survival rates that can be explained both by improvements in early detection of new cases and by progress of therapies used in treatment. The literature shows that cancer survival may be influenced by socioeconomic factors. Some studies suggest that the coverage by private health plans is a mediator in the correlation between socio-economic status, late diagnosis and survival, and may be a cause of inequalities in incidence, mortality and survival of breast cancer. But the results are controversial and some studies found no differences in survival rates even when the stage is controlled. This is a retrospective longitudinal study, with analysis of the 5-year survival of women diagnosed with breast cancer, living in São Paulo city, Brazil. The research used vital statistics data from the Mortality Information System (SIM-SP), the Population-Based Cancer Registry of São Paulo (RCBP/FSP/USP) and the administrative data from the National Information System of Private Health Plans (SIB/ANS/MS). Kaplan–Meier method was used for data analysis and the results pointed out significant associations survival rates and socioeconomic factors. The comparison of survival curves between women covered and not covered by private health insurance have shown that patients without insurance coverage presented a survival rate of 89.1 % while among patients with health insurance the estimated survival was 80.6 %. These findings highlight the need for additional studies to assess new variables in the analyses.

P3O16

Cytology use for cervical cancer screening in Portugal: results from the 2005/2006 National Health Survey

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Background In Portugal, opportunistic screening is the predominant for cervical cancer. Understanding the patterns of opportunistic screening may provide useful information to identify unmet needs and for an efficient transition to organized programs.
Objectives To identify the determinants of non-use and underuse of cytology for cervical cancer screening in Portugal.
Methods As part of the fourth National Health Survey (2005/2006), 3368 women were evaluated. The previous use of cytology was classified as never or ever, and the latter further grouped according to the time elapsed since the latest cytology. Underuse was defined as having performed the latest cytology more than 5 years before. We assessed the determinants of never use and, among those who had been tested, the determinants of underuse, through age- and education-adjusted odds ratios (OR), with 95 % confidence intervals (95 % CI), computed by unconditional logistic regression.
Results About 27 % of women had never used cytology and, among those who had been tested at least once, 5.6 % reported underuse. Compared with women aged 20–29 years, those aged 30–59 years were less likely to have never performed cytology (OR ranged from 0.21 to 0.27 across age strata), but more likely to underuse it (OR ranged from 2.43 to 4.59 across age strata). The prevalence of cytology non-use and underuse decreased with the increasing years of education (OR ranged from 0.20 to 0.39 for non-use and from 0.15 to 0.85 for underuse) and family income (OR ranged from 0.38 to 0.75 for non-use and from 0.18 to 0.74 for underuse). Living in *Alentejo* was associated with both cytology non-use (OR = 2.92, 95 % CI: 1.81–4.71) and underuse (OR = 3.72, 95 % CI: 1.66–8.38) compared with the region *Centro* (the region with organized screening for a longer time). Women from *Açores* were significantly more likely to have never performed cytology (OR = 3.52, 95 % CI: 2.26–4.48), while the opposite was observed for *Norte* (OR = 0.39, 95 % CI: 0.24–0.65). Having a previous diagnosis of a chronic condition was associated with the participation in screening (OR = 0.57, 95 % CI: 0.40–0.81 for non-use). Participating in breast cancer screening was also inversely associated to non-use (OR = 0.13, 95 % CI: 0.08–0.21) or underuse (OR = 0.13, 95 % CI: 0.06–0.29).
Conclusions A large proportion of women within the age-range eligible for cervical cancer screening were never tested or tested less frequently than recommended. Although organized screening may contribute to reduce the observed inequalities, its implementation in settings where opportunistic screening is widespread constitutes an important challenge.

P3O17

Age-period-cohort analysis of breast cancer mortality in Portugal

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Background According to Statistics Portugal (INE), malignant neoplasms are the second leading cause of death in Portugal, claiming

24,982 deaths in 2008. Among them, colorectal cancer is the main cause of death, followed by lung, stomach and breast cancers, respectively. In this study, the results of an exploratory data analysis of breast cancer mortality rates in Portugal through an age-period-cohort (APC) analysis.

Objectives The study present an APC of breast cancer mortality rates from a Lexis diagram between 1980 and 2009 in Portugal and according to NUTS II regions.

Methods The database used came from official certified breast cancer deaths registries supplied by INE, and population estimates were calculated over the period 1980–2009 according to region, 5-year age and period intervals. Women at risk were calculated for the triangular subsets of the Lexis diagram and expressed in person-years. An APC was fit to the data using R software. For Portugal and each of the 7 regions analyzed, the best of the 5 models was chosen according to the deviance. In all hypothesis tests a significance level of 0.05 was considered.

Results There is a clear linear increase of the breast cancer rates with age in all regions. With the exception of Madeira, where only the period effect was statistically significant, an A-P–C model was the best fit for the data. In Lisbon the period effect was much stronger than the cohort effect, while in Alentejo and Center the opposite occurred. All regions showed a similar increased risk of breast cancer until the reference birth cohort (1930), with Center and Lisbon stabilizing after the 1940 birth cohort; Azores, Madeira and North showing no signs of a decreasing tendency; and Alentejo and Algarve suggesting a decreasing risk in women born after 1940 and 1955, respectively. The period effect shows a very similar behavior for all regions, with a decline in period-specific risk until around 1990 and increasing after that time.

Conclusions Breast cancer mortality rates in Portugal and it's regions show a global decrease after early 90's. This can be explained by both opportunistic and organized screening activities. Regions were organized screening was earlier introduced and were population coverage was earlier reached, presented cohort effects stronger than period effects.

Poster Topic 3P. Cardiovascular diseases & clinical epidemiology

P3P01

Time until operation and associated factors for valve surgery in Brazilian children and adolescents with rheumatic heart disease

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Background Rheumatic heart disease remains as the most common acquired heart disease in children and young adults all over the world, being responsible for high mortality and morbidity rates and often demanding valve surgery in the acute or chronic phase of the disease.

Objectives To estimate the time from diagnosis until valve operation and the associated factors in children and young adults with rheumatic heart disease followed up in a tertiary center for cardiovascular care in Rio de Janeiro.

Methods Longitudinal observational study of a hospital based population, using survival analysis methodology for time estimation and Cox regression model for hazard risk evaluation of associated variables. Cohort was composed by 3–20 years old patients, registered between July 1986-June 2006, and followed up until 2011. Valve disease diagnosis was confirmed through Doppler echocardiography. Variables were evaluated at the patient's first visit and separated in three dimensions: socio demographic (gender, age group, skin color, residence region, decade of diagnosis); clinic (disease status at presentation, NYHA functional class, number of previous rheumatic episodes, secondary prophylaxis, infectious endocarditis, atrial fibrillation); echocardiographic (valve lesion and severity, left atrium diameter, systolic left ventricle diameter, left ventricle function, pulmonary hypertension, rupture of mitral chordae). Database was based on ACCESS 2000 and statistical analysis was performed using R Program. Significance was achieved by $p < 0.05$.

Results 348 patients were included in the cohort, 58 % female. Median age at register was 12.5, and 21.5 years at the end of follow up. Median follow-up time was 9.0 years (2–21 years) and 39 % underwent valve operation. Survival analysis demonstrated and the median time until surgery was 22.3 years. In the univariate analysis all the variables from the three dimensions (socio demographic, clinic and echocardiographic) presented statistical significance as hazard risk in predicting valve operation (hazard ratio > 1), with only one exception, that was residence region ($p > 0.5$). In the multivariate analysis the final model included the following variables: decade of diagnosis (HR 1.36), NYHA functional class II-IV (HR 1.97), number of anterior rheumatic episodes (HR 1.72–2.15), infectious endocarditis (HR 2.01), valve lesion and severity (HR 2.15–2.89), left atrium diameter $\geq$40 mm (HR 2.67), systolic left ventricle diameter $\geq$45 mm (HR 2.67) and rupture of mitral chordate (HR 2.68).

Conclusions Valve surgery is still common in Brazilian children and adolescents and is associated with socio demographic, clinic and echocardiographic factors. Although most patients underwent surgery in first 2 years, long-term surveillance of this population is mandatory.

P3P02

Incidence of heart failure after acute myocardial infarction and its determinants: report from a referral center in Western Iran

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Background Heart failure (HF) is chronic disease that causes a major burden on the health care system in developed and developing country. We have reported the incidence of in-hospital and early-onset HF after acute myocardial infarction (AMI).

Materials and methods We identified all patients referred to Imam Ali hospital located in Western Iran with diagnosis of new AMI and without history of previous HF in 2011 and followed them for 28 days after admission for diagnosis of both in-hospital and early-onset (HF). In-hospital HF defined using Framingham Criteria or those who had cardiogenic shock or pulmonary edema in hospital or patient was given diuretics without any sign toward renal failure or hypertension. In addition, if ejection fraction was less than 45 % patients classified as HF. The same criteria used for definition of early-onset HF if such signs and symptoms exist till 28 days after hospital admission.

Results In 2011, 995 cases of new AMI referred to Imam Reza hospital and 381 (38.3 %) cases developed HF during hospital stay. Such patients were older (63.6 ± 12.3 vs. 58.8 ± 16.7). While 31.3 % of patients with in-hospital HF had previous history of angina

the corresponding value for those without HF was 17.9 % ($p < 0.001$). Two groups were similar statistically in terms of history of diabetes, hypertension, dietary pattern and smoking pattern. In addition, 425 (42.7 %) patients developed early-onset HF. Patients with early-onset HF were older and they were more likely to have previous history of angina (29.2 vs. 18.5 %). Patients with early onset HF had higher pulse rate on admission (85.4 vs. 77.4).
Conclusion Although there are some reports that the risk of HF complicating AMI is decreasing over time, the incidence in Iran is still high compared to studies from elsewhere and need to be investigated carefully. Quality of care in Iranian hospital need to investigated in future studies.

P3P03

Beta blocker and ACE-inhibitor/ARB use in patients with heart failure: evidence from Western Iran

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Background Heart failure (HF) is a chronic condition mainly due to hypertension and acute myocardial infarction (AMI). While the burden of such condition is increasing over time, space for better health care still exists. We investigated the drugs prescribed for in-hospital and early-onset HF during hospital stay and after discharge.
Materials and methods All patients with diagnosis of first-ever HF after AMI referred to Imam Ali hospital in Western Iran were included. In-hospital HF were defined as HF complicating first-ever AMI and early-onset HF defined as those who remained as HF or developed HF till 28 days after discharge. For diagnosis of HF we used a combination of signs and symptoms in favor of HF plus Framingham criteria. In addition, we classified patients as HF if the ejection fraction was less than 45 %.
Results Over the period of study 381 and 425 cases of in-hospital and early-onset HF complicating a new AMI were referred to Imam Ali hospital. From total in-hospital HF, 86 % received B blocker during hospital stay. The corresponding value for early-onset HF was 90.8 %. After discharge the prescription of b-blocker raised to 97.0 % in both. During hospital admission and after discharge 85.3 and 96.6 % of patients with in-hospital HF received ACE-inhibitor/ARB. The corresponding values for early-onset HF were 88 and 90 %.
Conclusion The practice for drug treatment of HF in Iran is similar to elsewhere but the space for better treatment still exists.

P3P04

Epidemiological data, outcome and hospitalization costs of burn patients treated in Kermanshah, Iran

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Background The consequences of burns such as mortality, long-term disability and social economic costs can be imposed to the patients, their families, health sector and society.
Objective This study was carried out to investigate the epidemiology, outcome and hospitalization costs of the 388 burn patients who were admitted to the burn center of Imam Khomeini Hospital in Kermanshah Province of Iran in 2011.
Method A study retrospective cross sectional carried out. Data about demographic cause features of burn, degree of burn, outcome of treatment, total body surface area (TBSA) burn percentage and the average length of stay and hospitalization costs were retrospectively collected by using of medical records. Data analysis was done by SPSS 16.
Result The average age of patients was 27 years (from 6 months to 87 years). The male/female ratio in burn patients was 1.14 (207 males and 181 females). The mean extent of burns TBSA (total body surface area) was 36.06 % (from 0.6 to 100 %). The average LOS (length of stay) was 9.04 days (range 56 to less than 1 day). The most cause of burn injury was flame (67 %), followed by hot liquids (21.9 %). The average LOS in patients who were burned by flame was 10.33 days that is more than other causes. 29.4 % of burn injuries occurred during summer months, followed by winter (26.8 %), autumn (24 %), and spring (19.8 %). The commonest organ of burn injury was hand by 82 %, followed by lower limb (70 %). 11.6 % of patients had all the regions involved. Mortality rate was 18.8 % (n = 73) of all burn patients (n = 388). The seventy-six patients of the burn patients (18.8 %) were died and the 94.5 % of total death was flame burn. The mean extent of burns TBSA in death burns was 77.4 %. The average cost per patient was 20,288,518 Rials Iranian (IRR) [At the time of the study each US Dollar was equal to almost 10.000 IRRs]. The costs of the one TBSA burn percentage and 1 day hospitalization were 562,632 and 2,244,305 IRR respectively.
Conclusion This study has showed that there is a direct correlation between death with sex, burn extent, age groups, burns degree and flame burn. The mean cost per patient, the extent of burns, LOS and the case fatality rate for flame burn were more than other causes. It also provides a valuable view about epidemiology, outcome and service costs for burn injuries in Kermanshah Province.

P3P05

Metabolic health in the overweight and obese, what is the role of physical activity?

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Introduction The prevalence of overweight and obesity is increasing worldwide. In Ireland, approximately two-thirds of the population are overweight or obese. It is well established that physical inactivity plays a major role in the development of overweight and obesity and that being overweight and obese predisposes an individual to metabolic abnormalities. But some individuals maintain metabolic health despite being overweight and obese and the mechanism for this is unclear.
Objectives The objectives of this paper are to establish the prevalence of metabolically healthy overweight and obese in middle-aged Irish adults and to examine the effect of physical activity on metabolic health among overweight and obese.
Methods A population representative random sample of men and women were recruited from a large primary care centre in Mitchelstown, County Cork, Ireland. Baseline assessment included a health questionnaire and a physical examination undertaken by trained study nurses and included standardised measurement of height, weight, blood pressure, and venous blood sampling. Physical activity was measured with the International Physical Activity Questionnaire (IPAQ) and categorised into high, moderate and low levels. Participants were classified as overweight, BMI $\geq$25 kg/m^2, or obese, BMI $\geq$30 kg/m^2. Metabolically healthy was defined as; blood pressure

<140 mmHg systolic and <90 mmHg diastolic, fasting blood glucose <6.1 mmol/L, HDL cholesterol >0.9 mmol/L in males and >1.0 mmol/L in females, and fasting triglycerides <1.7 mmol/L.
Results The cohort includes 2047 men and women aged 46–74 years of whom 1,593 (77.8 %; 95 % CI 75.9–79.6 %) are overweight or obese. The overall prevalence of metabolically healthy overweight and obese in middle-aged Irish population is 34.2 % (n = 700; 95 % CI 32.1–36.3 %). The prevalence was higher in women (32 %; 95 % CI 29.2–34.9 %) than in men (36.3 %; 95 % CI 33.4–39.3 %).

Among overweight and obese, moderate and high physical activity levels were significant predictors of metabolic health (OR = 1.47; 95 % CI 1.15–1.88, OR = 1.40; 95 % CI 1.07–1.83). In a multivariate model, adjusted for age, gender, smoking and education, both moderate and high physical activity remained significant predictors of metabolic health [OR 1.53; 95 % CI 1.18–1.98 and OR 1.70; 95 % CI 1.27–2.28]. Overweight and obese women were twice as likely to be metabolically healthy than overweight and obese men [OR 2.05; 95 % CI 1.63–2.59].
Conclusion Physical activity provides protection against metabolic abnormalities among the overweight and obese. Current recommendations for physical activity should continue to be advised and further research should be undertaken in the area of physical activity and metabolic health.

P3P06

Insomnia and endothelial function: the HUNT 3 fitness study

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Background Insomnia is associated with increased risk of coronary heart disease (CHD), but the underlying mechanisms are not well understood. Impaired endothelial function is an indicator of preclinical atherosclerosis, which is the underlying pathophysiological mechanism of CHD. To our knowledge, no previous studies have examined insomnia in relation to endothelial function.
Objectives Our aim was to assess the association of insomnia symptoms with endothelial function in a large population based study of healthy individuals.
Methods A total of 4 739 participants reported how often they had experienced difficulties falling asleep at night, repeated awakenings during the night, early awakenings without being able to go back to sleep, and daytime sleepiness. Endothelial function was measured by flow mediated dilation (FMD) derived from the brachial artery. The data were analysed separately in women and men using general linear models, and least square means were calculated.
Results We found no consistent association between insomnia and endothelial function in the multi-adjusted models. However, some individual insomnia symptoms were associated with endothelial function. Women experiencing early awakenings several times/week had an estimated FMD of 4.6 % (95 % CI 3.8–5.3) compared to 5.6 % (95 % CI 5.3–5.9) in women without the symptom after adjusting for age, marital status, education, smoking, alcohol consumption, self-reported physical activity, body mass index (BMI), sleep-disordered breathing, and snoring (p for trend = 0.02).
Conclusions This study provided no consistent evidence that endothelial function, an early indicator of atherosclerosis, is an important linking factor between insomnia and CHD. Further studies are needed to explore the complex interrelation between sleep and cardiovascular pathophysiology.

P3P07

Blood pressure control and antihypertensive medication adherence in adult and elder hypertensive medicated patients in primary health care in Lisbon region

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Background Hypertension is an important chronic disease due to its high prevalence and association with cardiovascular mortality and morbidity. The elderly are a vulnerable group to uncontrolled hypertension, exacerbated by other comorbidities. Adherence to antihypertensive medication is pointed as a major associated factor to blood pressure (BP) control related to older patients.
Objectives To compare BP control and adherence to antihypertensive medication among medicated hypertensive patients (MHP) aged 45–64 and 65–80.
Methods Cross-sectional study with MHP randomly selected from primary health care centers of the Lisbon Health Region. Between September 2010 and March 2011, interviews collected demographic and clinical variables, BP measurements, and self-reported adherence to antihypertensive medication. Data analysis included bivariate analysis and Binary Logistic Regression ($\alpha = 0.05$).
Results 787 MHP entered the study: 57.8 % were women and 40.4 % were aged 65+. There is a higher proportion of natives ($p < 0.001$) and diabetic participants in the older group ($p = 0.016$). Between the two groups (40–64 and 65+) there were no differences on BP control levels. A higher proportion of youngest patients had higher grades of hypertension, while the oldest participants had higher proportion of isolated systolic hypertension (13.5 vs. 28.6 %, $p < 0.001$). DBP average was superior on the youngest group ($p < 0.001$).
There is a larger number of adherents in the oldest group ($p < 0.001$). The average number of medications was higher on the oldest group (5.5 ± 3.0, $p < 0.001$) but it didn't seem to influence BP control nor adherence to medication. After stratified multivariate analysis by age, being an African migrant ($p = 0.001$) and having poor education ($p = 0.030$) was related to being non-adherent to treatment for the youngest group, while having diabetes ($p = 0.015$) was related to (non-intentional) adherence on the elderly. Being a male ($p < 0.001$) and poorly educated ($p = 0.015$) was related to lower levels of BP control on the youngest group while the oldest group being poorly educated ($p = 0.019$) seems to be related with lower levels of BP control.
Conclusions The youngest group presents higher grades of hypertension while the oldest group has a higher proportion of ISH, in agreement with physiological mechanisms of aging. In both groups, for BP control, the associated factors where quite similar while for adherence to treatment the associated factors where different for each group. Being the elderly a group with multiple comorbidities and social inequalities, future analysis should encompass these factors to better address this age group and its needs of adherence to treatment and BP control.

P3P08

What is the impact of medicines beliefs and illness perceptions on hypertension control and medication adherence?

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Background Hypertension (HT) is a chronic disease, mainly asymptomatic, which depends highly on self-management and patient adherence to medication. Personal beliefs may contribute to poor adherence and low BP control. In fact, nonadherence has been associated with misunderstanding of the chronic condition, perceived improvement in health, worsening in health, general disapproval of medications and concerns over side effects.
Aims To describe the beliefs of hypertensive medicated patients about their illness and medication and to evaluate whether these beliefs are associated to medication adherence and hypertension control.
Methods Cross-sectional study with medicated hypertensive patients aged 40–80 years at Lisbon's Region Primary Health Centers conducted between September 2010 and March 2011. Patients were interviewed and asked to complete a questionnaire that included demographic information, the Beliefs about Medicines (BMQ) and Revised Illness Perception Questionnaires (IPQ-R). Medication adherence was measured by the Portuguese version of the Morisky and Green self-report scale. Controlled BP was defined as $\leq$140/90 mmHg. Multiple logistic and linear regressions were used to identify the predictive variables for BP control, BP mean values or beliefs dimensions scores, respectively ($\alpha = 0.05$, SPSSv19).
Results Of the 121 participants, 70 % were Portuguese natives and 54 % were women, with a mean age of 60 $\pm$ 10 years, 8 $\pm$ 5 years of education, 13 $\pm$ 10 years of HT, 1.8 $\pm$ 0.9 of antihypertensives, 48 % of non-adherent and 27.3 % were non-controlled.
Multiple logistic regression analysis showed that emotional response were most predictive of non-adherence in this population [OR: 2.0 (]1.0:3.9[, $p = 0.05$] and specific-necessity belief were most predictive of non-control BP [OR: 0.8 (]0.7:1.0[, $p = 0.04$].

BP mean values were higher for men (]1.5:11.4[; $p = 0.01$), with the beliefs dimensions of specific-necessity for HT medication (]0.04:1.3[; $p = 0.04$), and the perception dimensions of Time-cyclical (]0.9:6.0[; $p = 0.01$) and Psychological cause (]-6.1: -0.6[; $p = 0.02$).

BP diastolic mean values were higher with age (]-0.6: -0.1[; $p = 0.02$), with the specific-necessity belief for HT medication (]0.1:1.3[; $p = 0.02$). BP systolic mean values were higher for men (]4.7:19.1[; $p = 0.001$).
Conclusion Hypertensive medicated patients believe that their medicines are necessary, especially those who have their BP uncontrolled. Adherence is associated with more negative emotional representations. Patients with higher BP values are majority men, think the HT is unpredictable and that their cause is psychological. This suggests that health beliefs are relevant to control BP and thereby adherence. It's necessary understand how we can demystify wrong beliefs and perceptions to develop interventions to improve adherence and thereby blood pressure.

P3P09

Trends in pharmacological therapy for secondary prevention following an acute coronary syndrome: systematic review in the Portuguese population

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Background Secondary prevention following an acute coronary syndrome improves survival and quality of life of the patients, and reduces the risk of recurrent events.
Objectives To assess time trends of the use of main drug classes for secondary prevention, during hospitalization and prescribed at hospital discharge, following an acute coronary syndrome in the Portuguese population.
Methods Through a systematic review in Pubmed, from inception until January 2011, we identified 25 studies with data on use of aspirin, clopidogrel, beta blockers, angiotensin-converting enzyme (ACE) inhibitors and statins, following an acute coronary syndrome (20 studies with data during hospitalization and 13 prescribed at hospital discharge). We used linear regression to quantify the annual variation in the proportion of patients treated with each drug class, adjusting for the proportion of men in the sample and patients' mean age.
Results Assuming a mean age of 65 years and a proportion of men of 70 %, we estimated that, in 1995, 88.2 % [95 % confidence interval (95 % CI): 80.4–96.0] of patients were discharged with aspirin, 39.4 % (95 % CI: 29.1–49.6) with beta blockers, and 64.3 % (95 % CI: 51.9–76.8) with ACE inhibitors; in 2000, 59.1 % (95 % CI: 46.8–71.4) were discharged with statins and in 2002, 22.4 % (95 % CI: 8.4–36.4) with clopidogrel. Between 1995 and 2005, the use of aspirin increased 0.5 % per year (95 % CI: -0.6–1.5), the use of beta blockers increased 3.8 % per year (95 % CI: 2.6–4.9 %) and the use of ACE inhibitors 1.5 % per year (95 % CI: 0.1–3.0). Between 2000 and 2005, the use of statins increased 6.4 % per year (95 % CI: 3.7–9.1). From 2002 to 2007, the use of clopidogrel increased 12.1 % per year (95 % CI: 5.2–18.9). A similar pattern was observed for the trends in uptake of these treatments during hospitalization, except for ACE inhibitors whose use was initially lower in the hospital, but increased more in this setting, reaching similar levels to those at discharge in recent years.
Conclusions In the last years, there was an improvement in the use of the recommended pharmacological therapy for secondary prevention after an acute coronary syndrome and a trend towards earlier start of therapy before discharge.

P3P10

Influence of exercise on subjetive well-being and psychological ill patients with cardiac disease

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Background The cardiac pathologies represent according to the World Health Organization the leading cause of death in developed countries, existing a growing concern with the consequences and squeals, not only at a physical level but also at a psychological one, in individuals that suffer these disorders. One of the relevant known risk factors for the emergence of these pathologies is physical inactivity, which consequently makes exercise a practice with proven benefits to physical and psychological level both in the prevention and control of these diseases.
Objective The main purpose of this study was to evaluate the impact of exercise on subjective well-being—in its components of life satisfaction and positive and negative affects—and psychological well-being in individuals with cardiac pathology.
Methods For this study quantitative (cross-sectional, descriptive-correlational) we use a non-probabilistic sample consisted of 107 individuals, mostly male (52.30 %) engaged in physical exercise (51.40 %), with an average of age of 64.22 years and enrolled in seven hospitals/clinical northern and central Portugal. For the measurement of variables, were used scales measured and validated for the Portuguese population: satisfaction with life scale (SWLS) to evaluate life satisfaction; positive affects and negative affects scale (PANAS) to evaluate affects and the Psychological well-being scale

(EBEP) to evaluate the psychological well-being. It was also used a sociodemographic form and characterization of physical exercise.
Results The analysis of the results showed that there are significant differences in subjective well-being, in its components of life satisfaction and affects; physical activity practitioners reveal greater satisfaction with life and positive perception of affects, while the negative impact was shown more on non-practitioners; individuals who practice exercise present greater psychological well-being (in autonomy dimension) when compared with non-practitioners; independent of physical activity, male elements exhibit greater life satisfaction and environmental mastery, urban residents demonstrate more positive affects, unemployed individuals have more negative affects, and personal growth dimension of psychological well-being is relevant in individuals from 37 to 55 years old, from urban zone, employed and with qualifications at the secondary school level.
Conclusions This study confirms the importance of physical activity for a positive psychological attitude, which is of greater significance in individual with cardiac pathology, and efforts should be concentrated on promoting an active lifestyle that rehabilitates the patient and prevent these diseases, therefore reducing their impact on society.

P3P11

Cardiovascular risk profile of mothers of a Portuguese birth cohort: a survey 4 years after delivery

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Background In young women, pregnancy puts a physiological stress on the body that can unmask an underlying propensity for chronic disease. Furthermore, pregnancy and motherhood contribute with good opportunities for health promotion and disease prevention.
Objective To estimate the prevalence of established cardiovascular risk factors (smoking, low fruits and vegetables consumption, sedentariness, overweight/obesity, abdominal obesity, hypertension, dyslipidemia and diabetes mellitus), in mothers of a Portuguese birth cohort, an average of 4 years after child's birth, and their distribution by age, gravidity and indicators of socioeconomic position.
Methods A birth cohort was assembled at public maternities of Porto, Portugal in 2005–2006 and reevaluated an average of 4 years after delivery. In the current analysis, 5,435 women who attended a face-to-face interview at follow-up were included. Socioeconomic characteristics, smoking habits, fruit and vegetable intake and leisure-time physical exercise were self-reported. A subgroup of 2,483 randomly selected women had a fasting blood sample, providing data for blood lipids and glucose. These women were similar to the entire group in all the other characteristics. Weight, height, waist circumference and blood pressure were measured. Age-adjusted odds ratios were estimated using unconditional binary and multinomial logistic regression.
Results Overall, 25.3 % of the participants were smokers, 50.7 % consumed less than 3 portions of fruits and vegetables per day, 81.3 % did not practice any leisure-time physical activity, 31.4 % were overweight, 21.3 % obese and 31.8 % had abdominal obesity. Regarding the cardiometabolic comorbidities, 8.7 % of the women had hypertension and, the prevalence of dyslipidemia and diabetes mellitus was 18.5 and 0.9 %, respectively. The presence of at least one risk factor from each of the 3 groups (adverse lifestyles, adiposity and cardiometabolic comorbidities) was observed in 17.0 % of women. Smoking, low fruit and vegetables intake and sedentary lifestyle were more common in younger women, while adiposity and cardiometabolic risk factors were more frequent in the oldest. The prevalence of hypertension, dyslipidemia, diabetes mellitus and sedentariness increased with BMI. All risk factors were associated with unemployment, lower education and lower income.
Conclusions The prevalence of adverse lifestyles and adiposity was very high, while the prevalence of cardiometabolic comorbidities was lower than previously described for the general population in this age range. The clustering of risk factors emphasizes the unfavourable cardiovascular risk profile at a young age. Since adiposity and unfavorable lifestyles constituted the main risk factors and are largely modifiable, the potential for prevention is still high.

P3P12

Distribution of the 10-year risk of fatal cardiovascular event in a population of subjects between 40 and 65 years of age

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The authors are currently evaluating a cohort of randomly selected subjects representative of the population of two adjacent cities in the north of Portugal (Guimarães and Vizela), characterizing their cardiovascular (CV) risk profile. These two cities are located in a region of Portugal with a high incidence of stroke (2.3–3.0 first strokes per 1,000 inhabitants, every year). The present project is a collaborative effort of 13 community health centers and their corresponding reference university hospital. The sample was collected by simple random sampling from the database comprising all the subjects listed in all the health centers of the two cities, comprising a total of 183 146 citizens. The age and sex distribution of the database differ in less than 2 % with the population age and sex distribution for the year 2006, estimated by the National Institute of Statistics. We evaluated their age, sex, clinical history, blood pressure (BP) (mean of three measurements), height, weight, lipidic profile, fasting glucose, HbA1c, serum creatinine, microalbuminuria (occasional sample). We decided to calculate the 10-year risk of sustaining a fatal cardiovascular event for the subjects of that cohort aged between 40 and 65 years of age, using the European Low SCORE model. Our goal was to understand the distribution of subjects at Low (<1 %), Moderate (≥1 and <5 %), High (≥5 and <10 %) and Very High (≥10 %) risk of fatal CV event.

Of the 2,123 subjects observed, we recorded a mean age of 47 years; 55.7 % of subjects were females. We could determine a mean Body Mass Index (BMI) of 26.7 kg/m^2 and mean Systolic/Diastolic BP values of 132/77 mmHg. 43.1 % had elevated BP values, 10.8 % had Diabetes, 78.3 % had lipidic profile abnormalities, 4.2 % had GFR <60 ml/min and 14.8 % had microalbuminuria. 587 subjects were between the ages of 40 and 65 years (55.2 % females), with a mean global age of 52.8 years (SD = 7.4);

We found the following prevalence of risk classes amongst subjects aged 40–65 years: 54.3 % Low risk subjects, 41.7 % Moderate Risk subjects, 3.4 % High Risk subjects and 0.5 % Very High Risk subjects. The prevalence by sex and by risk class is the following: females (Low 78.7 %, Moderate 21.3 %), males (Low 24.3 %, Moderate 66.9 %, High 7.6 %, Very High 1.1 %).

The authors present their findings and discuss their relevance when analysing other available data from similar population based studies.

P3P13

Are diet-related factors associated with differences in mean arterial pressure among Portuguese natives and African migrants? A study with medicated hypertensive patients followed at Lisbon primary health care centres

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Background Nutrition and diet have been presented as key factors in the control of chronic diseases such as hypertension (HTA), but also as a source of disparities between different ethnic groups. Although the definition of HTA is based on systolic blood pressure (SBP) and diastolic blood pressure (DBP), increasing attention has been given to mean arterial pressure (MAP).
Objectives To explore which diet-related factors are associated with MAP in Portuguese natives and African migrants medicated hypertensive patients.
Methods Population-based cross-sectional study integrated in the DMATCH-HTA project that evaluated blood pressure (BP) control and its determinants among medicated hypertensive patients from 2 cohorts (migrants and natives). Both cohorts, randomly selected from Primary Health Care Centres of Lisbon's Region, answered to dietary knowledge, behaviour and health status questionnaires. Measurements of BP, weight, height and waist circumference were recorded. Data analysis included bivariate analysis (X^2 and Mann–Whitney tests; $p < 0.05$) and multiple linear regression models to compare the predictors for MAP [DBP + 1/3 (SBP—DBP)], in both ethnic groups and by sex ($p < 0.10$).
Results Data from 497 subjects was analyzed: 59.8 % natives and 40.2 % migrants, with a mean ± SD age of 64.0 ± 9.1 and 57.0 ± 10.2 years ($p < 0.01$), respectively. Proportion of overweight/obesity was high in both groups, but higher for migrants (88.4 %|85.4 %, $p = 0.04$). A higher proportion of natives reported to comply with the nutritional recommendations (NR) for fruit and fish (35 %|20.5 % and 83.2 %|69.5 %, respectively; $p < 0.01$ for both). More migrants reported to know NR about vegetables (33 %|19.5 %, $p < 0.01$). Multivariate models were built. Considering male natives, MAP was lower for older (OR 95 % CI]−0.6:−0.1[; $p < 0.01$) and higher for those who do not meet the NR for fruit (]−0.6:8.5[; $p = 0.09$). For female natives, MAP was higher with higher body mass index values (]−0.1:1.1[; $p = 0.10$) and lower for those who had diabetes (]−0.5:−13.3[; $p = 0.07$). Finally, MAP was higher for male migrants (]−0.4:10.2[; $p = 0.07$) and for those who not meet the NR for vegetables (]0.5:16.7[; $p = 0.04$); but lower for migrants with higher levels of education (]−1.2:0.1[; $p = 0.08$) and for those adherent to antihypertensive medication (]−11.4:−1.9[; $p = 0.01$).
Conclusion Higher MAP levels seem to be related to lower fruit consumption and overweight in male and female natives, respectively, and to lower vegetables consumption in migrants. Finer analysis should be performed to better examine the association between MAP and diet-related factors.

P3P14

Burden of cardiovascular diseases using mortality and years of life lost in Spain

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Background Information on the burden of chronic diseases is important to any public health strategy aimed at reducing the health losses attributable to potentially avoidable conditions.
Objective To comprehensively describe the burden of cardiovascular diseases (CVD) in Spain for the year 2008, using mortality and years of life lost (YLLs) due to premature death at the national level.
Methods 2008 death records for Spain were obtained directly from the anonymized official microdata files of the National Statistics Institute. Total number of deaths and YLLs by sex and age groups were calculated. YLLs were estimated according to standard life tables (Coale-Demeny West level 26 modified). Age-weighting and discounting were computed using Global Burden of Disease study criteria. All data were prepared in GesMor and Epidat packages.
Results In 2008, 126,252 deaths (56,651 men [45 %] and 69,601 women [55 %]; adjusted mortality rate per 100,000 [European Standard Population]: 155.0 both sexes, 186.5 men, 126.4 women) and 504,091 YLLs (289,506 men [57 %] and 214,585 women [43 %]) were due to CVD. Overall, these figures represent 32.9 % of all deaths (28.6 % men, 37.4 % women) and 24 % of all YLLs. For people aged 70 and over, they explain 36.6 % of all deaths (31.7 % men, 40.8 % women) and 24 % of all YLLs (22.7 % men, 26.1 % women).
Conclusions CVD had a substantial health burden in Spain in terms of mortality and YLLs, justifying further efforts to protect the population with cost-effective public health interventions.

P3P15

Premature deaths from ischaemic heart disease and cerebrovascular disease in Spain

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Background Health priority setting for ischaemic heart disease (IHD) and cerebrovascular disease requires an understanding of the population health-losses and evaluating the effectiveness of current interventions, both in an evidence-based way.
Objective To quantify premature deaths when age at death is taken into account from IHD and cerebrovascular disease in Spain. Implications for clinical and public health decision-making are discussed.
Methods Cross-sectional population based-study. Using national death registry data and Spanish population estimates in 2008, we calculated premature deaths in terms of years of life lost (YLLs). The results were stratified by age group, sex and specific disease conditions: IHD (ICD10 codes: I20-I25) and cerebrovascular disease (ICD10 codes: I60-I69). YLLs were estimated according to standard life tables (Coale-Demeny West level 26 modified). Age-weighting and discount rate were computed using Global Burden of Disease study criteria.
Results In 2008, IHD caused 175,778 YLLs (3.86 per 1,000 people), and cerebrovascular disease caused 123,816 YLLs (2.72 per 1,000 people). IHD and cerebrovascular disease represent nearly 60 % of all premature deaths due to cardiovascular causes. Among men, IHD caused 121,421 YLLs (5.39 per 1,000 people) and cerebrovascular disease 62,601 (2.78 per 1,000 people). Among women, IHD was responsible of 54,356 YLLs (2.36 per 1,000 people) and cerebrovascular disease of 61,215 (2.65 per 1,000 people).
Conclusions IHD and cerebrovascular disease are major public health problems in terms of premature deaths. Coordinated efforts to the way

both chronic conditions are managed, including earlier diagnosis and the implementation of programs aimed at disease prevention and progression delay, should continue to be prioritized.

P3P16

Impact of the assignment of heart failure as cause of death on the calculation of premature mortality by cardiovascular diseases in Spain

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Background Global Burden of Disease classification, which is based on an etiological perspective, includes heart failure (HF) among the so called "garbage codes". In Spain, a significant number of deaths are attributed to HF.
Objective We quantified the possible impact of deaths codified as HF on the calculations of premature mortality due to cardiovascular diseases in Spain for the year 2008.
Methods Mortality data were obtained from the anonymized official files of the National Statistics Institute. Deaths assigned to ICD10 codes I50, I50.0, I50.1 and I50.9 were included. Years of life lost due to premature mortality attributed to HF were calculated for each sex and age group. The standard life table Princeton West level 26 modified (appropriate for low mortality countries) was used to calculate years lost at each age of death. Age-weighting ($k = 1$) and discount rate (3 %) were applied.
Results 20,969 deaths were attributed to HF (17 % of all cardiovascular deaths and 5 % of all deaths), corresponding to a crude rate of 46/100,000 people (31.6 in men and 60.0 in women). Adjusted mortality rates per 100,000 people [European Standard Population] were: 23.6 both sexes, 22.6 men, 23.3 women). 89.5 % of deaths occurred in population aged 75 + (80 % among men and 94 % among women). HF was responsible for 17,203 years of life lost (1.3 per 1,000 population), 55.4 % of them in women (1.4 per 1,000 population) and 44.6 % in men (1.2 per 1,000 population). These figures represent 12 % of total years of life lost attributed to cardiovascular diseases (16 % in women and 9 % in men).
Conclusions The significant proportion of cardiovascular deaths assigned to HF in Spain has a relevant impact on the calculations of years of life lost from specific cardiovascular diseases. The main consequence would be an underestimation of premature mortality attributed to ischemic heart disease and hypertensive cardiopathy, the two leading causes of HF in our setting.

P3P17

Cancer and cardiovascular events incidence in kidney transplant recipients

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Background Cardiovascular illnesses and neoplasms are the two main causes of death with normal function of the graft in the long-term follow-up of patients who have received kidney transplants.
Objectives To establish the incidence of cancer and cardiovascular events in kidney transplant recipients.
Methods A follow-up cohort study of all kidney transplants carried out in A Coruña Hospital (Spain) during the period 1981–2010 ($n = 2,259$ kidney transplants, corresponding to 1,979 patients). For each transplant, information was collected on donor and recipient characteristics, laboratory parameters and immunosuppressive treatment, cardiovascular risk factors, cancer incidence and cardiovascular events after transplantation.

Standardized incidence ratios (SIRs) was estimated, the p values associated were calculated by a Poisson distribution. We used competing risks methodology to estimate the incidence of cardiovascular events and cancer in the follow-up.
Results During the follow-up period, 157 incident cancer cases were detected. The incidence of cancer increases with patient age and was higher in men than in women. After comparing the observed with the expected cancer incidence (standardized rate ratio), a significant increase in cancer incidence was found in the following locations: non-melanoma skin ($SIR = 25.44$), kidney ($SIR = 30.65$), non-Hodgkin lymphoma ($SIR = 9.09$), gastric ($SIR = 4.69$) and breast ($SIR = 3.38$).

Making a survival analysis, adjusting for competing risks, 9.02 % of patients died within the first 5 years, 27.01 % had lost their graft and 59.6 % were alive with a functioning graft. At 10 years, these percentages were 15.6, 34.1 and 42.1 % respectively. A progressive increase in the incidence of post-transplant malignancies during follow-up was observed, the cumulative incidence of cancer at 5, 10, 15 and 20 years was 4.41, 8.3, 12.9 and 13.6 %. There were 469 cardiovascular events. At 5 years the cumulative incidence was 18.54 %. The variables associated with cardiovascular events were: recipient age ($RR = 1.04$), BMI ($RR = 1.05$), left ventricular hypertrophy ($RR = 1.52$), creatinine clearance ($RR = 0.98$) and pre and post-transplant smoking ($RR = 1.56$). The relative risk reduction between pre-transplant non-smokers and smokers was 11.54 % in the first year, increasing with the follow-up. 84 patients were needed to treat to prevent one event in the first year and 4 patients at 15 years follow-up.
Conclusion There is an increased incidence of neoplasm in kidney transplant recipient, compared to that experienced by the general population. There are modifiable variables that may have great clinical impact on cardiovascular events in kidney transplant recipient.

P3P18

Prevalence of diabetes and associated hypertension in Brazil: findings from the 1998, 2003, and 2008 National Household Sample Surveys

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Background Diabetes and hypertension are commonly associated diseases that present a relevant public health problem in Brazil. They are important causes of morbidity and mortality, and impose high costs to the health system.
Objective To estimate the prevalence of diabetes and associated hypertension according to sociodemographic status and its distribution in Brazilian regions in the period 1998–2008.
Methods Cross-sectional study with data from the National Household Sample Surveys conducted in 1998, 2003 and 2008. Analysis were restricted to the adult population (≥18 years-of-age). Crude and age-and-sex standardized prevalence rates and 99 % confidence intervals (CI) were calculated for the entire population and according to categories of sociodemographical variables.

Results In the surveys of 1998, 2003 and 2008, respectively, 217,709, 254,870 and 271,677 people were included in the study samples. In 2008, the crude prevalence rate of diabetes was 5.0 % and that of diabetes associated to hypertension was 3.3 %. In the period 1998–2008, the standardized prevalence rate of diabetes in Brazil increased from 2.9 % (CI 2.8 %; 3.1 %) to 4.3 % (CI 4.2 %; 4.5 %). For diabetes associated to hypertension this rate increased from 1.7 % (CI 1.6 %; 1.8 %) to 2.8 % (CI 2.7 %; 2.9 %). The prevalences of diabetes and associated hypertension increased with age. The standardized prevalence rates of diabetes and associated hypertension were higher among women compared to men, as well as among individuals with up to 8 years of education than those with 12 or more, and among people living urban area compared to the rural. Statistically significant increases in those rates were seen in all Brazilian regions, but they were more pronounced in the Center-Western and North-Eastern. Regarding income, in 1998 and 2003, the prevalence of diabetes was slightly higher in the top quintile, compared to the bottom one. In 2008, the standardized prevalence rate of diabetes in the bottom and top income quintiles were, respectively, 3.9 % (CI 3.6 %, 4.2 %) and 4.3 % (CI 4.0 %, 4.7 %). Also the prevalence of diabetes associated to hypertension showed no statistically significant difference between the extreme (highest and lowest income) quintiles. In general, there was an increase in the prevalence of diabetes and associated hypertension in both extreme income quintiles. However, the bottom quintile recorded the highest increase.
Conclusion The prevalence of diabetes and associated hypertension is growing rapidly in Brazil. In the period 1998–2008, statistically significant increases in those prevalence rates were seen among all age groups, regions, income quintiles and both genders.

P3P19

The impact of human development index on survival in 53,210 children and adolescents hospitalized for heart failure in Brazil using probabilistic databases linkage

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Background The increasing development of therapeutics in heart failure (HF) has enabled an improvement in survival for adult patients. Nevertheless, it is unknown in the real world the survival of children and adolescents with this syndrome. In addition, social conditions of the patient remain open in the prognosis.
Objectives To study the influence on the prognosis of social condition measured by individual community's human development index (HDI) immediately prior to diagnosis. To assess overall and by etiology, gender, and age survival of pediatric heart failure, using probabilistic databases linkage methods.
Methods A retrospective nation-wide study of 53,210 patients from 0 to 18 years old hospitalized for HF (2001–2007), among them there were 8,291 (15.6 %) deaths. We performed probabilistic databases linkage from hospital admission and death certificates. We used the Kaplan–Meier method to construct the survival curve, and compared groups by log rank test. For evaluation of prognostic factors associated with death, we estimated hazard ratios (HR) with confidence intervals 95 %, followed by Cox proportional hazards model. The significance was achieved by $p < 0.05$.
Results The median age was 1.45 years (interquartiles 0.19–10.03 years), 51.5 % boys; etiologies: congenital heart disease (CHD) (57.2 %), secondary to systemic diseases (secondary) (36.5 %), myocarditis (2.7 %), dilated cardiomyopathy (DCM) (1.6 %), rheumatic heart disease (RHD) (1.5 %), and arrhythmia (0.5 %). The overall survival rates were 87.2 % at 1, 85.4 % at 2 and 82.3 % in year 7. There was no difference in survival between gender ($p = 0.359$), but the patients with RHD (61.4, 54.9 and 36.6 %) and DCM (50.3, 41.3 and 31.8 %) in 1, 2 and 7 years respectively, had the worst survival ($p < 0.001$). In Cox analysis the addition of 1 year in age increased HR in the secondary (1.052, 1.040–1.06), arrhythmia (1.081, 1.052–1.110), RHD (1.110, 1.082–1.139) and DCM (1.044, 1.031–1.057) (all <0.001) etiologies. However, the increase in the overall HDI of 0.01 point reduced the HR in the secondary (0.978, 0.969–0.986), congenital (0.988, 0.985–0.991), arrhythmia (0.959, 0.934–0.985), RHD (0.959, 0.949–0.970) and DCM (0.984, 0.974–0.995) (all <0.001). Similar results were observed for income, longevity and education dimensions. Only longevity dimension in DCM group was not significant ($p = 0.144$). Myocarditis had not association with any HDI dimensions.

P3P20

The impact of human development index on survival of 12,087 children hospitalized for congenital heart disease associated to heart failure in Brazil

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Background The increasing development of surgical repair for congenital heart disease (CHD) and therapeutics in heart failure (HF) had enabled an improvement in survival. Nevertheless, it is unknown in the real world the survival of children with this association. In addition, the impact of social conditions on prognosis and its association with CHD complexity and mechanism remain open.
Purpose To assess children with CHD and HF survival, using probabilistic databases linkage methods. To study the influence on the prognosis considering CHD mechanism, complexity, gender, and social condition measured by individual community's human development index (HDI) immediately prior to diagnosis.
Methods A retrospective nation-wide study of 12,087 patients from 0 to 18 years old hospitalized for CHD and HF (2001–2007), among them there were 3,138 (26.0 %) deaths. We performed probabilistic databases linkage from Brazilian nation-wide hospital admission and death certificates. We used the Student t test, analysis of variance, Kaplan–Meier method to construct the survival curve, and compared groups by log rank test. For evaluation of prognostic factors associated with death, we estimated hazard ratios (HR) with confidence intervals 95 %, followed by Cox proportional hazards model. The significance was achieved by $p < 0.05$.
Results The median age was 4.3 month (interquartiles 1 day to 1.99 year); 51.8 % boys; CHD complexity: low (11.5 %), moderate (65.6 %), and high (22.9 %); CHD mechanism: contractility (0.89 %), volume overload (VO) (80.02 %), pressure overload (PO) (15.71 %), and inflow tract obstruction (ITO) (3.38 %). The overall survival rates were 82.9 % at 1, 80.7 % at 2 and 77.3 % at 7 years. There was no difference in survival between gender ($p = 0.81$) or cyanosis presence ($p = 0.08$). Survival was poor for PO and ITO groups compared to contractility and VO groups ($p < 0.0001$). In Cox analysis the addition of 0.01 point in the HDI reduced the HR for death (0.988; 0.985–0.991; $p < 0.001$). The overall HDI was higher in

high complexity group ($p = 0.0004$), as well as for income ($p = 0.0044$), longevity ($p = 0.0016$), and education ($p = 0.0001$) dimensions. The overall HDI increased from contractility, VO, PO, and ITO mechanisms ($p < 0.0001$), as well as for income ($p = 0.0005$), longevity ($p = 0.0001$), and education ($p = 0.0001$).
Conclusion Pediatric patients with CHD that were hospitalized for HF are at increased risk of death, mainly if PO/ITO CHD mechanism are present. The increase of 0.01 point in HDI reduces the risk for death. HDI values increase with CHD complexity, as well as are different depended on CHD mechanism. This probably is related to access inequality.

P3P21

Nosocomial infection in intensive care units

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Background Nosocomial infection (NI) is a serious complication that raises the costs and the morbimortality of health care. NI mainly occurs in patients admitted to intensive care units (ICU), who are exposed to many procedures that can increase the risk of acquiring such complication.
Objective The authors analyze associations between specific exposure and NI.
Methods A prospective cohort study was carried through in a private ICU in Rio de Janeiro, Brazil that serves only to clinical patients with 421 patients who were followed up for 1 year. The NNIS (National NI Surveillance) method was used as monitoring base. The authors used logistic regression models to verify relation between specific exposures and NI.
Results The authors observed that some variables had an independent relation with NI. Among the reason of admission in the ICU: gastric aspiration ($OR = 10.66$, $2.31 < OR < 49.16$, $p < 0.000$), shock ($OR = 5.84$, $2.71 < OR < 12.65$, $p < 0.000$) and respiratory failure ($OR = 4.52$, $1.80 < OR < 11.29$, $p < 0.000$); among the personal antecedents: respiratory failure ($OR = 5.32$; $1.96 < OR < 14.46$; $p < 0.000$), stroke ($OR = 4.52$, $1.07 < OR < 5.042$, $p = 0.028$), previous antibiotic use ($OR = 4.38$, $1.92 < OR < 10.02$, $p < 0.000$), cardiac failure ($OR = 3.30$ $1.71 < OR < 6.37$, $p < 0.000$) and previous hospitalization ($OR = 2.78$, $1.52 < OR < 5.08$, $p = 0.001$). The rate of NI was 11.9 % (50 patients), with an incidence rate of 26.3 cases of infection/1,000 patient-day. The most common site of infection was the respiratory tract with 35 cases (58.3 %) and an incidence rate of 17.6 episodes/1,000 respirator-day, followed by sepsis (26.6 %), the urinary tract (14 %) and the skin (4 %). Nineteen of 52 patients who had evolved to death were related to NI, entering a lethality rate around 38 %. Enterobacteriaceae were the most frequently isolated pathogens. The mean length of stay was 8.15 days ($\pm$10.78). NI was associated with longer length of stay (14.76 ± 10.71 dias) compared to patients without NI (3.85 ± 3.31 days). NI still had significant correlation ($p < 0.05$) with gravity indexes (ASIS and APACHE II) and the number of procedures.
Conclusion The number of procedures, the length of stay, gastric aspiration, shock and respiratory failure as admition reason and personal antecedents of respiratory failure, stroke, previous antibiotic use, cardiac failure and previous hospitalization had a direct and stable correlation with the occurrence of IH, as shown in the logistic regression models. The data in this study cannot be generalized to other ICU, but similar studies should be stimulated to control NI in specific ICU.

P3P22

Trends of mortality and re-hospitalizations from acute myocardial infarction: an analysis over 8 years on 800,000 Italian patients

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Background In the last decades a worldwide constant reduction in acute myocardial infarction (AMI) mortality has been shown.
Objectives The aim of this study is to analyse trends of different indicators of in-hospital mortality from AMI in the Italian population and to describe survivors prognosis in terms of post-discharge mortality and re-hospitalizations.
Methods This study included all patients recorded in the Italian National Hospital Discharge Records between 1st January 2001 and 31 December 2009 with a primary or secondary diagnosis of AMI. In-hospital mortality, re-hospitalizations for all causes and for heart failure (HF) at 60 days from the AMI index admission were considered as the adverse outcomes. Three different in-hospital mortality rates were computed: index in-hospital mortality rate (I-MR), post-discharge in-hospital mortality rate (PD-MR) and total in-hospital mortality rate (I-MR + PD-MR = T-MR). Mortality average annual changes (AC) and their corresponding 95 % confidence intervals (CI) were calculated. The considered outcomes were also evaluated for patients with AMI "complicated" (c-AMI) or "not complicated" (nc-AMI) by HF during the index admission.
Results A cohort of 814,942 AMI patients was selected. From 2001 to 2008, I-MR decreased from 12.28 to 9.88 % (AC: -0.34 %; CI: -0.41 to -0.27). T-MR at 60 days decreased as well from 14.06 to 11.87 % (AC: -0.32 %; CI: -0.39 to -0.25). On the contrary, PD-MR passed from 1.49 to 1.70 % (AC: 0.02 %; CI: 0.002–0.040). In all years, PD-MR for c-AMI is nearly twice PD-MR for nc-AMI (about 2.5 and 1.3 %, respectively). Over 40,000 AMI patients had at least one re-hospitalization for all causes within 60 days from the index admission. The percentage of AMI patients with at least one re-hospitalization for HF within 60 days is stable over time, being around 9 and 2.5 % for c-AMI and nc-AMI respectively.
Conclusion The analysis of AMI mortality rates from 2001 to 2008 in Italy highlights the reduction of the I-MR but the increase of the PD-MR. Probably, the AMI patients previously destined to short-term mortality survive to the index hospitalization but have an increased probability to face re-hospitalization or death itself in the post-discharge period. This is particularly true for c-AMI patients. HF confirms to be one of the most frequent causes of re-hospitalization that can hardly mark AMI patients prognosis.

P3P23

Risk factors for cardiovascular disease in a Portuguese elderly population

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Background The population is aging. Associated with an increased number of older people there is an increased prevalence of chronic diseases such as cardiovascular diseases. These represent the major

causes of mortality worldwide namely in Portugal. Thus, it is important to know the prevalence of cardiovascular risk factors among the elderly population, to allow the provision of indicators for the development of community intervention in order to reduce the burden of cardiovascular disease.

Objective This study aimed to characterize the distribution of risk factors for cardiovascular disease among the older people when experiencing different living contexts through calculating the prevalence of sedentary, hypercholesterolemia, hypertension and overweight.

Methods A sample of 125 older people aged 75 years or more were studied (88 women, mean age 83.3 ± 5.4 years; 37 men, mean age 82.2 ± 4.8 years). Among these individuals, 90 (72.0 %) subjects used social support (recreation centres, homes for the aged, day care centres and home help services) and 35 (28.0 %) did not. Lifestyle questionnaires were completed on health habits and physical activity. Personal medical records were used as a source of data on anthropometric measures and biochemical information. Weight values were available for 101 (80.8 %) of the participants, the height values for 113 (90.4 %) participants, the total cholesterol values for 21 (16.8 %) and blood pressure values for 104 (83.2 %) participants. When the body mass index (BMI) was greater than 25 kg/m^2, the older person was considered overweight (including obesity).

Results Sedentary was observed in 96.9 % of men and in 81.2 % of women ($P < 0.05$). Overweight prevalence was significantly higher in those who used social support than those who did not use (71.9 vs. 28.1 %, $P = 0.005$). Hypertension was found in 39.4 % of the participants. The prevalence of hypertension among social support participants is higher than compared to participants who did not use social support (27.9 vs. 11.5 %, $P = 0.23$).

Conclusions The overall prevalence of some risk factors for cardiovascular diseases found in older people was high, namely sedentary and overweight. The results suggested the need for health promotion programs for older people, especially programs emphasizing the reduction in sedentary behaviors in social support.

P3P24

The micRoAlbumin sCreening survEy (RACE) study: design, methods and main results

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Background Urinary albumin excretion is a well known surrogate marker for cardiovascular and renal events in both diabetic and non-diabetic populations.

Objectives The micRoAlbumin sCreening survEy (RACE) observational study was designed to estimate the prevalence of microalbuminuria (MA) in the population of hypertensive and/or type II diabetics and also in the normotense population of outpatient users of Portuguese primary care services. The analysis of association between clinical/epidemiological variables and MA was a secondary objective of this study.

Methods In this cross-sectional study. MA was measured in spot occasional urine samples (Micraltest) in 9,194 outpatients and in 3,065 24-h urinary samples of the 9,198 outpatients enrolled ($r = 0.586$, $p < 0.001$ correlation between methods). Specific inclusion criteria for the hypertensive and/or diabetic participants: age ≥18 years, diagnosis of hypertension and/or type II Diabetes mellitus. Specific inclusion criteria for the control group: age ≥18 years, SBP <140 mmHg and DBP <90 mmHg or not receiving any antihypertensive treatment, fasting glycemia <110 mg/dL. All patients: informed consent and availability of blood and urine tests in the previous 12 months. Exclusion criteria: menstruate, pregnant or breast feeding women, episode of fever or urinary tract infection upon recruitment, patients followed by nephrologists, diagnosis of type I Diabetes mellitus, intense physical activity in the previous 24 h, diagnosis of any autoimmune disease. Patients were recruited in Portugal from the 1st October until the 31st December 2010. Each general practitioner recruited 20 eligible outpatients (15 hypertensive and/or diabetic, and 5 controls) from the first four consecutive patients observed in each recruitment day. Clinical/epidemiological data included information on sociodemographics, concomitant diseases, blood pressure, routine blood test results and antihypertensive, hormone and endocrine diseases medication.

Results Prevalence of MA was estimated to be 42.6 % (95 % CI: 41.0–44.2 %) in hypertensive outpatients (n = 3,769), 51.3 % (95 % CI: 46.6–56.0 %) in type II diabetic outpatients, 57.5 % (95 % CI: 55.8–59.3 %) in outpatients diagnosed with both hypertension and type II diabetes and 20.6 % (95 % CI: 18.9–22.5 %) in control outpatients. Regarding all hypertensive outpatients (n = 6,869), the Odds Ratio associated with MA versus normoalbuminuria was 1.6 (95 % CI: 1.3–1.9) for stroke/TIA cases, 1.9 (95 % CI: 1.6–2.2) for coronary disease, 1.6 (95 % CI: 1.4–1.8) for periphery arterial disease, 2.1 (95 % CI: 1.8–2.4) for left ventricular hypertrophy, 1.9 (95 % CI: 1.6–2.3) for heart failure and 1.7 (95 % CI: 1.4–1.9) for chronic kidney disease.

Conclusions High prevalence of MA was observed in the Portuguese diabetic and non-diabetic hypertensive population and MA was found to be strongly associated to target organ damage and cardiorenal events. MA is a robust surrogate marker of cardiovascular risk that can be easily determined in ambulatory clinical setting.

P3P25

Oral health assessment in a sample of Portuguese patients

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Background Oral diseases—namely dental caries and periodontal disease—are a worldwide public health burden. The development of epidemiological studies is important to identify, assess and monitor the prevalence and distribution of oral diseases. It is in this context that the DMF-T index, which is recommended by the World Health Organization (WHO), allows the assessment of dental caries in different populations, expressing the mean of decayed, missing and filled teeth (DMF-T index). This is the basic reference point for the diagnosis of dental conditions and development of oral health programs.

The objective of this study consists in the determination of the DMF-T index and the dental plaque indexes (O'Leary and Silness and Löe) in a sample of patients at the Dental Clinic of the Portuguese Catholic University in Viseu, Portugal and the association with sociodemographic factors.

Methods We conducted a cross-sectional study involving patients that attended the first dental appointment at the Dental Clinic of the Portuguese Catholic University in Viseu, Portugal. Data was collected using the DMF-T index and the O'Leary and Silness and Löe plaque

indexes to assess dental plaque total percentage. To assess dental caries we used the *WHO* probe during the dental appointment. The final sample was composed of 729 patients (428 female, 58.8 %), mean age = 39.6 years. We conducted a statistical analysis in which prevalences were expressed in proportions and compared using the Chi-square test.

Results We obtained a mean of 5.5 ± 4.3 decayed, 4.1 ± 5.3 missing and 2.7 ± 3.3 filled teeth, resulting in a final DMFT index mean of 12.5 ± 6.8. Sixty-four point six percent have a DMF-T equal or higher than 10, 8.5 % have a DMF-T mean between 1 and 3 and only 2.2 % have a DMF-T equal to 0. Gender was associated with the prevalence of more than 5 dental caries (female = 34.2 % vs. male = 42.4 %, $p < 0.05$) and age was associated with the prevalence of more than 3 dental caries (≤40 years = 60.7 % vs. >40 years = 69.8 %, $p < 0.05$) and missing more than 3 teeth (≤40 years = 15.6 % vs. >40 years = 71.9 %, $p < 0.001$). As for the O'Leary and Silness and Löe dental plaque indexes, the means obtained were 69.5 and 74.9 %, respectively.

Conclusions The DMF-T index and dental plaque indexes present high values that indicate inadequate patterns of oral health behaviours among dental patients. These scores are associated with gender and age. The improvement in primary prevention methods in the community is important in order to improve oral hygiene habits among patients.

P3P26

Cross-sectional and longitudinal associations between serum uric acid and metabolic syndrome

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Background and objective Research on the importance of serum uric acid (SUA) as a contributing metabolic factor to cardiovascular diseases has conducted to conflicting results, with most studies assuming a cross-sectional design. The aim of this study was to evaluate the association of SUA and Metabolic Syndrome (MetS) and its features.

Methods A representative sample of 2,485 individuals aged ^{3}18 years were randomly selected from the non-institutionalized resident population of Porto, Portugal. A total of 1,054 eligible subjects were included for the longitudinal analyses. Hyperuricemia was defined as SUA ≥7.0 mg/L in men and ≥6.0 mg/L in women. MetS was defined according the Joint Interim (2009) criteria. Associations were estimated using Poison regression and binomial models. Final models considered the adjustment for age, sex, education, smoking, alcohol, protein and energy intake, total physical activity, and having one or two features of MetS at baseline evaluation.

Results In the cross-sectional analysis, subjects with hyperuricemia had a 2.10-fold increased risk of MetS as compared with normouricemic subjects (PR = 2.10, 95 % CI: 1.68–2.63). Among MetS features, high triglycerides presented the strongest association with hyperuricemia (PR = 2.32, 95 % CI: 1.84–2.91).

The MetS crude incidence rate was 4.5/100 person-year (95 % CI: 3.9−5.2) in normal uricemic and 13.0/100 person-year (95 % CI: 8.5–20.0) in hyperuricemic participants. Using a multivariate longitudinal approach, hyperuricemia was positively associated with MetS (IRR = 1.73, 95 % CI: 1.08–2.76). One standard deviation increase of SUA concentration was associated with a 1.22-fold increase in MetS risk (IRR = 1.22, 95 % CI: 1.05–1.42). Elevated SUA presented the strongest association with high triglycerides concentration (IRR = 1.44, 95 %: 1.22–1.71) and waist circumference (IRR = 1.25, 95 %: 1.05–1.49).

Conclusion The independent positive association between SUA and MetS suggested by this longitudinal study supports that SUA might be a risk factor for MetS.

P3P27

Analytical evaluation of two methods for vitamin D determination: a comparative study

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Background Vitamin D is a steroid hormone which can be found in serum in two forms (D2 and D3). In the last decade, there was an increase of publications associating low levels of vitamin D with various pathologies such as cancer, cardiovascular disease, autoimmune disease, diabetes and even infection. Simultaneously, there has been an increase of clinical request for this determination. In our hospital there was a fivefold increase from 2008 to 2010.

Objective The main objective of this study was to determinate and compare total vitamin D (D2 and D3) levels with two automated equipments.

Methods Serum samples (n = 201) were evaluated using two automated equipments with chemiluminescent immunoassays (Abbott Architect® and Roche Cobas®). Precision, using quality control material, and correlation were determined. Differences were evaluated by paired samples t test and Bland–Altman analysis. An accuracy profile was created with β-expectation tolerance intervals of 95 % and acceptance limits settled at ±20 %. Statistical analysis was performed in Medcalc® and e-noval® software.

Results For the within-run precision of Abbott Architect® (n = 45), were used 3 levels of quality control material: Level 1 (20.0 ng/mL), CV = 3.8 %; Level 2 (40.0 ng/mL), CV = 2.0 %; Level 3 (75.0 ng/mL), CV = 3.2 %. For Roche Cobas® (n = 30) were used 2 levels: Level 1 (20.6 ng/mL), CV = 3.3 %; Level 2 (37.8 ng/mL), CV = 2.0 %. There was a correlation coefficient of 0.9328 ($p < 0.0001$), with a mean difference of 6 ng/mL [5.4 ng/mL; 6.6 ng/mL, 95 % CIs] (t test, $p < 0.0001$). Accuracy profile, shows that the Abbott Architect® method is validated between 20.0 and 75.0 ng/mL and the Roche Cobas® method is validated between 20.6 and 37.8 ng/mL.

Conclusion There is a strong correlation between both methods and Abbott Architect® values are significantly higher. This may influence the way desirable vitamin D ranges are establish.

P3P28

Acute myocardial infarction with ST elevation and withoutST elevation: impact on quality of life

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Background The Acute Myocardial Infarction (AMI) requires urgent medical intervention to improve the survival and survivors' Quality of

Life (QOL). Time is myocardium! For that, health systems should provide a place for accessible care in time. It is imperative that an emergency room is equipped with the best strategies with regard to its diagnosis and treatment. On the other hand, scientific societies have been proposing clinical guidelines and performance protocols based on best evidence. So, being a disease with such a great impact, not only on health but also on economy, we intend to relate the type of AMI with the QOL.

Methods It is a quantitative transverse study. The sample consisting of 131 subjects with a medical diagnosis of acute myocardial infarction (AMI) at least 6 months and which last episode occurred between January 1 of 2008 and August 31 of 2011. We used a questionnaire (sociodemographic characteristics and Quality of Life—Mac New QLMI) self-administered to patients in an outpatient setting at Hospital Center in Portugal. They have ages between 41 and 86 years (media = 67.11 ± 11.78) and 74.0 % are men. Through Green Lane for Acute Myocardial Infarction (GL-AMI) were admitted 44.3 % of patients with AMI, 42.0 % had AMI with ST-elevation and the rest had AMI with non-ST-elevation, 94.5 % of the patients AMI with ST-elevation MI were admitted through GL-AMI. The majority of patients (97.7 %) have risk factors (RF), of which 84.0 % with hypertension, 73.3 % with dyslipidemia, 54.8 % with obesity, 27.5 % with mellitus II diabetes, 18.3 % smokers and 13.0 % with stress. As for the numbers of associated RF, 10.9 % have one RF, 29.7 % have two and 59.4 % have more than three RF.

The type of treatment made after the AMI, 45.8 % was primary-Percutaneous Coronary Intervention, 35.9 % Percutaneous Coronary Intervention, 9.9 % Coronary artery bypass grafting, 4.6 % symptomatic treatment and 3.8 % thrombolytic therapy.

Results We found that most patients who suffered AMI with ST-elevation referred better perception of QOL than those who had AMI with non-ST-elevation, both on total value ($t = 5.061$, $p = 0.000$), as on dimensions of QOL: emotional ($t = 5.646$; $p = 0.000$), physical ($t = 4.570$; $p = 0.000$) and social ($t = 4.480$; $p = 0.000$).

Conclusion According to the challenge set by WHO (1998) which states that is not enough "give years to life", it is crucial to give "life to years". Thus, evaluating QOL is a key component in both the construction of the clinical decision, as the effectiveness of established treatment.

Poster Topic 3Q. Other chronic diseases & Quality of life

P3Q01

IgM antibodies levels to *Mycobacterium leprae* PGL-1 in serum and salt samples of leprosy patients and contacts from the endemic area of Para, Brazil

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Introduction Leprosy still is a public health problem in some Asia and African countries. In south America the Brazil is the second in the world ranking. The north and northeast regions show prevalence a new case detection higher when compared with the south and southeast regions. The Para state has active foci of transmission in some municipalities that to present high detection rates in the general population and children under 15 years.

Objective We evaluated IgM antibodies levels to *Mycobacterium leprae* PGL-1 in serum and salt samples among leprosy patients and your contacts to compare tests performance as diagnostic tools and leprosy surveillance.

Materials and methods Leprosy patients Multibacillary (MB), kin leprosy contacts (KLC) and not kin leprosy contacts (NKLC) residents in Cameta city northeast Para were selected for this study and serum and salt samples were collected to measure IgM antibodies levels to PGL-1 by standard enzyme immunoassay (ELIZA) using semi-synthetic antigen PGL-1 (NT-P-BSA) specific to this Mycobacteria.

Results Fifty-two subjects (N = 52) were examinated and after signing the consent Form Free and clear were collected serum and salt samples to ELIZA performance. 26 patients were classified as multibacillary (MB); 15 as KCL and 11 as NKLC. Average antibodies anti-PGL-1 levels in leprosy patients MB in serum and salt samples was 0.186 and 0.128 respectively, significantly longer when compared with average of contacts in serum (0.052) and salt (0.09) samples.

Discussion The Pearson correlation was positive in analysis of antibodies anti-PGL-1 levels in serum and salt samples among patients MB; r(pearson) = 0.5012, 95 % CI—0.14–0.74, $t = 2.7298$, $p = 0.0091$. However a comparative analysis of Mb patients and contacts show negative correlation: r(pearson) = 0.023, 95 % IC = 0.41–0.038; $t = 0.9127$.

Conclusion Serologic testing anti-PGL-1 in salt samples was shown be important auxiliary toll in the leprosy diagnostic and epidemiological surveillance of contacts with high risk of morbidity due to leprosy.

P3Q02

Occurrence of inflammatory bowel disease in a central region of Italy. A study based on health information systems

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Objective There are few estimates of the incidence and prevalence of inflammatory bowel disease in Italy. Using health information systems, we sought to measure the incidence and prevalence of inflammatory bowel disease (IBD), including Crohn's disease (CD), and ulcerative colitis (UC), among 5 million citizens of Lazio Region during the year 2009.

Methods Data were obtained from Hospital Information System (HIS) and from disease-specific payment exemptions register (DPER). We identified as prevalent IBD cases all members of public health insurance register alive and resident in Lazio Region at 31/12/2009, who had had a hospital discharges with ICD-9CM code 555 (CD) or 556 (UC) as principal or secondary diagnosis during the period 2000–2009 or had had a disease-specific payment exemption during the period 2005–2009. Incident cases were defined excluding cases occurred before the year 2009. Subjects with both UC and CD features were classified separately (UCCD) and to evaluate their contribution to estimates all analysis was carried out including and excluding them. Contribution of each source of data was analyzed. Specific and age-standardized (European population) occurrence rates for 100.000 resident were calculated for males and females.

Results 21,569 IBD patients were identified (6,694 with CD and 13,254 with CU), 1,621 subjects fulfilled both CD and CU case

definitions. 58.9 % of CD prevalent cases could be only identified by HIS whereas DPER accounted exclusively for 18.3 % of subjects. Inclusion or exclusion of UCCD subjects led to CD prevalence rates ranging respectively from 88 to 116 for males and 79–103 for females. Prevalence rates for CU ranged from 194 to 222 for male and from 159 to 184 for female. Incidence rate for CD ranged from 8.6 to 9.8 for males and from 7.5 to 8.1 for females. For CU incidence rates ranged from 19.8 to 20.5 for males and from 7.0 to 7.8 for females. Age-specific prevalence rates increased for age lower than 40 years, after became relatively constant.

Conclusions Occurrence rate for IBD obtained using health information systems led to estimates similar with those reported in other western countries. The identification of people with IBD in the Lazio Region offers the opportunity to describe the health care utilization patterns of this population of patients and to carry out other relevant epidemiological studies.

P3Q03

EpiReumaPt Study versus National Health Survey (INS): first analysis on the self-reported prevalence of chronic diseases within the region of Lisbon

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Introduction EpiReumaPt is an observational cross-sectional study on the prevalence of Rheumatic Diseases (RD) in Portugal. 10.000 inhabitants will be randomly surveyed within a representative sample of the Portuguese population, which will be stratified by administrative territorial units (NUTS II).

Objectives The aim of the current work is to compare the observed prevalence of self-reported RD and other chronic diseases, such as hypertension (HTA) and diabetes mellitus (DM), in EpiReumaPt versus the self-reported prevalence of those diseases obtained in the National Health Survey 2005–2006 (INS) for the same geographic area (i.e. Lisbon and Tagus Valley, LVT).

Methods The first EpiReumaPt results are available, comprising data collected from September 2011 until April 2012 in the districts of Lisbon and Setúbal (i.e. NUT II of Lisbon). The self-reported prevalence of RD, HTA and DM was calculated for different age ranges starting on 25 years old (yo).

Results We analyzed the results from 2,200 interviews (female gender: 62.6 %; average age: 53,2yo), with the following distribution by age range: 16.4 % (25–34 yo); 20.0 % (35–44 yo); 17.4 % (45–54 yo); 16.8 % (55–64 yo); 16.9 % (65–74 yo); and 12.5 % (≥75 yo). In the INS the same age ranges had a similar distribution: 21.9, 19.7, 18.2, 16.7, 13.5, and 9.9 %. Representativeness of the Portuguese population was preserved in this EpiReumaPt sample in what concerns the size of each territorial unit. We observed the following self-reported prevalence for RD by each age range, EpiReumaPt versus INS: 4.1 versus 5.1 % (25–34 yo); 7.6 versus 7.3 % (35–44 yo); 24.9 versus 19.3 % (45–54 yo); 39.4 versus 36.0 % (55–64 yo); 46.0 versus 40.8 % (65–74 yo); and 53.8 versus 54.7 % (≥75 yo). The overall prevalence of RD calculated for EpiReumaPt and INS were 27.7 and 23 % (females: 35.7 vs. 30.5 %; males: 14.2 vs. 14.6 %), respectively. Regarding the other chronic diseases we detected the following overall prevalence for the same comparison EpireumaPt versus INS: 28.7 versus 29 % (HTA); and 9.4 versus 8.3 % (DM).

Conclusions EpiReumaPt detected similar overall prevalence values to the ones registered in the INS within the LVT geographic area. It is too early to draw definitive conclusions given that EpiReumaPt didn't cover all INS LVT regions and because results still need to be weighted according to gender and age distribution for each territorial unit. Nevertheless, these are promising results which reiterate the appropriateness of the data collection method used in EpiReumaPt. We intend to continuously test the representativeness of our sample and to further compare the obtained epidemiologic data against the INS database.

P3Q04

CoReumaPt project: the Portuguese cohort of rheumatic diseases

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Background Rheumatic diseases (RD) have a variety of clinical manifestations and their prognosis is influenced by several factors. Cohorts and registries have contributed to important epidemiologic knowledge about the disease course and the long-term outcomes of RD. The Portuguese Society of Rheumatology (SPR) developed a national register (Reuma.pt) for inflammatory RD (rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis and juvenile idiopathic arthritis), but so far no further nation-wide registries or cohort of patients with other relevant chronic RD have been established in Portugal, such as, osteoporosis, osteoarthritis, systemic lupus erythematosus, polymyalgia rheumatica, fibromyalgia, gout, periarticular diseases and non-specific low-back pain.

Objectives CoReumaPt aims to be a national prospective cohort to further explore outcomes research of chronic RD and to assess factors influencing the development and progression of RD. CoReumaPt will also enable the evaluation of the economic impact and the burden of RD in Portugal.

Methods An open cohort is being created, initially composed by the randomly selected population of the ongoing cross-sectional National Epidemiological Rheumatic Diseases study (EpiReumaPt) and subsequently by other sources, namely through self- and physician's referral. Follow-up will be performed with annual self-administered questionnaires, in order to systematically collect and analyze outcomes of interest, mainly patient-reported outcomes. Data concerning less frequent assessments, such as radiographs and biomarkers, will also be assembled.

Results So far 2,411 subjects were interviewed at home with a questionnaire to detect symptoms of RD. 1,625 subjects with a positive screening (suspected RD) and 176 with no rheumatic symptoms were invited for the rheumatologist's assessment with standardized evaluations. 1,053 subjects have accepted to participate in the CoReumaPt project and signed the Informed Consent. Out of these enrollees, 638 were already evaluated in a rheumatology baseline visit.

Conclusions CoReumaPt will be a valuable resource for epidemiologic research and will deliver pivotal information to improve public health policies concerning the prevention and the management of RD in Portugal. Being nationwide, population-based and mainly derived from a random sampling technique are among the strongest aspects of our approach.

P3Q05

Quality of life in Portuguese obese patients the role of dispositional optimism and social support

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Background Quality of life (QoL) has become an important concept for health care. It is a construct composed of a number of factors that contribute to individual's well-being and adjustment to chronic diseases. Obesity is considered a relevant problem of public health in modern societies, as it is a risk factor for various health conditions, including diabetes, chronic respiratory and cardiovascular diseases. Obese patients are required to live with the limitations imposed by their conditions.
Objectives The aim of the present study was to test a hypothetical model to examine whether dispositional optimism and social support are relevant predictors of QoL (general well-being, physical and mental health) and if dispositional optimism exerts a mediator effect between social support and QoL, in Portuguese obese patients.
Methods This study comprises a sequential sample of 215 volunteer obese patients, approached by their physicians, in outpatient departments of the main hospitals in Portugal. All patients completed self-reported questionnaires assessing socio-demographic, clinical variables, social support, dispositional optimism and quality of life domains. Structural Equation Modeling was used to test the quality of the hypothesized model. Satorra-Bentler Scaled correction to c^2 statistic test was used. To test the adequacy of the model two goodness-of-fit indices were used: Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). Analysis was performed using EQS 6.1.
Results SEM results showed that the hypothesized model fitted the data reasonably well, CFI = 0.93, RMSEA = 0.06, = 293.8573, $p < 0.001$ (sensible to sample size). Controlling for socio-demographic and clinical variables, dispositional optimism and social support had a simultaneous independent statistically significant impact in QoL. More optimistic patients reveal a better general well-being and a better mental health. More social support contributes to a better QoL. The results also showed a partial mediation effect of dispositional optimism between social support and mental health.
Conclusions The purpose of this study was to evaluate, in Portuguese obese patients, the role of social support and optimism in QoL. Using SEM, the findings suggest that an optimistic attitude and a good social support contributes to affect positively their quality of life.

P3Q06

Functionality of the vascular access in hemodialysis

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Background Vascular access is vital in patients with end-stage renal disease (ESRD) whose major cause of morbidity and hospitalizations are the hemodialysis program and its dysfunction. Therefore, each individual should be provided with skills to care and preserve access, create programs and implement quality assessment procedures to maximize its longevity.
Objectives The objective of this study is to characterize the type of vascular access, evaluate the functionality of access and the influence of sociodemographic variables and clinical in functionality access.
Methods According to the importance and relevance of the topic, it was felt necessary to conduct an exploratory study with a sample of 127 patients on hemodialysis treatment using the grid of observation as a tool for data collection. The average age is 67.76 years (SD = 14.372), was composed of 65.4 % men and 34.6 % women.
Results The functional access prevails (85.8 %) and dysfunctional access are found mostly in women (22.7 %), in the age group ">70" (83.2 %) and in patients with central venous catheter (CVC) (45.5 %). The ESRD stage 5 with diabetes has mostly functional access. Patients with CVC and use of Citra-LockTM as buffer showed greater percentage of dysfunctional access (60 %).
Conclusions There is no doubt in the importance of monitoring the vascular access to allow early action. The CVC is the type of access with the highest percentage of dysfunction; as a result, it is always more desirable an arteriovenous fistula (AVF) or arteriovenous grafts (PTFE). In order to increase its longevity, avoid failure of the access and prevent further complications, it is necessary a regular monitoring and evaluation.

P3Q07

Vulnerability to stress and quality of life in patients following acute myocardial infarction

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Background The vulnerability to stress has been documented as associated with heart disease, reporting literature constitute an important determinant of quality of life, therefore this study aimed to investigate the implications of stress on quality of life (QOL) in patients after MI, followed in *CHTV EPE*, which outlined the aims:
Objectives Evaluate QOL and examine the influence of age and sex in their variability;

Evaluate stress, self-concept and social support and determine their effect on QOL;
Methods The cross-sectional observational study, was conducted in a non-probabilistic sample of convenience, consisted of 61 patients after MI aged between 34 and 92 years (mean = 62.92 years, SD = 11.69 years). Data collection was performed using the Vulnerability to Stress Scale—QVS 23, elaborated by Vaz Serra in 1985 (Vaz Serra, 2000), to Clinical Inventory of Self-Concept Vaz Serra (1985), Scale of Social Support of Matos and Ferreira (2000) and adaptation of the Questionnaire MacNew Leal (2004).
Results It was observed that 45.9 % of patients present following MI vulnerable to stress and 54.1 % are not vulnerable. Vulnerability to stress is higher in patients with poor self-concept (Ró = −.283, $p = .027$), and with poorer social support (r = −.280, $p = .029$), in females (mean = 45.47, SD = 6.907), but not influenced by age

($r = -.038$, $p = .771$). The majority of patients following MI, pointed out with reasonable QOL (57 %), followed by the high QOL (41 %). QOL is higher in patients with better self-concept (Ró = .388, $p = .002$), with better social support ($r = .314$, $p = .014$), with lower vulnerability to stress ($r = -.478$; $p = -.000$) and in men (global score and domains). The age was not associated with QOL ($r = -.164$, $p = .206$).

The stress and self-concept shown to be predictive of QOL, explaining 31.3 % of its variability.

Conclusions It follows from the results shown that stress, self-concept and social support influenced the QOL of patients after MI, imposing themselves consider them when designing good clinical practice for their assistance.

P3Q08

Determinants of quality-of-life in a sample of Portuguese teachers

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Background Professional requirements may interfere with social, psychological and physical activities and that can condition the quality of life.

Objectives The aim of this study was to analyze the determinants of health-related quality of life (HRQoL) in a sample of Portuguese elementary teachers.

Methods In a cross-sectional study we assessed a sample of elementary teachers from sixteen randomly selected public schools of the district of Viseu, Portugal. A self-administered questionnaire was used to assess social and demographic variables that included the 12-Item Short Form of Medical Outcomes Study (SF12) to assess HRQoL grouped in physical and mental dimensions (lower scores, better quality of life). The final sample was composed of 864 elementary teachers (638 female, 73.8 %), age = 43.7 ± 7.6 years. We used the qui-square test to compare proportions and the Kruskal-Wallis test to compare continuous variables.

Results The total scores of HRQoL were associated with gender (female = 33.0 ± 3.9 vs. 34.4 ± 3.4, $p = 0.01$), age (<40 years = 33.5 ± 3.7 vs. 32.9 ± 3.9, $p = 0.05$) marital status (married = 33.5 ± 3.8 vs. 32.7 ± 3.8, $p = 0.05$), time of service (less than 15 years = 33.8 ± 3.4 vs. 33.1 ± 4.0, $p = 0.05$), sports practice (yes = 33.8 ± 3.6 vs. 32.4 ± 4.1, $p < 0.01$), depression (yes = 31.2 ± 4.1 vs. 33.9 ± 3.4, $p < 0.01$); insomnia (yes = 31.9 ± 4.2 vs. 33.8 ± 3.5, $p < 0.01$). The physical dimensions were associated with gender, age, time of service, sports practice, depression and insomnia. Also, the mental dimensions were associated with marital status, time of service and sports practice.

Conclusions The impairment of quality of life in Portuguese elementary teachers was associated with socio-economic and professional variables.

P3Q09

Feelings about the stoma and its implications for the quality of life Ostomates

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Background The construction of an ostomy involves changes in lifestyle in terms of family and social relationships of individuals, there may be changes in social role performance and quality of life of Ostomates.

Management of feelings and fears, but sometimes it is of great emotional complexity, lacking the ostomy specialist help to overcome these obstacles.

Objectives Assessment of Quality of Life (QOL) of people with an ostomy; Check how the feelings of the person with a stoma influence its Quality of Life (QOL).

Methods Cross-sectional descriptive study, conducted on a sample of 104 non-probabilistic intentional Ostomates, 58 men and 46 women with mean age of 63.77 years.

Data collection was conducted through questionnaires of QOL (WHOQOL—BREF) and Scale for Assessment of the Areas of Life Satisfaction in Marriage (EASAVIC).

Results Ostomates scored with negative feelings with poorer self-concept, worse mood (greater frequency of depressive symptoms), greater dissatisfaction with body image and changes in marital satisfaction. Patients who had fewer negative feelings, punctuated with better self-esteem and greater extraversion.

Conclusion This study demonstrates that the absence of negative feelings and better self-concept and global self-esteem, greater satisfaction with body image and conjugal life, the outgoing person has less tendency to become depressed.

We note that the influence of negative feelings in 26.5 % the quality of life, really is important that health professionals do provide itself with all means at its disposal to minimize the causes of dissatisfaction with the quality of life (negative feelings, body dissatisfaction, depression and mood changes in marital satisfaction and body image).

In this context, it would be appropriate to develop a longitudinal investigation of nature in order to monitor the QOL of Ostomates along your life path.

P3Q10

Cardiovascular risk factors in young individuals from a university in São Paulo state, Brazil

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Cardiovascular diseases affect the whole circulatory system, and myocardial infarction, angina, atherosclerosis and stroke are among the most common of such diseases. Risk factors are significant in all populations, and in developed countries, one-third of cerebral cardiovascular diseases are caused by the use of tobacco, alcohol, dyslipidemia, obesity and arterial hypertension. The latter, which is the focus of this study, is characterized by increased tension levels in association with metabolic and hormonal alterations and trophic phenomena—cardiac and pulmonary hypertrophy. It is necessary to prevent its increase by reducing risk factors, particularly in population groups with greater potential to develop the disease.

Objective To identify the epidemiological profile and risk factors for arterial hypertension in students of Faculty at Botucatu School of Medicine.

Materials and methods Is a quantitative study from August 2005 to May 2010. Data were collected by means of voluntary search by students during the campaign Health Promotion and Disease Prevention, scheduled on each of UNESP campuses. The participants filled out a questionnaire on their personal and epidemiological details: smoking duration, physical activity, weight, height, base disease and regular use of medication. Arterial pressure was measured and capillary blood was collected by digital puncture for verification of glucose and total cholesterol values.

Results 6,102 students from 14 UNESP campuses were evaluated. 6.4 % showed maximum pressure above normal values; only 18.6 were aware of the fact that they were hypertensive. Among the hypertensive individuals with maximum arterial pressure over 140 mmHg and minimum arterial pressure over 89 mmHg, it was found that: 63 were males; 23 were females; their mean age was 28.8 years; 10 were smokers; 50 were sedentary; 52 showed a BMI higher than 25; one showed cholesterol over 240 mg %, and 16 showed altered glycemia. As to their family history, 45 reported diabetes in relatives; 21 reported stroke, 29 obesity, 21 myocardial infarction, 48 arterial hypertension and 31 hypercholesterolemia.
Conclusions It is necessary to implant and implement educational programs for control and follow-up, which will allow for reducing such situation in the early phases of life, as it represents a health problem with a high frequency of morbidity and mortality and a high familial and institutional cost.

P3Q11

Factors associated with the walking activity in rural area

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Background The regular practice of walking can bring significant benefits, contributing to a better quality of life and reducing the risk of cardiovascular diseases.
Objective To verify the association between factors related to walking activity of adults in rural communities at the Jequitinhonha Valley—Minas Gerais.
Methods This is a cross-sectional study based in community census. The studied population consisted of 567 adults aged $\geq$18 years old. The assessment of the walking activity was performed using the long version of IPAQ. We used a typical week as a reference. The outcome variable was the walking activity, cutting in a third tertile of walking time, which corresponded at least 154 min of walking per week. For the bivariate analysis, a Chi-square test was used to verify differences in the proportion of walking activity, according to the independent variables. Multiple Poisson regression analysis was also performed with an estimated prevalence ratio (PR) and confidence interval of 95 % (95 % CI).
Results Overweight and obesity was prevalent mainly women, 39.8 and 51.5 %, respectively. Approximately 30 % of the population had altered blood pressure values and 8 % had high values glycemic index. The population walks 180 min per week on average, being the larger time walking as displacement (116 min). Men reported to walk longer time that women (243 and 120 min respectively). In the multivariate model female (PR 0.84, 95 % CI 0.78–0.89), and fair/poor health perception (PR 0.90, 95 % CI 0.84–0.97) were negatively associated and age between 31 and 45 years (PR 1.11, 95 % CI 1.02–1.22) remained positively associated with a third tertile of walking.
Conclusion Women, age $\geq$60 years and perceive health status as fair/poor were related factors to low walking activity. This indicates the need for the formulation and introduction of strategies to encourage people at these communities to exercise of walking.
Keywords Leisure-time physical activity · Exercise · Walking · Rural areas · Physical activity · IPAQ

P3Q12

DM2 in primary care: risk factors, control and therapeutics of a lifelong disease

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Summary justification of the topic relevance Diabetes was the 4th cause of death in Portugal, in 2009. Recent studies showed high prevalence of cardiometabolic risk factors in DM2 patients in specialist consultations and an average glycemic control just below recommendations. However, there is lack of information about diabetic patients' control in primary care setting, where they are most commonly assisted in our country. To understand the dimension of the problem and to provide adequate measures to optimize preventive care and treatment goals, it is urgent to study type 2 diabetic population attending primary care units.
Background In 2010, the prevalence of diabetes among Portuguese population between 20 and 79 years was 12.4 %, and accounted 4,744 of associated deaths. It was estimated that one-fourth of the patients present values of HbA1c over 8 %. Primary care health units provide care for the majority of type 2 diabetic patients and therefore it is urgent to obtain information about diabetes health related status in this population.
Objectives Our aim was to characterize, in primary care setting, Portuguese diabetic patients according to HbA1c value and estimate the diabetes control rate using both cut-offs of ADA and EASD/IDF. Other goals were to determine cardiovascular risk factors, comorbidity and therapeutic profile in these patients and to analyse its association with HbA1c values.
Methods A cross-sectional study was conducted in primary health care units throughout the country between July 2011 and April 2012. A sample of 1,500 patients was included from 158 units randomly selected, stratified proportionally by region according to the national distribution. Information about socio-demographics, anthropometrics, cardiovascular risk factors, comorbidities, patient global assessment, HbA1c value and treatment was collected. Frequencies and measures of central tendency and dispersion were calculated with 95 % confidence intervals. Pearson correlation, *t* test and ANOVA were used to analyse the association between HbA1c value and the independent variables. Multiple linear regression was used to model the relationships.
Results Results will be presented in order to determine correlations between HbA1c and cardiometabolic risk factors (with both ADA and IDF/EASD cut-offs), therapeutic approaches and socio-demographic characteristics.
Conclusions Previous studies, conducted in specialist consultations, reported a high prevalence of diabetes in Portugal and high prevalence of cardiometabolic risk factors. These results show that people with type 2 diabetes require access to on-going care with updated plans of action, and multidisciplinary teams involved in the disease management. The study of associations between metabolic control and risk factors and therapeutics is extremely relevant to the acknowledgment and development of health politics, especially preventive care.

P3Q13

EpiReumaPt after 3 months on the field

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Introduction In Portugal, data on prevalence and impact of Rheumatic Diseases (RDs) is scarce. EpiReumaPt is a national epidemiologic,

cross-sectional study of RDs in the Portuguese population designed to estimate the prevalence of the major RDs in Portugal.
Objective To describe the population participating in EpiReumaPt after the first 3 months on the field, including the proportion of subjects with RDs diagnosis.
Methods EpiReumaPt involves a two-stage approach. The first phase is a survey randomly performed by trained interviewers at subjects' homes (random route). Phase 2 consists of a clinical observation performed by a Rheumatologist, in order to confirm (or not) the RD diagnosis using a blinded methodology and to apply specific and validated questionnaires in case of a diagnosis of a RD. The study was started on 19 September 2011, at Greater Lisbon area, in 50 different locations. For this analysis, data collected until 17 December was used (12 weeks, 24 assessment days, 22 collaborating Rheumatologists). We performed a descriptive analysis of the initially surveyed population and an analysis of the subgroup assessed by a rheumatologist.
Results During the first phase of the study, the interviewers tried to contact 5,014 subjects having been successful in 1,682 contact attempts (33.5 %). Among those successfully contacted, 834 (49.6 %) subjects accepted to be interviewed. Mean age of interviewed participants was 50 years-old (SD 18.5) and 534 (64.0 %) were women. The screening survey selected 554 cases (66.4 %) of suspected RD or rheumatic symptoms associated with a RD. All positive screenings and 65 (23.2 %) randomly recruited negative screenings were invited for phase 2. Of the total number of invited participants (n = 619, table 2), 364 (58.8 %) dropped-out (people who accepted but missed the phase 2 appointment + people who rejected the invitation). Of this, 47 (12.9 %) had negative screening and 317 (87.1 %) had a positive screening. 255 were observed by a Rheumatologist. Among those observed by the Rheumatologist, 7.1 % (18/255) were considered healthy regarding their musculoskeletal system. A RD diagnosis was established in 92.9 % (237/255) of the subjects: 95 (11.4 %) low back pain; 59 (7.1 %) periarticular disease; 56 (6.7 %) knee OA; 40 (4.8 %) hand OA; 38 (4.6 %) osteoporosis; 11 (1.3 %) hip OA; 7 (0.8 %) fibromyalgia; 5 (0.6 %) gout; 4 (0.5 %) rheumatoid arthritis; 2 (0.24 %) spondyloarthritis; 2 (0.2 %) lupus; 1 (0,1 %) polymyalgia rheumatic; 1 (0.1 %) childhood rheumatic disease.
Conclusions After 3 months of enrollment, preliminary data obtained allows a demographic description of nearly 1,000 individuals and begins to sketch the prevalence of RDs in Portugal.

P3Q14

Employment and hemodialysis

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Background In Portugal the percentage of subjects that suffer from a chronic medical condition is as high as 52 %. This fact, in addition to the pressures of the current social-economical situation, represents an important challenge for both workers and employers. In this context, chronic kidney disease (CKD) is of the utmost relevance given the sheer number of affected subjects (5–7 % in developed countries) and required costs to the health system. In Portugal this translates to 16 thousand subjects with CKD, which often struggle to maintain treatment due to professional limitations. In this study we present a profile dialysis outpatients aged between 18 and 64 years old.
Methods A cross sectional study was conducted, in a nonrandomized sample of dialysis outpatients. The questionnaire used focus on sociodemographics, professional status and attempt to characterize the disease and the hemodialysis treatments. To evaluate the professional performance's self-perception we used the ECOG scale.
Results From a sample of 207 subjects, where 67 % were male (n = 138) and average 49 years old, we found an average of 10 years of CKD and 6 years of dialysis. Regarding employments, only 26 % were active and a staggering 70 % were inactive. They were further sub-divided into active: employed (46) and unemployed looking for a job (16) and inactive: retired (96), unemployed not looking for a job (24), off with temporary illness (17) and students/housewives (7). From the employed sample (23 % of the total), 55 % had to change their work schedule and 43 % changed their work duty. This might justify the preference for the night shift (64 %). Moreover, 66 % of the retired sample stated that CKD disability was the principal cause for retirement. More than 90 % of the employed subjects and 61 % of the retired subjects auto-percept in ECOG classes 0 and 1 (fully active or restricted in physically strenuous activity but able to carry out work of sedentary nature). From the retired, 59 (61 %) also auto-percept in the 0 and 1 classes.
Conclusions There is evidence that hemodialysis contributes to high unemployment rate amongst subjects and/or early retirement. Taking into account the good self-perception of functional performance results, we argue that the adoption of health measures, such as work hours flexibly or adequate job description, will retain people at work and improve the current status of hemodialysis subjects by promoting their integration as contributing members of the active working community.

P3Q15

Sleep and quality of life in higher education students

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ATCTO, ESTSP-IPP; CIAFEL, FADEUP; ATCBBB

Objective To analyze the relationship between the perception of sleep quality and perceived quality of life (QOL) in higher education students.
Participants and methods Sport sciences (n = 161) and Health Technologies Students (n = 108), aged on average 20.9 ± 3 years (62.2 % female) participated in the study. The amount and quality of sleep and sleepness was assessed by questionnaire (Sleep Quality Index in Pittsburgh, Epworth Sleepiness Scale), as well as Physical Activity (International Physical Activity Questionnaire) and Quality of Life (World Health Organization).
Results The participants reported sleeping an average of 7.3 ± 1.4 h per night, had an average sleep quality score slightly compromised (5 ± 2.8), and drowsiness (10 ± 3.6 points). Almost half of participants had poor sleep quality (45.8 %), and 74.8 % had some kind of sleepiness. Girls had a worse average score of sleep quality (5.3 ± 2.9; $p = 0.006$) and increased sleepiness (10.4 ± 3.7; $p = 0.013$) compared to boys. The participants reported reasonable scores average of QOL, but boys reported always better QOL scores than girls in all domains of QOL (physical domain: $p < 0.05$; psychological: $p < 0.05$; social: $p > 0.05$; environmental: $p < 0.05$). Almost all of the participants (98 %) said that met the recommendations for physical activity associated with health benefits. There was an association between the sleep quality and QOL, adjusted to the values of physical activity, and the quality of sleep may account for about 31.2 % to variation in quality of life ($p < 0.05$).
Conclusion This study suggests a relationship between sleep and QOL in higher education students, seeming to emphasize the importance of sleep hygiene to a better QOL of higher education students.

Poster Topic 3R. Aging

P3R01

Sex differences of cardiovascular risks factors among elderly Brazilian rural population

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Background The elderly increases risk for chronic disease, particularly the cardiovascular disease (CVD). CVD incidence in adults doubles each decade of life. Although CVD increases with age, most of them could be prevented. Additionally, aged individuals have a cluster of physiologic modifications (senescence) which contributes to a higher susceptibility but not yet malfunctioning. When associated to CVD or even CVD risk factors, it contributes to frailty installation and high-risk profiles for increased morbidity and disability.
Objectives The aim of the present study was to estimate sex differences in the occurrence of cardiovascular risk factors in an elderly rural population of Jequitinhonha Valley, Brazil.
Methods Cross-sectional study with 236 participants, both sexes, aged between 60 and 99 years-old, residents in rural area of Jequitinhonha Valley. Cardiovascular risk factors were overweight (BMI $\geq$25 kg/m^2), obesity (BMI $\geq$30 kg/m^2), abdominal obesity (waist circumference $\geq$88 cm for females and $\geq$102 for males), total cholesterol $\geq$200 mg/dL, triglycerides $\geq$150 mg/dL, LDL-cholesterol $\geq$160 mg/dL, HDL-cholesterol $\leq$40 mg/dL for males and $\leq$50 mg/dL for females, glycemia $\geq$100 mg/dL, systolic/diastolic blood pressure $\geq$140/90 mmHg, smoking status and metabolic syndrome (defined according to NCEP criteria). Prevalence ratios (PR) and 95 % confidence intervals (95 % CI), crude and adjusted for age and schooling, were calculated in order to estimate differences of the cardiovascular risks factors between sexes.
Results Studied population presented high level of illiteracy (54.8 %) and most of the population was in the range of 60–69 years-old (52.1 %). A great variety of cardiovascular risk factors occurrences shows significant differences between sexes. Women were less frequent smokers than men (PR = 0.20; 95 % CI: 0.10–0.36) and this relation remained significant after adjustment for age and schooling (PR = 0.23; 95 % CI: 0.12–0.46). The other studied risk factors have shown an inverse pattern and women presented high prevalence, when compared with men, of the following risk factors: obesity (PR = 3.52, 95 % CI: 1.18–10.49); elevated LDL-cholesterol (PR = 2.35, 95 % CI: 1.21–4.54) and metabolic syndrome frequency (PR = 2.19, 95 % CI: 1.15–4.16), all of PR were adjusted for age and schooling.
Conclusions Sex was associated with many cardiovascular risk factors among elderly Brazilian rural population. Elderly women were more vulnerable than men to obesity, dyslipidemia and metabolic syndrome. These results indicate the necessity of improving elderly risk profile in order to maintain functional capacity and avoid CVD occurrence.
This study was supported by a grant FAPEMIG and CNPq.

P3R02

Prevalence of cognitive impairment in Brazilian frail elderly

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Background The population aging process is associated with increased chronic diseases, which turn into long-term problems and include, for appropriate care, lots of material and human resources. It is needed to know the profile of frail elderly in the country to manage appropriate public health policies to this population group.
Objectives Data obtained in other countries could not represent the national population; therefore the objective was to describe a Brazilian frailty elderly sample and to determine the cognitive impairment prevalence of frail elders assisted by the Centro Mais Vida (CMV) (Juiz de Fora, Brazil), during the year 2010.
Methods This was a cross-sectional, descriptive, observational and population-based study that included all frail elderly (n = 7,119) of both sexes, aged over 60 years, attended by the CMV (January-December 2010). Data were obtained from the electronic database maintained and organized by this institution. The clinical diagnoses were performed by this institution's physicians and Mini-Mental State Examination (MMSE) and Pfeffer Functional Activities Questionnaire (PFAQ) were applied.
Results The study comprised 7,119 elderly, of which 4,810 (67.6 %) were female; 1,524 (21.5 %) were above 80 years; the mean weight, height and Body Mass Index were, respectively, 65.76 $\pm$ 14.31 kg, 1.54 $\pm$ 0.09 m, and 27.60 $\pm$ 5.55 kg/m^2; the majority was married (49.2 %), followed by widowers (36.6 %); and 90.1 % had the capacity for self care. With respect to cognitive function, 838 elderly (11.8 %) had cognitive impairment, while 665 (9.35) had mild cognitive impairment. Yet regarding neurological function, 360 patients (5.1 %) presented depression, 562 (7.9 %) had dementia and 309 (4.3 %) had Alzheimer's disease. 24.9 % of this population had functional impairment (PFAQ >5, mean = 14.55 $\pm$ 7.93 in this group) and 21.50 % had MMSE score above or equal 24 (mean = 25.21 $\pm$ 1.00 in this group).
Conclusions We presented data obtained in a Brazilian sample collected in Juiz de Fora (Minas Gerais State) that determine the prevalence of cognitive impairment in this region. These data can be used to compare cognitive impairment in different countries.

P3R03

Cardiac function in Brazilian frail elderly

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Background Frailty elderly is defined as the person older than 80 years old or between 60 and 80 years old and who has polipathologies; polipharmacy; total or partial immobilizations; fecal or urinary incontinence; postural instability; cognitive or functional impairment; and frequently hospitalizations. In this group of the population, cardiac problems are frequent, therefore the knowledge about their prevalence can contribute to the success of health professionals' assistance.
Objectives Once the prevalence data can vary among different countries and populations, this study aimed to determine the prevalence of cardiac insufficiency and some lifestyle parameters of frail elders assisted by the Centro Mais Vida (CMV) (Juiz de Fora, Brazil), during the year 2010.
Methods This was a cross-sectional, descriptive, observational and population-based study that included all frail elderly (n = 7,119) of both sexes, aged over 60 years, attended by the CMV (January-December 2010). Data were obtained from the electronic database maintained and organized by this institution. the clinical diagnoses were performed by this institution's physicians.

Results The study comprised 7,119 elderly, of which 4,810 (67.6 %) were female; 1,524 (21.5 %) were above 80 years; the mean weight, height and Body Mass Index were, respectively, 65.76 ± 14.31 kg, 1.54 ± 0.09 m, and 27.60 ± 5.55 kg/m^2; the majority was married (49.2 %), followed by widowers (36.6 %); and 90.1 % had the capacity for self care. With respect to cardiac function, 563 elderly (7.9 %) had cardiac insufficiency. Another parameters evaluated were: dyslipidemia (found in 45.2 % of this population), smoking (11.2 %), alcoholism (2.8 %) and sedentary lifestyle (79.7 %).
Conclusions We presented data obtained in a Brazilian sample that determine the prevalence of cardiac insufficiency in this population, and also data from another lifestyle parameters that can be somehow associated with his disease. These data can be used to compare the cardiac profile in different countries and to stimulate elderly self-care during their aging.

P3R04

Comparison of dementia risk score and a vascular risk score in predicting cognitive decline in midlife

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Background Dementia has a long pre-clinical phase with early manifestations as early as two to three decades before diagnosis. Thus, early detection of cognitive deficits and decline is of paramount importance. Risk scores are useful tools to assess risk of cognitive impairment and decline as they take into account the collective importance of risk factors. However, it is not clear which of these risk scores may be more predictive of cognitive decline starting in midlife.
Objectives Our aim was to assess and compare two previously developed risk scores; a dementia risk score and a vascular risk score and the extent to which they predict cognitive decline at midlife in different and distinct cognitive domains.
Methods We studied 5,157 participants, mean age 55.6 years at baseline, from the Whitehall II study, a longitudinal British cohort study. We compared the two versions of the dementia risk score based on the CAIDE study, with the Framingham Stroke Risk Profile (FSRP) based on the Framingham Offspring Study. Cognitive tests included reasoning, memory, phonemic and semantic fluency, vocabulary, and a measure of global cognition, assessed three times over 10 years.
Results In cross sectional analyses dementia risk and stroke risk were both associated with cognitive performance in multiple domains, although the magnitude of the association was larger for the dementia risk score. For each standard deviation (SD) unit increase in dementia score there was 0.22 SD (95 % CI = −0.24, −0.20) lower score in global cognition, whereas for every SD increase in stroke risk there was 0.09 SD (95 % CI = −0.11, −0.07) lower global cognitive score. In longitudinal analyses the two risk scores differed in predicting 10-year cognitive decline. Higher FSRP score was associated with more rapid decline in all cognitive domains whereas the CAIDE dementia score was associated with more rapid decline in reasoning and vocabulary.
Conclusions The dementia risk score does not perform better than a common vascular risk score (FSRP) in predicting cognitive decline starting in midlife. The strong cross sectional associations observed are likely driven by the education component of this dementia risk score. The FSRP may be especially useful in detecting sub-clinical cognitive deficits. Current dementia risk prediction models need to be improved.

P3R05

How much does it hurt to be lonely? Mental and physical differences between elderly men and women who suffer from loneliness. Findings from the KORA-AGE study

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Background Many old people are faced with a substantial narrowing of their social contacts during their final phase of life. However, living alone is not always associated with loneliness as living together may be also connected with feelings of loneliness. Therefore, the known survival benefit of women over men may not necessarily lead to psychological suffering.
Aim This study was conducted to compare the perceived level of severity of loneliness between elderly men and women and to identify factors which are associated with their experience of loneliness.
Methods Analyses are based on the 2008/2009 data of the Kora Age Study. Data was collected from 4.127 participants (≥65 years) through telephone interviews. An age-stratified random subsample (n = 1.079) participated in a personal interview, during which loneliness was measured by using a short German version of the UCLA-Loneliness-Scale. Multiple logistic regression analysis was conducted to analyze the associations between loneliness and socio-demographic as well as physical and mental variables.
Results Although the perceived level of severity of loneliness did not significantly differ between men (mean 17.0 within a range from 0 to 36 points) and women (mean 17.5), major gender differences were observed regarding psychological factors: Lonely men were more likely to be depressed than lonely women (men OR = 4.9 vs. women OR = 3.2.). They were more likely to be unsatisfied with life (men OR = 2.9, women no significant association) and they were less resilient (men OR = 2.4 vs. women OR = 2.1). Among women, higher age increased the likelihood for feelings of loneliness (women OR = 3.4, men no significant association). Interestingly, neither in men nor in women loneliness was associated with living alone, impaired cognitive status, or limited senses.
Conclusion Men suffer more in many respects from loneliness than women. These important differences between men and women in their experience of loneliness should be considered when developing intervention strategies to reduce loneliness.

P3R06

Is intellectual activity important for the cognitive performance? Study on healthy elders living in Abbiategrasso, Italy

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Background Dementia is a disease with a high social and economic impact. Even if a lot of studies were conducted to estimate the 'dimension' of this disease, less is known about the evolution of healthy subjects with and without a very good cognitive performance (CP).
Objectives The aim of this work was to investigate the relationship between intellectual activity (IA) and CP in the healthy subjects aged 70–75 years.

Methods Data analysed in the present work were a part of InveCe.Ab study (Invecchiamento Cerebrale Abbiategrasso). A cross-sectional study was carried-out on people born in 1935–1939, living in Abbiategrasso (Northern part of Italy) to estimate the prevalence of neurodegenerative diseases and the impact of known and/or potential risk factors. 962 cognitive normal subjects (without dementia and mild cognitive impairment diagnosis) attending InveCe.Ab were enrolled in the present work. Depending on CP level, a subject was classified as 'best cognitive performer' (BCP) if she/he presented a score to Mini Mental State Examination (MMSE) test higher than 75° percentile (=28.3 pts), otherwise she/he was defined 'worst cognitive performer'(WCP). The IA was measured by asking about playing cards and crossword puzzle, reading, going to cinema/theatre, attending courses, taking holidays, doing voluntary works, artistic activities and listening to music. The crude associations were investigated by Pearson c2 test. The mutually adjusted association was estimated by C-Log–Log GLM and was expressed as Prevalence Ratio (PR) with 95 % Confidence Interval (95 % CI). The model was adjusted for the effect of sex, birth cohort and years of education. The stepwise variable selection procedure was applied. Significance level was set to 5 %. Statistical analysis were performed using Stata10.
Results 257 subjects were BP. In univariate analysis a higher proportion of BP was found between subjects reading books (33.1 vs. 20.6 %, $p < 0.001$), going to cinema or theatre (32.7 vs. 25.4 %, $p = 0.038$), attending courses (54.1 vs. 25.8 %, $p < 0.001$), doing voluntary work (34.9 vs. 25.7 %, $p = 0.030$), artistic activity (38.0 vs. 26.1 %, $p = 0.029$) and knit (32.1 vs. 25.2 %, $p = 0.035$). In multivariate analysis, a higher prevalence of BP was found between subjects attending courses (RP = 2.2, 95 % CI: 1.3–3.6, $p = 0.002$) and reading books (RP = 1.5, 95 % CI: 1.1–2.0, $p = 0.005$), but a lower prevalence was evidenced between subjects taking long holidays (RP = 0.8, 95 % CI: 0.6–1.0, $p = 0.053$).
Conclusions Reading books and attending courses seems to be important IA for the best CP in older healthy people, but additional analysis, taking into account other possible confounders, are needed.

P3R07

Dementia and Alzheimer: what is the prevalence and the demographic factors associated in Northern Italian population older than 70 years?

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Background Dementia is neurodegerative syndrome associated to ageing. Since the expectation of life in average is increasing, the prevalence of dementia will arise. Till now the information on the size of disease and on risk factors are not so clear. Adding evidence on these aspects to identify the risk subjects as soon as possible is important.
Objective To estimate the prevalence of overall dementia (D) and of Alzheimer disease (AD) in Northern Italian population aged 70–75 years living in a homogenous area taking into account the known and probable risk factors for D and AD.
Methods *Study design*—A cross sectional study was performed in 2009–2011 on the population living in Abbiategrasso, a small town in the Northern part of Italy near Milan (InveCe.Ab—Invecchiamento Cerebrale Abbiategrasso). All the adult born from 1935 to 1939 were eligible: 1,321/1,644 subjects attended the study (80.3 %) and completed the clinical interviews made by trained medical doctors and psychologists and were drawn a blood sample for genetic analysis and biological bank.

The prevalence of D e AD was estimated by means of GLM with complementary log–log model adjusting for several potential risk factors.
Results The responders were prevalently women (54.1 %), born in Northern-Western part of Italy (73.2 %), married (66.1 %), with less than 5 years of education (57.2 %), employed in manual occupation during the life work (50.7 %) and without familiarity for any type of dementia (14.7 %). The crude prevalence of overall dementia was 2.9 % (95 % CI [2–3.9 %]) and of AD 1.2 % (95 % CI [0.7–2 %]). In the last case women showed a prevalence two times higher than men (Prevalence Ratio = 2.54 [95 % CI: 0.64–10.09]) after mutual adjustment for probable risk factors, even if the excess was not significant ($p = 0.19$). On the contrary women evidenced a prevalence of D slightly less than men (PR = 0.92 [0.43–1.97]), but again the difference between genders was not relevant ($p = 0.83$).
Conclusion Our findings points out a prevalence of D higher than in previous Italian study performed on elders population living in Central Italy since 2000, but as in the past no relevant difference between genders appears. The prevalence of AD in our population overlapped that for Tuscan (Italian) and Spanish populations, but it is less than that estimated for the Danish one. It is difficult to understand if different approaches may bias the estimated prevalence. So whether prevalence of D is really increasing in time or not is still an open question.

P3R08

Drug therapy complexity of institutionalized elders: the importance of pharmacotherapeutic follow-up

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Background The population ageing represents an international phenomenon, which assumes particular significance in Portugal, with 19 % of its population over 65 years and an aging index of 129. As they get older, individuals present more comorbidities and consequently consume an increasing number of medicines, which contributes to a growing drug therapy complexity. Drug therapy complexity is defined as the conciliator of several characteristics of the pharmacotherapy (number of medicines consumed, pharmaceutical forms, dosages frequency and additional instructions provided by prescribers), and can affect patient's safety and adhesion to the drug regimen.
Objectives The main objective of this study was to determine the drug therapy complexity of institutionalized elders in order to assess the need of pharmacotherapeutic follow-up.
Methods Descriptive and cross-sectional study carried out in 2009 in institutionalized elders (N = 415). Data collection was performed in five institutions in Alentejo and Lisboa e Vale do Tejo healthcare regions. The instrument Medication Regimen Complexity Index (MRCI) was used for measuring the drug therapy complexity. Statistical analysis was performed on SPSS v. 17.
Results The studied sample presented a mean age of 83.9 years old (±SD = 6.6 years). The 415 elderly were chronically consuming a total of 3,410 drugs with an average consumption per individual of 8.2 medicines (±SD = 3.6 medicines) [1–20]. The more frequently consumed drugs belonged to the 3 ATC groups—the cardiovascular system (30.8 %), the nervous system (27.7 %) and the food tract and

metabolism (16.4 %), being the acetylsalicylic acid in low dosages, the active substance consumed by a larger number of inquired individuals (31.8 %). The *drug therapy complexity index* presented an average value of 18.2 (±SD = 9.6) [2.0–53.5]. The most determinant factors that contributed to the drug therapy complexity of the regimen were the number of medicines consumed and dosages frequency. These values are in line with the ones found in other published studies performed in institutionalized elderly in the same age group.
Conclusions The studied sample consumed a large number of medicines, with 76.6 % of individuals that took more than 5 drugs per day. The complexity of drug regimen evaluated by MRCI revealed to be related mainly to the medication number, but also to dosages frequency. If high, the drug therapy complexity can have a negative impact in medication adherence and expected results of treatment, and in these cases the need of regular medication review should be seen in order to simplify the therapeutic scheme.

P3R09

Effect of reducing sodium concentration in soups on hedonic evaluation by institutionalized elderly

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Background The average salt intake reported in most countries including Portugal, is well above the guidelines. Reducing salt consumption is linked to improvements in blood pressure and a reduced risk of chronic diseases. Table and cooking salt are under discretionary control and may be targeted as strategies to reduce salt intake. However, reduced salt/sodium foods may be criticized for the alleged decreased palatability. Vegetable soup may be important as its consumption is negatively associated with obesity, but its high levels of sodium raised some concern recently.
Objectives The aim of this work was assess the perception of salty taste and hedonic value of a vegetable soup served at lunch after 30 % reduction of habitual salt content, in a sample of institutionalized elderly.
Methods Twenty-nine Portuguese elderly (58–94 years, mean ± SD = 79.7 ± 8.9) with an average body mass index of 25.7 ± 3.9 kg/m^2, institutionalized in two different nursing homes, were randomly assigned in this double-blind trial to either the treatment arm (30 % salt reduction in the soup) or the control arm (normal soup salt content). Each participant performed tests of flavour perception in the two experience days (washout period of 24 h) at 12 o'clock. Vegetable soups with two different sodium concentrations (normal salt content and 30 % salt reduced) were crossed over. The perception of salt content and hedonic evaluation of vegetable soup were derived from 100 mm visual analogue scale anchored at each end with the statements ''extremely'' and ''not at all''.
Results Baseline concentrations of sodium in the soups offered by the two institutions shown that the added salt was 300.7 mg/100 g in one institution and 206.7 mg/100 g of soup in the other one; reductions of 30 % were made on these values. No differences in the medians of the perception of salty taste neither in the attributed hedonic value, were found between the baseline salt concentration soup and the 30 % salt reduction soup (salty perception: 5.0 vs. 7.8, $p = 0.150$; hedonic value: 0.8 vs. 0.7, $p = 0.859$).
Conclusions A reduction of 30 % of normal levels of salt in the soups did not result in a reduction of acceptability or significant change in the detection of salty taste by elderly. Soup could belong to group of food where perform 30 % decrease in levels of salt without affecting valuation by consumers, particularly elderly.

P3R10

Hip fracture in elderly in Portugal: incidence from 2004 to 2010

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Background Hip fractures related to osteoporosis and falls in elderly are an important cause of decreased health state. After Hip fracture older adults have a 5–8-fold increased risk of all-cause mortality, a 2.5-fold increase risk for the development of a new fracture and the majority of patients never regain previous level of independence. In Portugal, during 2006, Direcção Geral da Saúde (DGS) estimated that 52 million Euros were spending in hospitals direct costs related with Hip fractures, with a medium cost of 4.100 Euros per hospitalization.
Objectives Estimate the annual incidence of Hip fractures; describe the evolution between 2004 and 2010.
Methods Using Administração Central dos Sistemas de Saúde (ACSS) information from Hospitals Discharges (GHD) database, Hospitalization with code 8200–8201 (Classification of Diseases 9th Revision Clinical Modification—ICD-9-CM) as the main cause of hospitalization were considered as being due to Hip fracture. Number of hospitalization by Hip fracture was analyzed considering age (65–74, 75–84 and ≥85 years) and sex. Incidence rates and respective confidence intervals for the hospitalization hip fracture were estimated for each age group and gender. For each age group and year official data (from Statistics Portugal) was considered as the number of people at risk of being hospitalized by a hip fracture.
Results For the group aged 65–74 years incidence rate varied between 0.49 by 1,000 Persons-year of follow-up (PYFU) [95 % confidence-interval (95 % CI): 0.45; 0.54) in 2010 and 0.65 by 1,000 PYFU (95 % CI: 0.60; 0.70) in 2004. For the group aged 75–84 years incidence rate varied between 1.99 by 1,000 PYFU (95 % CI: 1.89; 2.10) in 2010 and 2.41 by 1,000 PYFU (95 % CI: 2.30; 2.54) in 2006 and 2007. Considering people aged 85 or more incidence were highest in 2009 [6.86/1000 PYFU (95 % CI: 6.50; 7.24)] and lowest in 2010 [6.09/1000 PYFU (95 % CI: 5.75; 6.44)]. As far as the difference between sexes are concerned risk of hospitalization by hip fracture is approximately twice in women of all ages above 65 years comparing with men of the same age.
Conclusions The incidence rate of hospitalization discharges by hip fracture has been constant in the analyzed years. Further analysis is needed in order to understand the reasons on this phenomenon. Being an important cause of fracture we highlight the importance of fall prevention in this population.

P3R11

Malnutrition, depression and dependence of caregivers in elderly receiving geriatric support

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Background The prevalence of malnutrition in elderly population is high, which may result from multiple and cumulative chronic diseases (Hrnciarikova et al., 2011; Isaia et al., 2011), as anorexia, chewing difficulty and dysphagia. (Pirlich et al., 2001; Kaneda et al., 2000) Other factors and conditions can influence the health of the elderly, like Depression and the Need of a Caregiver (Garcia et al., 2001;

Funes-Avila et al., 2007). These factors demonstrate correlation, because the elderly who have depression are more likely caregiver dependency and have increased risk of malnutrition (Cabrera et al., 2007), as well as the elderly dependent of caregiver may be more likely to develop malnutrition (Payette, 2005) and depression, which means a dependent relationship between these three factors.

Objectives This study aims to determine the Prevalence of Malnutrition, Depression and the Need of Caregiver in the elderly of Braganza, and study the association between these variables.

Methods It was a cross-sectional study performed between February to April 2012, with subjects aged greater than 64 years old, institutionalized or day care in eight geriatric institutions from Braganza—Portugal. The malnutrition risk was evaluated with the MNA—Mini Nutritional Assessment (Vellas et al., 2006), Depression was evaluated with the GDS—Geriatric Depression Scale (Sheikh et al., 1991), and the subjects were questioned about their ability and autonomy in daily activities, to evaluate the Need of Caregiver. The data were statistical analyzed using qui-square test and phi coefficient by SPSS version 19.

Results The sample included 197 elderly, mostly female gender (67 %). The mean age was 83 ± 6 (65–96) years old. Regarding MNA, 23.4 % of subjects had no malnutrition, while 62.9 % of subjects were at risk of malnutrition and 13.7 % were malnourished. The Depression prevalence, assed by GDS, was 86.8 % and Need of Caregiver prevalence was 59.4 %. After statistical analysis performed, it was possible to verify that malnutrition is associated with depression ($p < 0.0001$, Phi = 0.297) and with the need of caregiver ($p < 0.0001$, Phi = 0.402) and Depression is associated with the Need of Caregiver ($p < 0.0001$, Phi = 0.258).

Conclusion In this study it was found that the prevalences of Malnutrition/Malnutrition Risk, Need of Caregiver and Depression in elderly are high, over half of the sample for all variables. There was a positive correlation between these variables, despite weak correlation between the Malnutrition with Depression and with Need of Caregiver or moderate correlation between Depression with Need of Caregiver.

P3R12

Serum lipids and bone mineral density in Portuguese older adults

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Background Compelling evidence has linked cardiovascular disease and osteoporosis. Because this is a complex issue with many confounding factors, there have been many different conclusions regarding the association between hypercholesterolaemia and low bone mineral density (BMD). As the Portuguese population ages, the incidence of both diseases is expected to increase. Prevention or postponement of age-related decline in cardiovascular and bone health is now of high relevance from a public health point of view.

Objectives The present paper reports the assessment of the lipid profile and BMD in a cohort of Portuguese older adults.

Methods A total of 101 healthy white older adults (mean ± SD age, 68.7 ± 5.4, age range 60–84) comprising 72 women and 29 men, free of medications known to affect bone were enrolled. Body mass index (BMI) was calculated in kg/m^2. Fasting serum total cholesterol (TC), high density lipoprotein (HDL), and triglycerides (TG) were measured and low density lipoprotein (LDL) levels were calculated using standard formula: LDL = TC − HDL − (TG/5). Proximal femur BMD was measured by dual-energy X-ray absorptiometry (DXA). Body composition (lean mass, fat mass, and percentage of fat) was measured through whole-body DXA scans. Dietary intake was assessed by 4-day dietary record and physical activity was assessed using accelerometers. *T* tests were used for comparing differences in cholesterol and BMD between genders. Pearson correlations coefficients were calculated.

Results Serum TC, LDL, and HDL levels were higher and total hip, femoral neck BMD and lean mass were lower in women compared to men. There was no significant difference in age, TG, BMI, fat mass, macronutrient intake, and moderate to vigorous physical activity. No significant associations between serum lipids and total hip or femoral neck BMD were found for both men and women. HDL and TG correlated negatively with BMI and positively with fat mass (r = 0.331 and $p = 0.005$, r = 0.378 and $p = 0.001$, r = 0.236 and $p = 0.046$, r = 0.402 and $p < 0.001$, respectively) in women. HDL also correlated negatively with BMI (r = 0.377 and $p = 0.044$) in men.

Conclusions No correlations were found between serum lipid profile and BMD. In addition, some associations were observed between body composition variables and HDL and TG levels. Bigger studies or studies of selected cohorts are needed, but additional studies in animal models will be also very helpful to identify the genetic relationship between both lipid profile and BMD, both contributing to better understand the clinical relationship between cardiovascular disease and osteoporosis. Supported by Foundation for Science and Technology grant PTDC/DES/108780/2008—FCOMP-01-0124-FEDER-009606.

P3R13

Oral health and oral hygiene habits of institutionalized elderly from OPorto District

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Background An indirect parameter of oral health measurement is the evaluation of oral hygiene. Bad results may implicate serious oral disease, portraying a population that may present some of the basic life function altered: masticatory function ability, limitation regarding some food consumption, phonetics and other factors such aesthetics and self-esteem.

Objectives The objective of this study was to determine the oral health condition of the OPorto district institutionalized elderly through the oral hygiene care evaluation.

Methods Observational cross-sectional descriptive study, with 372 individuals, age ≥60 years; residents in 22 homes of the OPorto District, randomly selected (cluster) and directly examined in 2007. Descriptive/inferential analysis ($\alpha = 0.05$) and multivariable logistic regression (backward stepwise method, $p = 0.05/0.10$ for factor' inclusion/exclusion) was carried out using SPSS©vs.17.0 with the Complex Samples add-in.

Results The elderly mean age (±standard deviation) was 78.8 (±9.1) years. In this group 69.9 % were female, 30.4 % had no schooling and 81.7 % were completely independent regarding oral hygiene tasks. Regarding dentate elderly, 38.9 % did not brush daily their teeth and only 33.1 % did it twice or more. No association was found between number of daily brushing times and age, but a significant association was found with gender ($p = 0.023$) and independence degree ($p = 0.013$), with higher number of daily brushing times for female and independent elderly. The dental plaque index was related to the number of daily brushing times, but not with gender and age. The predictor of dental plaque retained by the multivariate logistic regression model was the number of daily brushing times, with an

elderly that brushes its teeth twice or more per day having a probability reduced by 67.7 % of having visible dental plaque, when compared with those that do not brush. Age, gender, schooling degree, independence degree and time since the last visit to the dentist variables were not retained by the model.
Conclusions Bad oral hygiene was observed in the evaluated population, as well as the inefficiency of oral health promotion and prevention messages, particularly the information regarding the importance of oral hygiene in retaining dentition and in the consequences that the lack of it has on the elderly general health.

P3R14

Physical activity levels, and accomplishment with the ACSM guidelines, in elderly type II diabetic patients in accordance with their BMI

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Introduction Epidemiological trends of our times are the aging of the population, the obesity epidemic and Type II Diabetes. Each of these trends has important effects on body composition (BC), morbidity, and mortality. Assessment of physical activity (PA) is necessary when the relationship between practice and health benefits is being investigated. Accelerometers (ACL) provide data about the amount, frequency and intensity of movement for extended periods of time. ACSM guidelines suggest at least 5 days of moderate to vigorous PA during a week as health recommendations.
Purpose Evaluate the prevalence of obesity in elderly and its association with the minutes of moderate to vigorous PA (MVPA)/day, as well as with the ACSM PA guidelines.
Methods Data was obtained from 77 healthy elderly subjects (mean age 66.5 years; 55 women and 22 men), which have used during a week the triaxial ACL (GT3Xs, Actigraph, LLC) to evaluate the levels of PA in accordance with standard procedures and cut-off points, and measured BC using a DEXA (Hologic QDR).
Results The prevalence of overweight and obese (O + OB) participants was high, with more than 90 % of women (W) and men (M) being considered O + OB. If we consider participants with more or less that 30 min a day of MVPA, we can observe that 44.2 % of the sample accomplishes with more than 30 min. of MVPA. However if we consider ACSM guidelines (5 out of 7 days of MVPA), and a more detailed analysis in all the days (considering only those with more than 30 min of MVPA in the different days) we can observe discrepancy in the analysis, with only 23.4 % of the participants accomplishing the ACSM guidelines of at least 5 days of MVPA during a week.
The number of minutes of MVPA by gender and groups of BMI was: women [normal weight (nw): 25.4; overweight (ov): 38.5 and obese (ob): 22.9] and men (nw: 53.9; ov: 31 and ob: 29.2), statistically significant differences only for women ($p < 0.05$), between ov and ob.
Conclusions The prevalence of O + OB subjects was very high, with prevalence's above 90 %. Its crucial to better define in the different studies how are the recommendations of MVPA evaluated, since if we consider the average min. of MVPA/day and the accomplishment of the ACSM guidelines we might have completely different results, and as consequence a discrepancy between the association between PA and the reduction in the clustering of risk factors. Research funded by PTDC/DES/104518/2008 (FCOMP-01-0124-FEDER-009599); SFRH/PROTEC/50008/2009.

P3R15

Age group 65 or more years' morbidity profile (public hospitals admissions) in Portugal mainland and health regions in 2009

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Direção-Geral da Saúde

Introduction The execution of analyzes related to the oldest age group in order to enable managers and decision makers with indicators and studies to improve organization and management of hospital services' quality is of utmost importance.
Objective To list the differences in morbidity for the age group of 65 or more years in hospital admissions.
Methods The study used data summarized in the publication "Morbilidade Hospitalar—2009," recently presented by DGS (Directorate-General of Health). This publication had its origin in the diagnosis related groups database (GDH, 2009) provided by ACSS. Homogeneity of hospitalization episodes was tested for groups of morbidity causes by region of mainland Portugal, using both the total number of hospital admissions episodes and the resident population as weights.
Results In 2009, individuals with 65 or more years accounted for percentages around 40 % of the total hospital admissions in mainland Portugal and its health regions. In the health region of Alentejo that percentage reached 52.5 %. Hospitalizations per 1,000 inhabitants were always higher than the value for total admissions. These admissions amounted to 431.1 in mainland Portugal and Northern health region had the highest value, 468.3 hospitalizations per 1,000 inhabitants.
Conclusions Oldest age group morbidity accounts for almost half of hospital production in Portugal with notorious regional discrepancies that vary across different disease groups. It is imperative to study these morbidity patterns and discrepancies in depth.

P3R16

Hip fractures incidence in Brazil, from 1998 to 2010

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Background In Brazil, the process of demographic transition caused a rapid change in its age structure with an increasing proportion of elderly. Consequently, diseases associated with the ageing, such as osteoporosis, became more prevalent. Hip fractures due moderate or minimal trauma are the most serious consequence of osteoporosis, representing an enormous burden for health services. Although well described in Europe, North America and some Asian countries, there is a lack of information about the incidence of hip fractures in South America, namely in Brazil.
Objective The aim of this study was to evaluate the incidence of hip fractures in Brazil during the period 1998–2010.
Methods A descriptive ecological study was conducted. Public hospital admissions from 1998 to 2010, with diagnosis of hip fractures [International Codification of Diseases, 10th version (ICD10), [S720, S721 and S722] caused be low energy in individuals with 50+ years-old were selected. Data was obtained from the Notifications of the Hospitalization Authorization, Information System of the Unified Health System of Brazil (DATASUS). Cases of bone cancer and readmissions for after care were excluded.

Results There were 251,806 admissions selected, being 165,146 (65.6 %) of women, and 86,660 (34.5 %) of men. Mean age (±SD) was 77.9 ± 10.0 years-old and 72.7 ± 11.8, women and men respectively. The hip fractures increased exponentially with age: 42.8 % occurred with 80 years-old and over. The age-standardized incidence rates (per 100,000 inhabitants) had an increasing trend during the study period, being 63.8 (men) and 77.2 (women) in 1998 and 72.9 (men) and 87.5 (women) in 2010. The sex ratio, female:-male, was stable during the period: 1.2:1 More than 90 % of the hip fractures were caused by falls. The fatality was 3.8 % for women and 4.3 % for men.

Conclusion Age standardized incidence rates of hip fractures in Brazil and the mean age at time of fracture were lower than in most developed countries, for both sexes. Fatality was higher among men, as described in other studies. The female:male ratio was similar to the sex ratio reported in some Asian countries and lower than in USA (2.8:1), Argentina (2.9:1) and most of the European countries.

P3R17

Does hip fractures incidence vary by regional socio-economic status?

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Background Worldwide, hip fractures (HF) are a public health burden. In regions with high level of social deprivation, the percentage of individuals with poor diet, insufficient physical activity, deficient access to the health system as well as to preventive actions might be high. Regarding this fact, social environment might be associated with osteoporosis and consequently with HF risk, but this issue has not been well explored.

Objective Evaluate the association between osteoporotic hip fracture (OHF) incidence and socioeconomic deprivation at municipality area level in Portugal, from 2000 to 2008.

Methods Hospital admissions registers collected from the National Hospital Discharge Database, with diagnosis of HF (code 820.x from ICD9.CM, caused by low impact, aged 49+) were selected. Cases of bone cancer and readmissions for after-care were excluded. A socioeconomic deprivation index (tree levels, calculated in a previous study) and population data of the 278 municipalities from official statistics were used. Association between the OHF and regional socioeconomic deprivation index was analyzed by multiple Poisson regression models, taking over dispersion into account and adjusting for age, gender and calendar year of the event.

Results This study included 76,542 hip fractures, being 59,269 (77.4 %) in women. Mean age (SD) of fracture was 81 (8.5) and 78 (10.1) years-old, respectively for women and men.

Overall, the increase of hip fracture risk (95 % Confidence Intervals CI) was 3.6-fold higher (3.5–3.7) in most deprived level (MDL) municipalities compared to the most affluent level (MAL), adjusted for age, sex, and calendar year. Using the MAL areas as reference, the relative risk (RR) for males was 2.6 (2.5–2.7) in median deprivation level (ML) and 5.5 (5.3–5.8) in MDL, and for females was 1.7 (1.7–1.7) in ML and 3.2 (3.1–3.3) in MDL. The hip fracture risk in the most deprived municipalities was statistically significant higher compared to most affluent in all age-sex-strata, being the RR higher for women in age group 50–54 years-old (15.3, 10.7–21.2) and for men in age group 55–59 years-old (15.6, 11.8–20.4), after adjusting for calendar year.

Conclusions There is some evidence that OHF incidence at municipality level might be associated with the socioeconomic context of the region. In Portugal, more deprived areas presented higher risk for OHF incidence. The impact of interventions and prevention health actions on reducing inequalities between regions must be evaluated.

P3R18

Prevalence of cardiovascular risk factors, chronic kidney disease and peripheral arteriopathy in a general population sample aged 65 years or older

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Objectives

- To determine the prevalence of *peripheral arteriopathy in* population aged *65 years or older.*
- To determine the validity of clinical manifestations in the diagnosis of peripheral arteriopathy.
- To determine the prevalence of cardiovascular risk factors and chronic kidney disease in the same population.

Methodology

Design Prevalence observational study.

Setting Cambre municipality (A Coruña, Spain).

Period November 2009–December 2011.

Inclusion criteria Population of 65 years or older with informed consent.

Sample size n = 497 (α-level = 95 %, accuracy = ±5 %, 15 % losses), random sample stratified *by gender and age.*

Variables Age, gender, body mass index (BMI), Charlson's comorbidity index, *Edinburgh* Claudication *questionnaire, ankle*-brachial *index, estimated glomerular filtration rate (eGFR)* (*Cockcroft-Gault* and MDRD equations).

Statistical analysis Descriptive analysis, sensitivity, specificity and predictive values for peripheral arteriopathy diagnosis.

Results Mean age was 73.8 ± 6.2 (Range: 65–96 years), 52.7 % were women. The prevalence of overweight was 40.8, and 47.1 % were obese. Mean Charlson's comorbidity score was 0.7 ± 1.0 (Range: 2–9). 8.1 % (14.0 % in men) were smokers.

Of the patients with hypertension, 44.3 % did not know that they were hypertensive, while 59.6 % of the hypertensive patients had elevated blood pressure levels. The prevalence of diabetes was 18.6 %. From diabetic patients, 4.9 % did not know they had diabetes.

Prevalence of chronic *kidney disease (*eGFR <60 mL/min per 1.73 m^2) was 41.6 % (Cockoft-Gault), and 22.3 % (MDRD), depending on the formula used (global percentage of agreement = 80.9 %, Kappa index = 0.608).

According to the *Edinburgh* Claudication Questionnaire, the *prevalence* of intermittent claudication was 5.8 % (95 % CI: 3.5–8.1 %). After ultrasound doppler examination, an ankle-brachial index <0.9 was found in 26.2 % of the patients. Agreement between the Edinburgh questionnaire and the ultrasound doppler results was studied, with a Kappa index = 0.083.

Sensitivity and specificity of clinical manifestations to diagnose peripheral arteriopathy was 10.5 and 95.7 %, respectively.

Conclusions Prevalence of peripheral arteriopathy is consistent with published data. There is a poor correlation between claudication clinical manifestations and ankle-brachial index results. Clinical manifestations underestimate the prevalence of the disease.

There is a high prevalence of cardiovascular risk factors, some of them being unknown to the patients.

P3R19

Depressive states in elderly

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Introduction Depression in elderly people is an important health problem. About 30 % of elderly people who seek medical care have mild forms of depression, but that may affect the quality of their lives. (FIRMINO; MARQUES, 2003).
Objectives To characterize the depressive state of elderly people, and to what extent socio-demographic variables (age, gender, marital status), situational context (number of children, contact with children, Senior Universities attendance, physical activity), family context (family functionality) and psychosocial variables (satisfaction with life and emotional intelligence) influence the depressive state of elderly people.
Methods Quantitative, descriptive, correlational and transversal study in a sample of 280 elderly people in the counties of Cinfães, Lamego, Moimenta da Beira and Resende. As an instrument of data collection it has been used a questionnaire consisting of: situational and socio-demographic characterization; Family APGAR; satisfaction with life; geriatric depression; emotional intelligence.
Results Regarding the depressive state 49.6 % show a normal situational, 43.6 % have mild depression and 6.8 % have severe depression.

Regarding the depressive state, those who show mild and severe depression are elderly people who:

- Are women with an average age of 74.05 years old;
- Live without a partner;
- Do not have children;
- Do not attend Senior Universities;
- Do not interact with children;
- Show serious family dysfunction and highly functional family;
- Have low satisfaction with life;
- Have low emotional intelligence.

Conclusions The gender, family functionality, satisfaction with life and the dimensions of emotional intelligence (self-motivation, self-control and self-awareness) predict the depressive state of elderly people.

P3R20

Relationship between regular physical activity, sleep and quality of life: a descriptive analysis in the elderly

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Objective To analyze the relationships between the reported physical activity, the perceived quality of sleep, and perceived quality of life (QOL) in the elderly.
Participants and methods The sample consists of elderly people living in the district of Porto ($n = 108$), mean age 70 ± 8.1 years and 63 % of female participants. The instruments used were: Index of the Pittsburgh Sleep Quality, Epworth Sleepiness Scale, International Physical Activity Questionnaire and Quality of Life Questionnaire of the World Health Organization.
Results Participants reported that they slept an average of 6.9 ± 1.3 h per night and 64.8 % state to have a regular practice of physical activity. We observed no significant differences between perceptions of quality of life of women (56.0 ± 19.0) and men (63.4 ± 16.5). We found significant differences ($p = 0.004$) between the perception of sleep quality among women (7.7 ± 4.0) and men (5.5 ± 3.1). The female sample also report increased sleepiness ($p > 0.005$), compared to the male elderly. Participants who reported practicing physical activity reported better sleep quality ($p = 0.011$) and reported a better and significant perception of quality of life in all domains ($p < 0.05$). We also observed significant moderate negative correlations between the perception of sleep quality and the quality of life domains, particularly in the physical ($r = -0.5$; $p < 0.05$) and psychological ($r = -0.4$; $p < 0.05$) domain.
Conclusion This study suggests a relationship between sleep, physical activity and QOL, seeming to emphasize the importance of promoting healthy lifestyles, namely physical activity and sleep hygiene to a higher quality of life in the elderly.

Poster Topic 3S. Social inequalities & Health surveys

P3S01

Social inequalities in healthy life expectancy: alternative methods of estimation in the absence of the national census

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Background The indicator Healthy Life Year (HLY) is currently a standard summary measure of population health that expresses the number of remaining years spent without disability at a particular age. Social inequalities in HLY are widely documented on the national and European levels. In previous studies, HLY by socioeconomic status (SES) in Belgium were estimated using the follow-up mortality of the national census. However, as there has been no census planned since 2001, other approaches have to be identified.
Objectives This presentation explores an alternative method to estimate and update HLY by SES (as defined by educational level) using the follow-up mortality of a representative population survey.
Methods To estimate HLY by SES using the Sullivan method, two types of data are required: disability information by SES and mortality rates by SES. Based on a number of criteria, two surveys were chosen: The Health Interview Survey (HIS) and the Survey on Income and Living Conditions (SILC). Mortality was based on a 6-years mortality follow up for the HIS and a 5-years follow up for the SILC. Disability was defined by the Global Activity Limitation Indicator instrument (GALI) that is worded as follows: "For at least the last 6 months, have you been limited because of a health problem in activities people usually do?".
Results Mortality rates by SES were comparable in the HIS and the SILC, but the disability rates by SES were systematically higher in the SILC leading to systematically higher HLY in the HIS. For instance, life expectancy at 25 years for men with the lowest educational achievement is almost 50 years in the HIS and the SILC. Concerning HLY for the same group, it is 35 years in the HIS compared with 28 years in the SILC. Statistically significant inequalities in HLY were detected in both surveys. For instance, the difference in HLY between men in the highest and lowest educational group is almost 7 years in the HIS and 14 years in the SILC.
Conclusion Both the HIS and the SILC are good alternatives to the census for estimating HLY by SES. However, the estimates are not

interchangeable between these two surveys. To monitor HLY by SES in Belgium, we recommend the use of the SILC as it is a yearly survey and is the survey used to monitor the HLY at the European level.

P3S02

A multilevel analysis of individual and household inequalities in self-rated health in Brazil: evidence from the National Household Sample Survey, 2008

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Background Self-rated health has been broadly used as an indicator in epidemiologic surveys. Research systematically demonstrated its association with several morbidity and mortality measures. Characteristics of place in which people live may affect their health, beyond and above individual factors.
Objectives To investigate the prevalence of negative self-rated health and its association with individual, household and region characteristics among adults and elderly in Brazil, using multilevel modeling techniques.
Methods Cross-sectional study using microdata from the Brazilian National Household Sample Survey conducted in 2008. Subjects with $\geq$20 years-of-age were included in the study sample (n = 257,816). Crude and multilevel-adjusted Poisson regression models were fitted to investigate the association between negative self-rated health (poor and very poor) and health-related, behavioral and demographic variables at the individual level, socioeconomic and environmental factors at the household level, and household location at the region level.
Results The overall prevalence of negative self-rated health was 5.3 % (95 % CI 5.2; 5.5). In the crude analysis, the outcome was statistically significantly associated ($p \leq 0.05$) with higher household income, living alone, not having piped water and garbage collection, lower education, not having health insurance, female sex, higher age, having black, brown or indigenous skin color, being a current or previous smoker, physical inactivity, having chronic diseases, having physical impairment. Subjects living in rural areas also had higher prevalence of negative self-rated health. Those residing at the Southern, Northern and Northeastern regions of Brazil also had higher risk for that outcome than those living at the Southeastern and Center-Western. At the adjusted multilevel analysis, all those variables remained associated to the outcome, except for skin color ($p = 0.804$). The factors most strongly associated with the outcome at the adjusted analysis were physical impairment (RR 7.88; 95 % CI 7.32; 8.48); age $\geq$60 years (RR 6.44; 95 % CI 5.95; 6.97) and reporting three or more chronic diseases (RR 5.57; 95 % CI 5.20; 5.97).
Conclusion There was no evidence of association between skin color and self-rated health after adjustment, what could indicate possible confounding for other variables, particularly socioeconomic and environmental factors at the household level, and education at the individual level. Having two or more people living at the household was a protective factor for negative self-rated health. Subjects with physical impairment, $\geq$60 years-of-age, and reporting three or more chronic diseases showed the highest prevalence of self-rated health.

P3S03

Equity in health and public policies: tuberculosis among Bolivian immigrants in São Paulo. Brazil

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Background Migrations are of great concern for international organizations for their economic, social and public health impact calling for priority public policies to integrate migrants into the host countries. Large Brazilian cities, especially the city of São Paulo, have received since the 1990s growing inflows of migrants—and Bolivians are the most numerous ones. Bolivia has a high incidence of tuberculosis (TB), and as there is no published data on the impact of Bolivian migration on TB in the city of São Paulo, an exploratory study on the subject is justified.
Objectives To profile TB cases among Bolivian immigrants and to investigate its potential impact on local TB trends as well as equity in access to treatment.
Methods A descriptive study was conducted in four districts of the city of São Paulo, southeastern Brazil, with high Bolivian migrant population from 1998 to 2008. Data was obtained from the TB surveillance database. We examined trends in TB and compared the characteristics of incidence cases during the study period between Brazilians and Bolivians. In order to investigate potential differences of outcomes according nationality, cure rates after treatment were adjusted for potential confounders using logistic regression.
Results Between 1998 and 2008 there were 2,056 new TB cases, of which 65.7 % in Brazilians, 32.1 % in Bolivians, and 2.2 % in other nationalities. TB incidence was high but stable, but the average annual proportion of cases among Bolivians rose from 15 to 53 % of total cases, while the number of new cases among Brazilians decreased by 40 %. Compared to Brazilian cases, Bolivians were younger (median age 24 vs. 40 years, $p < 0.0001$), had lower unemployment (3.1 vs. 11.6 %, $p < 0.0001$) and lower TB/HIV coinfection (1.5 vs. 28.5 %, $p < 0.001$) but higher coverage of observed treatment (81.5 vs. 62.0 %, $p < 0.001$) and cure rates (71.6 vs. 63.2 %; $p < 0.0001$). After adjusting for potential confounders, cure after treatment was not associated with nationality.
Conclusions TB among Bolivian immigrants in Brazil seems to have contributed to keep high TB rates in the area studied, but it did not affect the declining incidence rates among Brazilians. It points to the need for specific intervention strategies targeted to migrants. There were no differences in access to health services or in treatment outcomes between Brazilians and Bolivians. Ensuring free universal access including undocumented immigrant access to health services promotes health equity.

P3S04

Rates and determinants of abortion in the state of Ceará, Brazil: analysis of a series of population surveys conducted in 1994, 2001 and 2007

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Background The Millennium Development Goals aim at improving women's health and reducing mortality. Abortion and its complications are among the major causes of maternal mortality.
Objective To estimate the rates and associated factors of abortion in the state of Ceará, northeastern Brazil.
Methods Data from three population-based surveys with a sample of 8,000 households with 9,000 women of reproductive age, conducted in 1994, 2001 and 2007, were used to calculate abortion rates. The association among socioeconomic and reproductive factors with abortion was studied, using Chi-square test, with significance of 5 %.

Results We studied 9,713, 9,733 and 8,830 women in 1994, 2001 and 2007 respectively. The number of abortions was 158, 100 and 93 in each year. From 1994 to 2007, the overall abortion rate fell from 16.3/1,000 to 10.3/1,000. The rate among women who had become pregnant, fell from 29.8/1,000 to 18.8/1,000; among adolescents from 77.4/1,000 in 2001 to 43.9/1,000 in 2007. This group had the highest abortion rates. Young age and null parity were the main associated factors to abortion ($p < 0.01$).
Conclusions There was a significant drop in abortion rates in the studied period. Young age and parity were strongly associated to abortion. Programs to reduce abortion rates should focus on younger women with no reproductive experience.

P3S05

Relationship between physical activity level and different sources and types of social support in adolescents from the Northeast region of Brazil

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Background Social support has been considered one of the main factors that can influence adolescents' participation in physical activity. However, little is known about the relationship of different sources and types of social support physical activity level in this population.
Objectives To analyze the relationship between physical activity level and different sources and types of social support in adolescents from the Northeast region of Brazil.
Methods This is a secondary data analysis from a cross-sectional epidemiological study conducted with 2.401 adolescents (56.8 % females), 14–19 years old (mean 16.4 SD = 1.2), from public and private high schools located in the city of João Pessoa—PB. Physical activity level was measured by using a questionnaire, considering the frequency and duration of moderate to vigorous physical activity in the last week. Social support of parents and peers (sources) was measured by a scale comprising 12 items, six items for each. Adolescents reported the frequency (never, seldom, frequently, and always) with which their parents and peers provided different types of social support to physical activity, during a typical week. Binary logistic regression was used to assess the association between physical activity level (<300 min/week = 0 e ≥300 min/week = 1) and sources and types of social support, adjusted by age, parents' level of education, skin color, socioeconomic and nutritional status, stratified by sex. The analyses were performed using Stata 10.0.
Results The prevalence of physical activity was 51.6 % (CI 95 %: 49.6–53.6), boys were more active (67.2 %; CI 95 %: 64.4–70.1) than girls (39.6 %; CI 95 %: 37.0–42.2). The results of the multivariate analysis showed that the higher social support provided by parents and peers increased the chance of adolescents being physically active. Adolescents who had more chances of being physically active received more social support from parents by providing monetary and transportation support, positive comments (boys) and encouragement to physical activity (girls). Social support of friends through participation in physical activity with adolescents (boys) and providing positive comments about their practice were associated with high physical activity levels.
Conclusions Social support of parents and friends showed to be an important predictor of physical activity in adolescents, especially instrumental support (transportation and participation in physical activity with the adolescents), institutional/informative (positive comment) and emotional/psychological (encourage).

P3S06

Physical activity in adolescents: analysis of the social influence of parents and peers

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Background Physical activity in adolescents is associated with different correlated factors such as physical activity and social support from parents and peers.
Objectives Analyze the relationship between physical activity and social support from parents and peers, and self-efficacy perception, and physical activity in adolescents.
Methods This study is a secondary data analysis from a cross-sectional school based epidemiological study conducted with 2.401 adolescents of both genders (56.8 % girls), 14–19 years old (mean 16.4 SD = 1.2), from public and private high schools located in the city of Joao Pessoa—PB, in the Northeast of Brazil. Physical activity levels of the adolescents and physical activity practice of parents and peers were measured by a questionnaire. To measure social support of parents and peers, a 12–item scale was used, six items for each, and the perception of self-efficacy was assessed with a scale of 10 items. Data analysis was performed using the structural equation modeling in AMOS 20.0 (Analysis of Moment Structures).
Results Physical activity of peers was directly associated with physical activity level in adolescents of both genders (boys $\beta = 0.11$, $p < 0.001$; girls $\beta = 0.07$, $p < 0.001$) and, physical activity of the father was associated with the physical activity level of their sons ($\beta = 0.10$, $p < 0.001$) and the mother with their daughters ($\beta = 0.08$, $p < 0.001$). Furthermore, an indirect relationship was identified between the physical activity of parents (boys $\beta = 0.02$ a 0.03, $p < 0.001$; girls $\beta = 0.03$ a 0.04, $p < 0.001$) and peers (boys $\beta = 0.10$, $p < 0.001$; girls $\beta = 0.07$, $p < 0.001$) with physical activity level of the adolescents, mediated by social support and self-efficacy. Social support of parents and peers was directly associated with physical activity level in adolescents of both genders (boys $\beta = 0.22$ a 0.14, $p < 0.001$; girls $\beta = 0.20$ a 0.17, $p < 0.001$) and indirectly mediated by self-efficacy (boys $\beta = 0.11$, $p < 0.001$; girls $\beta = 0.05$ a 0.08, $p < 0.001$).
Conclusions Physical activity and social support from parents and peers were important predictors of physical activity of adolescents, either directly by behavior modeling and/or mediated by social support and perceived self-efficacy.

P3S07

Health status of minorities during epidemiological transition: the case of the Arab minorities in Israel

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Background The epidemiological transition occurs as a country undergoes the process of modernisation and industrial development. An increase in living standards, together with the expansion and improvement of healthcare, leads to a drastic reduction of infant mortality rates and an extension of average life expectancy; subsequently, fertility declines. The average age of the population increases, while chronic degenerative diseases displace infectious diseases and undernourishment as the most important causes of death.
Methods The data presented in this presentation were extracted from a variety of sources including the Israel National Cancer Registry,

Israel Central Bureau of Statistics, Israeli Center for Disease Control, the Association for Advancement of Civic Equality (Sikkuy) and the Galilee Society for Research and Development Center.

Results The major indicators of the Israeli Arab demographic transition are the decrease in fertility rates and infant mortality rates, the increase in life expectancy, and the ageing of the population. In the last few years, the life expectancy at birth in the Arab population has not changed and the gap between Jews and Arabs has widened. The infant mortality rate in the Arab population is twice as high as in the Jewish population. One of the main changes in the Israeli Arab population is the significant increase of mortality due to metabolic diseases including diabetes and cancer. Diabetes mellitus has a high prevalence among the Arab population, making it one of the leading causes of disability and mortality. The high prevalence of obesity, the lack of physical activity, low socioeconomic status and the increase in aging were the main risk factors for diabetes. Both incidence rates and mortality rates for cancer have increased consistently over the last three decades for both Arab men and women. Among the men, the age adjusted incidence rates of cancers increased by 138.4 % and among women by 152.7 %.

Conclusion It is recommended that policy makers need to put primary prevention as a top priority to close the gaps between Arab and Jewish socioeconomic status, lifestyle practices, infrastructure, health and social services, which will result in improving the health status of these communities.

P3S08

Social inequalities in access to prenatal care in Umbria (2010)

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Background Equity in health care is defined as equal access to available care for equal need, equal utilization for equal need, equal quality of care for all. Many governments have made commitments to tackle inequities in access but making this policy operational will be difficult without a clear picture of what is currently known about equity of access to health care services.

Objectives To identify the possible role of various social determinants to equity in access to prenatal care in Umbria, an Italian Region, during the period 2010.

Methods Data was obtained from routine maternity discharge data. Prenatal care indicators are indicators of inadequate or late access to first visit (increased to 12 weeks gestational) and low number of visits (lower than 4). Logistic regression models were used to analyze the magnitude of various social indicators, such as citizenship, occupation, residence, education, and parity with respect to prenatal care indicators.

Results The study included 8,525 mothers. Significant differences in prenatal care indicators were documented. In multivariate analysis model, foreign national has been confirmed to be strongly associated with having made the first visit later than the 12th week, particularly for African women (99 % CI = 2.2–4.1); with a low number of prenatal visits, particularly for Asian women (99 % CI = 2.5–6.7). Having made the first visit beyond the 12th week was associated with even more variables: young age (<20 years) (99 % CI = 1.7–6.8), pluriparity (99 % CI = 1.2–1.8) and rural residency (99 % CI = 1.1–1.5). Having made a low number of visits was associated with even more variables: low educational qualifications (99 % CI = 1.4–2.3), condition of housewife (99 % CI = 1.3–2.2) and of unemployment (99 % CI = 1.2–2.3).

Conclusion The study shows that some maternal factors put women at a disadvantage in relation to access to adequate prenatal care. Access inadequate prenatal care is a public health problem, resulting in risk of complications during birth and neonatal mortality. Policies measures aimed at social-demographic inequalities will reduce adverse perinatal events. More research is needed to explore possible mechanisms underlying social determinants and access inadequate prenatal care and necessary to help improve maternal and fetal health.

P3S09

Self-perceived health, morbidity, healthcare services use, healthcare expenditure and health related behaviors of nurses, other health professionals and other professionals: a study using data from 1998/99 and 2005/06 National Health Survey

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Background It has been suggested that nurses have a different health profile than the general population. Several health problems are described as specific or more prevalent in nurses. The differences seem to result from the nature of nursing work.

Objective To describe differences in self-perceived health, morbidity, healthcare services use, healthcare expenditure, and health related behaviors of nurses, other healthcare professionals (OHP) and other professionals (OP) using data from 1998/99 and 2005/06 Portuguese National Health Surveys.

Methods Cross-sectional, analytical study. Results 2005/06 NHS were supplied by the National Institute of Statistics according with SPSS syntaxes prepared by the authors. Data from 1998/99 NHS were analyzed by the authors controlling for design and stratification effects. Missing data were considered to be missing completely at random.

Results No differences found in the prevalence of acute or chronic disease, long term incapacity and BMI of nurses, OHP and OP. Nurses, OHP and OP do not differ in terms of use of sleep medication, number of days in which they use sleep medication, years of use or physical activity at least once per week.

OP, when compared to OHP and to nurses, had 52 % greater chance of perceiving their health as reasonable and not as very good or good. Nurses were the occupational group with the lowest score on Mental health Index, thus with poorer mental health.

Nurses had a lower chance of going to a dental appointment in the previous 12 months and of going for a medical consultation in the previous 3 months when compared to OP.

Nurses do not differ from OP in terms of emergency appointments and other expenditure, medication expenditure or other expenditure with health in the previous 2 weeks.

Being a nurse, when compared to OP, decreases by 42 % the chance of being an ex-smoker in relation to never being a smoker. Being an OHP in relation to OP increases the chance of drinking alcohol in the week before.

The large majority of nurses were using a contraceptive method. OHP had the lowest percentage of contraceptive use. Vaccination against the flu was more prevalent in nurses than in OHP and OP. Having made at least one cervical cancer screening during life time or assessing blood tension was more frequent in OHP and much higher than in nurses and OP.

Conclusions Nurses have some health behaviours (smoking, vaccination, health surveillance) that differ from those of OP and OHP.

P3S10

National Health Surveys: anthropometric data of Portuguese and Brazilian women: INS 2005–2006 and PNDS 2006

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Background Nutritional problems related to under or overweight in women have been shown itself as a relevant issue to health and quality of life, affecting mainly older women.
Objective To compare the anthropometric data of Portuguese and Brazilian women studied on the 4th National Health Inquiry (4° Inquérito Nacional de Saúde, INS-2005-2006, Portugal) and on the National Research of Demography and Health (Pesquisa Nacional de Demografia e Saúde, PNDS-2006, Brazil).
Methods This work is a result of a data comparison between the Portuguese and the Brazilian national inquiries, respectively, INS-2005/2006 and PNDS-2006. Both researches represent the population of the countries and were based on transversal studies. The nutritional status of the women from 18 to 44 years old was evaluated using the body mass index, as recommended by the World Health Organization (1995). The prevalence of underweight, normal weight, overweight and obese women in the total sample was studied in three age groups (18–24, 25–34, 35–44). The statistical significance was considered for $p < 0.05$.
Results The population was of 2,048,623 women in Portugal and 12,167 in Brazil. There were no significant statistical differences between the occurrences of underweight women on the studied countries. However, there were significant differences between normal weight, overweight and obese women on the total sample and on the different age groups. The greater prevalence of normal weight women was found in Portuguese group ($p < 0.001$). Overweight and obese women were found more prevalent in the Brazilian group ($p < 0.001$). On both countries the occurrence of overweight and obesity increase while the occurrence of underweight decrease on higher age ranges.
Conclusions High overweight and obesity prevalence were found on women of both countries, with higher proportions on the Brazilian group. Health promotion measures and stimulus to healthy nourishment have shown itself as essential to avoid the emergence of morbidities related with nutritional status of women belonging to all age groups, especially on the higher ranges.

P3S11

Prevalence of depression symptoms in a sample of young unemployed Portuguese

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Background Unemployment is a known risk factor for the mental health of population and it is documented that the depression rate is higher in this group. Among them, young people are especially vulnerable to economic fluctuations and to the development of mental disorders.
Aim To describe a sample of young unemployed people regarding depressive symptoms.
Methods We conducted a cross-sectional and descriptive study. A non-randomized sample of 791 subjects was collected, aged between 17 and 34, inside public employment centers of the regions of Lisbon and Alentejo. Depressive symptoms were quantified according to the CES-D scale 20, using 20 and 25 cut-off points.
Results In our sample, the prevalence of depressive symptoms was 43.24 %. Females, long-term unemployed people, people unemployed more times, those with less income and who perceived themselves as poorer, and those with no expectations of future employment were the ones who were more depressed.
Conclusion The study showed a higher prevalence of depression than expected. As a result, and given the obvious methodological limitations, we suggest the conduction of future population-based longitudinal studies.

P3S12

Prevalence and determinants of childhood undernutrition in Ceará State, located in the semi-arid region of Brazil, in a 20 year period

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Background Undernutrition rates in childhood have been declining in the world. However, in some regions it continues to be an important public health problem.
Objectives To describe the evolution of the prevalence and of the associated factors to childhood undernutrition in a place located in the Semi-arid region of Brazil, in a 20 year period.
Methods Data from two population-based surveys, conducted in the sate of Fortaleza northeastern Brazil, with a sample of 8,000 households, in 1987 and 2007 were analyzed. Undernutrition in children under 3 years of age was assessed by anthropometric indices using age, weight and height. Biologic and socio determinants of undernutrition were studied using multivariate analysis, with factors hierarchically defined by a conceptual model. Prevalence rates (PR) and confidence intervals (CI) were calculated to assess associations.
Results In 1987 we studied 4,513 children and 1,533 in 2007. The prevalence of acute undernutrition was reduced in 60 % in the studied period, dropping from 12.6 % in 1987 to 4.7 % in 2007. The prevalence of chronic undernutrition was reduced in 50.0 %, dropping from 27.0 to 13.0 % in the same period.
The association of acute undernutrition and very low birth weight showed important change. (PR: 2.5; 95 % CI: 1.3–4.9 in 1987 and PR: 4.1; 95 % CI: 2.4–7.1 in 2007). In 2007, male gender had a 70 % more chance to have acute undernutrition. Chronic undernutrition in 2007 was associated to unavailability of toilet in the household and low birth weight.
Conclusions Both acute and chronic undernutrition declined in the study period. In 2007, the determinants of acute undernutrition were restricted to biologic factors, different from chronic undernutrition. The economic development and health interventions possibly contributed to this new scenario.

P3S13

Does parental perception of neighborhood safety predicts PA in children from different SES

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Background Achieving daily recommendations of 60 min of moderate-to-vigorous physical activity (PA) during childhood has well documented benefits. Despite this knowledge many children do not engage in sufficient PA and children from disadvantage families are known to have even lower levels of PA. Time spent outdoor is highly correlated to higher levels of PA, however safety concerns within disadvantage communities may be limiting children's outdoor play. Therefore the aim of this study is to examine the association between parents' safety perceptions of the neighbourhood environment and children's physical activity according to socio economic status (SES).
Methods Participants were 298 adolescents (164 girls) with mean age of 11.59 (±0.80) years old from Porto, Portugal. PA was obtained with Actigraph accelerometer model GT1M. Parent's safety perceptions of the neighbourhood environment were obtained by a self-report questionnaire with 11 items on road safety, crime and stranger danger; SES was obtained based on parent's educational level and was collapsed into two categories: ≤9 years of education (low) and >10 years of education (high).
Results Adjusted (gender, age) binary logistics regression analysis showed that parental overall safety perception is associated with achieving PA recommendations only in children from low SES. In low SES families children from parents perceiving more "Safety for outdoor playing during the day" have higher odds (OR = 3.50 CI: 1.55–7.91) of achieving PA recommendations than children whose parents recognize less safety.
Conclusions Parent's perceptions of safety in the neighbourhood appear to be an important correlate of PA in low SES families. Therefore interventions to promote neighbourhood safety within these families may be of particular relevance from a health perspective, since they may rely more on the neighbourhood to get their daily PA, than children from high SES.
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P3S14

Risk factors of dental erosion in alcoholic patients undergoing rehabilitation therapy: an epidemiology approach

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Background Alcoholic patients are a vulnerable group for dental erosion injuries, because alcohol consumption and behaviour have potential for increasing chemistry dental wear, by direct and indirect ethanol effects in the organic system as gastro-oesophageal reflux.
Objectives To assess prevalence, severity and risk factors of dental erosion in alcoholic patients under addiction rehabilitation therapy in a North Alcoholic Regional Centre (CRAN), Porto, Portugal,
Methods Cross-sectional study on dental erosion in a group of 50 patients, 15 (30 %) women and 35 (70 %) men, between February and May of 2006. Data were collected by a questionnaire (gender, age, socio-demographic characteristics; alcohol consumption quantities/qualities, behaviours regarding smoking/drugs of abuse history and oral health promotion) and visual dental examination; Dental erosion condition classified by Eccles and Jenkins index. A sample of 1,064 teeth was obtained, making this a cluster sampling design. Statistic analysis procedures were carried out through the SPSS® v.17.0 with complex samples add-in. Inferential analysis (alpha = 0.05) used Friedman and Wilcoxon tests and the independent effect of significant variables ($p < 0.05$) on dental surface erosion (severity level >0) was assessed using generalized estimating equations (GEE) based on a binary logistic regression model.
Results Clinical data revealed that 49.4 % of 1,064 teeth had enamel and/or dentin erosion lesions. Significantly more severe erosion lesions were observed in maxillary than in mandibular dental arches ($p < 0.001$). Erosion severity in all maxillary dental surfaces were significantly different ($p < 0.001$), being the most severe erosion lesion found in anterior teeth palatine surfaces, followed by posterior teeth occlusal surfaces and by anterior teeth incisive edges. In mandibular arches, the most severe dental erosion condition was found in posterior teeth occlusal surfaces, followed by anterior teeth incisal/lingual surfaces ($p < 0.040$). The binary logistic model (GEE) included as independently factors associated with dental erosion (severity level >0): for maxillary arch, the occlusal dental surface (OR = 2.04, 95 % CI: 1.55–2.68) and palatine surface (OR = 6.40; 95 % CI: 4.36–9.41); For anterior teeth, occlusal surface (OR = 0.38; 95 % CI: 0.28–0.51) and palatine surface (OR = 6.27; 95 % CI: 4.47–8.80); For gastro-oesophageal reflux condition the palatine dental surface (OR = 2.26; 95 % CI: 1.11–4.61); For buccal surface the model only retained the anterior teeth (OR = 1.54; 95 % CI: 1.00–2.36).
Conclusions Alcohol-dependent patients under addiction rehabilitation therapy presented high experience and low severity of dental erosion lesions. Maxilla location is a significant risk factor (RF) for occlusal/palatine surfaces dental erosion; anterior teeth location is a RF for occlusal/palatine and buccal surfaces and gastro-oesophageal reflux is a RF for palatine surfaces dental erosion.

P3S15

Factors influencing the use of condoms among people attending drug treatment centers in Portugal

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Background Risky drug use behaviors (such as injection), as well as risky sexual behaviors increase the likelihood of acquiring and transmitting HIV and other sexual transmitted diseases by current and former drug users. The use of condom is one of the most effective behavioural preventive strategies.
Objective To assess factors that influence the use of condom among people attending drug treatment centers.
Methods Between August 2009 and September 2010, a cohort of 378 current or former adult drug users was recruited in 23 drug treatment centers in the North and Centre of Portugal. A structured questionnaire was administered by trained interviewers. This analysis is based on 289 people who reported having sexual relationships within the last 6 months. A comparison was made between those who had always used a condom and the others concerning socio-demographic characteristics, lifestyles (drug and alcohol use), clinical history and sexual behavior. Proportions were compared by the Qui-square test. Multivariate logistic regression models were fitted to quantify the association between the use of condom and participants' characteristics.
Results Overall, 47.8 % (n = 138) always used condoms. Although not statistically significant, men used always condoms more often than women (50 vs. 35.6 %, $p = 0.106$). No injecting drug users within the last 6 months reported always using condoms more often than those who injected drugs (53.3 vs. 42.4 %, $p = 0.212$). Higher proportions of condom use were found among participants having more than one sexual partner (OR = 3.15; 95 % CI 1.61–6.17) and

being member of a HIV positive couple (OR = 4.48; 95 % CI 2.48–8.11). The use of condom was significantly less frequent among participants with children (OR = 0.54; 95 % CI 0.32–0.92). Marital status was not independently associated with the use of condom.
Conclusions Priority-setting mechanisms need to be developed in order to increase the prevalence of regular condom use, focusing on people attending drug treatment centers with more than one sexual partner, HIV positive and with children.

P3S16

Socioeconomic disparities in health production through diet and physical activity in Chilean adolescents

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The share of child and adolescent obesity in Chile has dramatically increased over the past 20 years; Western dietary patterns and sedentarism are strong environmental determinants. According to the economic Health Production Model, the level of health depends on the amount of inputs individuals allocate to the production of health. The amount of health capital may depreciate but can be restocked by investing in medical care, diet or exercise. Socioeconomic determinants influence individuals prone to produce health; however there is a lack of evidence concerning the production of health on children and adolescents.
Objective To investigate socioeconomic disparities in health production through diet and physical activity in Chilean adolescents.
Method In a random sample of 1,692 high-school individuals from urban Santiago, we studied the production of health using an indicator that considered the quality of food intake and physical activity, and establishing good producer (GHP), intermediate producers (IHP) and poor producer (PHP). Then we assessed the risk of being obese and the probability of behaving as GHP after controlling by type of school and socioeconomic status (SES). Nutritional status by BMI (weight/height^2), waist circumference, SES, type of school as well as education level and activity of household head were assessed in each adolescent.
Results There was 31 % of GHP, 32 % of IHP and 38 % of PHP, with a significantly higher prevalence of the latter among obese individuals ($p < 0.01$ and $p < 0.001$). The prevalence of PHP was significantly higher in adolescent attending public schools or when they came from low and mid-low income families. The prevalence of GHP was significantly lower ($p < 0.001$). While keeping type of school constant, the risk of being obese was significantly higher in individuals attending public schools (OR: 2.370; IC: 1.455–3.862) as well as the probability of suffering from abdominal obesity (OR: 1.976; IC: 1.160–3.367). The probability of behaving as GHP was significantly lower in this group (OR = 0.5317; IC = 0.417–0.678). As for SES, results concerning the prevalence of obesity and abdominal obesity, the risk of suffering from these two conditions, and the probability of behaving as GHP were all significant and consistent with those obtained after controlling by type of school.
Conclusions Results support the association between obesity and the quality of health production through food intake and physical activity. Socioeconomic determinants are strongly associated with the quality of this production in young individuals. Chilean adolescents are at a disadvantage in the production of health when they attend public schools or when they come from low and mid-low income families. Focused policies are needed to encourage behaviors that increase the stock of health and prevent negative health outcomes related to overweight and obesity.

P3S17

Familial risk of premature cardiovascular mortality and the impact of intergenerational occupational class mobility

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Background The negative impact of low social class on cardiovascular disease (CVD) and mortality has been consistently documented. However, less scientific consistency exists in terms of whether a unique health effect of social mobility from childhood to adulthood prevails.
Objectives This study explored how childhood and adult social class and the transition between them (social mobility), is related to premature CVD mortality when familial aggregation of CVD among siblings is also considered.
Methods The study includes nearly 1.9 million Swedish residents born 1939–1959 distributed over 1,044,725 families, of whom 14,667 died prematurely from CVD in 1990–2003. Information on parental class (1960) and own mid-life occupational class (1990) was retrieved from the respective censuses. Odds ratios for premature CVD mortality according to trajectory-specific social mobility, along with pairwise mean odds ratios for sibling resemblance of premature CVD mortality, were calculated by means of alternating logistic regression. This model calculates the remaining dependency of CVD mortality within sibships after accounting for available risk factors (like parental and adult social class) in the population mean model.
Results Results showed that premature CVD mortality was associated with both parental and own adult social class. A clear tendency for the downwardly mobile to have increased, and for the upwardly mobile to experience a decreased risk of premature CVD mortality was found, as well as a corresponding unique effect of social mobility per se among the manual and non-manual classes. This effect was verified for men, but not for women, when they were analysed separately. The pairwise mean odds ratios for premature CVD mortality among full siblings was 1.78 (95 % CI: 1.52–2.08), and was independent of parental CVD mortality and parental or adult occupational class.
Conclusions For manual and non-manual classes we found evidence of decreased risk of premature CVD mortality for individuals moving upwards, and increased risk for individuals moving downwards. A unique effect of social mobility on premature CVD mortality could be verified for men, but not for women. Stable high non-manuals showed the lowest risk of premature CVD mortality together with stable self-employed and non-manuals moving upwards. There was at least a 50 % increased risk of premature CVD mortality for those with an affected full sibling, independent of parental CVD mortality and parental or adult occupational class.

P3S18

Age and gender differences in the social patterning of cardiovascular risk factors in Switzerland: the CoLaus study

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Objectives We examined the social distribution of a comprehensive range of CVD risk factors in a Swiss population, and we assessed whether socioeconomic differences varied by age and gender.
Methods Data come from the CoLaus study, a population-based cross-sectional survey of 2,960 men and 3,343 women living in Lausanne, Switzerland, aged between 35 and 75 years. Analyses are based on cross sectional data of all participants at baseline (2003). Educational level and occupational position were the indicators of socioeconomic status.
Results There were large educational and occupational differences in the prevalence of cardiovascular risk factors such as current smoking (Δ = absolute difference in prevalence between highest and lowest educational group: 10.5/8.2 in men/women), physical inactivity ($\Delta = 23.0/22.3$ in men/women), overweight and obesity ($\Delta = 10.6/11.9$ in men/women for obesity), hypertension ($\Delta = 10.6/9.7$ in men/women), dyslipidaemia ($\Delta = 2.9/8.8$ in men/women for high LDL-cholesterol) and diabetes ($\Delta = 4.1/1.8$ in men/women). Social inequalities in the distribution of risk factors were larger among women than men for alcohol consumption, obesity, hypertension and dyslipidaemia ($p < 0.05$). Relative socioeconomic inequalities in risk factors prevalence tended to be greater among the youngest (35–54 years) comparing to the oldest age group (55–75 years), particularly for behavioural risk factors and abdominal obesity among men and for physiological risk factors among women ($p < 0.05$).
Conclusion The socioeconomic gradient in cardiovascular risk factors tended to be larger in women and in the youngest generation. This might suggests that related socioeconomic inequalities in cardiovascular disease are likely to widen over the next decades.

P3S19

Social inequalities in the chances of undergoing mammography in Brazil

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Background Screening procedures such as mammography are essential for early detection of breast cancer, the most common among women, in Brazil as in other countries. Worse socioeconomic position imposes additional difficulties to screening—resulting in more advanced stage at diagnosis. As such, it is an important health inequity affecting women and their families.
Aim To analyze the chance of having undergone mammography at least once during the life of women aged 40 years or more in each of the nine metropolitan areas (MA) in Brazil.
Methods A cross sectional study based on data from the Health Supplement of the National Household Sample Survey (PNAD), Brazil, in 2008. Income, education and race/color were selected indicators of socioeconomic position. The chance of having ever undergone mammography was estimated using multivariate logistic regression. The effects of income, education, race/color, and age were considered in modeling. PNAD has complex sample design, and the logistic regression was both weighted and corrected for the effect of the design using the survey and SOAR libraries of R software.
Results As in other health events, the chances of undergoing mammography in Brazil is strongly influenced by the women's socioeconomic position. The influence of income, education and color/race present different patterns and intensities across the major MA. The chance of having mammograms performed conditioned by color/race was also analyzed in two education strata. Among those who had up to 7 years of study, for the set of MA's considered, women self-classified as black had 30 % lower odds (OR = 0.70, 95 % CI: 0.60–0.82), brown, 24 % lower (OR = 0.76, 95 % CI: 0.69–0.84). For the MA's considered separately, there was no consistent pattern to the differences. The results suggest that color/race can be one of the barriers to mammography, especially among those in higher income brackets. Among those in lower income brackets, on the other hand, its influence appears to be less relevant.
Conclusions The results confirm the existence of "various Brazils" in which analysis of income, education and race/color reveal different aspects of inequality. As such, they highlight the fact that understanding the determinants of each outcome contributes to the success of health policies.

P3S20

Implementation of respondent-driven sampling among female sex workers in Brazil, 2009

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Background Female sex workers (FSWs) are known in Brazil and elsewhere in the world as one of the most-at-risk populations for risk of HIV infection, due to their social vulnerability and factors related to their work. However, the use of conventional sampling strategies in studies on most-at-risk subgroups for HIV is generally problematic, since such subgroups are small in size and are associated with stigmatized behaviors and/or illegal activities. In 1997, a probabilistic sampling technique was proposed for hard-to-reach populations, called Respondent-Driven Sampling (RDS).
Objectives This article describes some assumptions of RDS and all the implementation stages in a study of 2,523 FSWs in 10 Brazilian cities.
Methods The RDS is considered a variant of chain sampling and allows the statistical estimation of target variables and assumes that persons with a given characteristic or activity are connected in a social network and have links to other persons with similar characteristics. The data collection is done through successive recruitment cycles called "waves". First, individuals from the target population called "seeds" are selected non-randomly to participate in the study. The seeds are asked to recruit a fixed number of peers from among their friends and acquaintances in the same population subgroup. The peers recruited by the seed also recruit other peers, and so on.
Results The study, called the "Health Chain", was carried out in Brazil from August 2008 to July 2009, aimed at estimating the prevalence rates for HIV and syphilis and identify knowledge, attitudes, and practices related to HIV infection and other sexually transmitted diseases in female sex workers. The sample size (2,500 women) was calculated by estimating a 6 % HIV prevalence rate, with a 95 % confidence interval, and two-tailed error of 1.5 %, considering a design effect of 1.5. In each of the municipalities, the attempt was made to distribute the sample proportionally to the municipality's population, while setting a minimum sample of 100 women. The collected sample was 2,523 FWs distributed in 10 brazilian cities.

Conclusions RDS proved appropriate for recruiting FSWs, allowing the selection of a probabilistic sample and the collection of previously missing information on this group in Brazil.

P3S21

Harmful links between the built and social environment and obesity in Portuguese school boys and girls

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Background Obesity is nowadays a major public health concern, affecting not only more people but also younger people. The study of *obesogenic environments* has become relevant, assuming that are environmental most of the factors behind the pointed trend. Moreover, opportunities or constrains provided by the environment have not an equitable distribution, with environmental "negatives" penalizing the more vulnerable, least powerful individuals.
Objectives This study investigates links between parents' perceptions of the social and built environment and child sex-specific levels of excess weigh/obesity. Further, we analyze if the local availability of child sports is a potential contribute to the observed patterns of excess weight/obesity.
Methods We observed 1,885 school children (aged 3–10 years) living in Coimbra district. Using age- and sex-specific BMI, overweight and obesity cut-off points, as defined by the IOTF, were used. Children were grouped into normal weight and overweight/obese. SES was measured by years of parental education. Parental perceptions of their local neighborhoods were assessed through a questionnaire (IPS, 2002), from which we select 15 questions. To reduce those questions into a more intelligible data set without losing information, a CATPCA was performed and two composite indices were obtained. Associations between overweight/obesity in children and the parental neighborhood perceptions were analyzed through logistic regression models adjusted for SES, age and school clustering. In a second step, to investigate the existence of a process of environmental discrimination according to gender in the city of Coimbra, we collect data on all places—e.g., sports, recreational and socio-cultural clubs and associations, gyms, etc.—offering formal sports directed to children under 10 years. At each point we collected information on sports available and the number and sex of practicing children.
Results We found a significant association between parental perceptions of built and social local environment and obesity in girls. We also found that the availability of sports in Coimbra city is unbalanced, heavily restricting the opportunities of sports practice to girls. From the 67 sports opportunities observed in Coimbra, 32 were directed to both sexes, 23 were directed towards boys and 12 to girls.
Conclusions We concluded that revert and control the prevalence of childhood obesity is both a health and planning issue. Furthermore, girls experience processes of environmental discrimination, which may have a harmful health impact. In this context, we argue that environmental interventions embody an opportunity to promoting health and to decrease gender iniquities.

P3S22

Development and validation of an individual social capital measurement tool in Portugal

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Background Social capital, commonly described as being implied in norms and social networks, reveals social relationships within communities or among social groups grounded on different amounts of trust and reciprocity. The study of social capital has been showing a growing interest on health research due to its potential as determinant of health and wellbeing. Different tools for empirical measurement of social capital have been developed, but there are insufficient validated instruments for assessing social capital at an individual level.
Objective To develop and validate a tool for measure individual social capital in youngsters.
Methods The study was developed within a population-based cohort of urban adolescents born in 1990 and assembled at 13 years in public and private schools of Porto, Portugal (EPI-Teen). The present analysis included cross-sectional information of 2,446 participants, collected using a self-administered questionnaire when they have completed 17 years old. The social capital scale comprised 16 items regarding formal and informal networks, civic participation, social support, trust, reciprocity and social control. The items were assessed using a four-point likert scale. Exploratory factor analysis was used to evaluate the dimensionality of the items and GEOMIN rotation was applied. Cronbach alpha was used to measure the reliability. The global goodness of fit of the underlying structure with five factors was evaluated. To assert construct validity, scale dimensions were tested according to gender, parents' education and school failure.
Results Explanatory factor analysis suggested 5 factors: informal network items, formal network and civic participation dimensions, institutional social support, family social support and trust, reciprocity and social control items, explaining 61.2 % of variance. Excluding the last, there was significant correlation between the factors. The items presented consistent item-total correlation (values ranged from 0.20 to 0.51). Estimated Cronbach's alpha ranged from 0.43 to 0.67. In construct validity, no significant associations were found according to gender, except for trust, reciprocity and social control factors in which boys presented a lower mean value. School failure implied lower mean values, except for family social support factor. Mean values increased with parents' education, except for family social support factor.
Conclusion The present tool showed to be a reliable and valid instrument for assessing individual social capital in Portuguese youngsters.

P3S23

Socioeconomic and geographical differences in disability pension: a multilevel analysis in Andalusia, Spain

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Background In 2001, the total number of individuals who had been granted some kind of DP in Spain was almost one million and the total cost of these pensions ascended to more than 7,000 million euros.
Objectives We investigated what variables are associated with disability pension (DP) in Spain and if the areas under investigation condition the differences in DP. Methods: We used data from Andalusia, Spain. We performed multilevel anlayses with five levels (individuals, households, neighborhoods, municipalities and provinces) to determine to which degree the areas under investigation condition individual difference in probability of DP and to analyse the association between individual and contextual variables and the individual outcome. We introduced a random slope at neighborhood level for both age and gender to allow for the coefficients to vary from one neighborhood to another.
Results The variation in DP at the municipalities, neighborhood and household levels represented 2.8, 6.2 and 30.5 %. A considerable proportion of the total individual-level variance in the probability of DP was at the household level, being the Variance Partition Coefficient (VPC) more than 35 % for some age groups. This proportion was smaller at the neighborhood and the municipality levels, although the VPC reached almost 10 % at neighborhood level in some age groups. The inclusion of the provinces in model six halved the variance at municipality level and reduced the VPC in all age groups and for both men and women, indicating that some of the total individual-level variance was at province level. Men had 2.8 times higher probability of DP than women and the probability increased 36 % when going from one age group (i.e. 5 years increase) to another. With higher educational level, the probability of DP was reduced (OR = 10.70, 2.92 and 1.76, respectively for very low, low and medium education). Having a second dwelling reduced the probability in 10 % and not having a motor vehicle doubled it. A person in one of the most deprived neighborhoods had 31 % higher probability of DP that someone in one of the least deprived ones.
Conclusion 30.5 % of the individual variance was at the household level. We detected a conclusive association between neighborhood deprivation and the probability of having a DP. This is the first study to analyze the general and the specific contextual effects of DP, using a five-level multilevel analysis, in Spain.

P3S24

Explaining socioeconomic inequalities in neonatal mortality in low- and middle-income countries

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Background The presence of socioeconomic inequalities in rates of neonatal mortality (NMR, the number of deaths in the first month per 1,000 live births) has been documented in some low-income settings; however, inequalities have not been described systematically across low- and middle-income countries (LMIC) using equivalent measures of inequality that enable cross-country comparisons. Furthermore, there is very limited information about which determinants contribute to socioeconomic inequalities in NMR.
Objectives To produce country-specific estimates of wealth-related differences in NMR over time and identify country-level factors that may contribute to socioeconomic inequalities in NMR in LMIC.
Methods We analyzed data from Demographic and Health Surveys conducted between 1990 and 2010 in 54 LMIC. Socioeconomic inequalities in NMR were measured for the 5-year period preceding each survey using the concentration index (CI). Negative values of the CI indicate higher NMRs among poorer women. We then used random-effects meta-regression to assess whether heterogeneity between countries in the magnitude of wealth-related inequalities in NMR was related to six country-level variables: gross domestic product per capita, percent of the population living in urban areas, out-of-pocket expenditure as a percent of total health expenditure, percent of births delivered in a health facility, percent of deliveries by Caesarean section, and HIV prevalence.
Results There was heterogeneity in the presence and magnitude of socioeconomic inequality in NMR across countries and time periods. In general, socioeconomic inequalities in NMR were larger for countries in South-East Asia (random-effects pooled CI = −0.27, 90 % confidence interval: −0.38, −0.15) and the Americas (CI = −0.27 (−0.37, −0.17)) and lower in African and European countries (CI = −0.09 (−0.14, −0.04) and CI = −0.08 (−0.18, 0.02) respectively). In univariate meta-regression analysis, NMR was most concentrated among the poor in countries with higher out-of-pocket expenditures as a percent of total health expenditure. Lower prevalence of health facility births also showed a significant association with increasing pro-rich inequality in NMR, accounting for other country-level variables.
Conclusions The burden of out-of-pocket payments for health services and the risks associated with non-facility births may exacerbate socioeconomic inequalities in NMR in LMIC. Initiatives to reduce financial barriers and improve access to health facility births may be effective at reducing socioeconomic inequalities in NMR.