




## Article

# Air Pollution and Climate Change: A Pilot Study to Investigate Citizens' Perception

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**Abstract:** Air pollution and climate change are risk factors for noncommunicable diseases of paramount importance and of major concern in a population. Their complex interaction suggests the need for an integrated and participatory approach by health professionals and citizens. During the Italian BRIGHT-NIGHT (European Researchers' Night) at the Pisa Research Campus of National Research Council (CNR), a laboratory focusing on environmental epidemiology issues and open to the public was set up. A self-administered questionnaire was distributed, with the aim of investigating the individual perception, knowledge, opinions and attitudes in relation to 12 different environmental, natural and anthropogenic hazards. The questionnaire was completed by 44 subjects aged over 18 years (47.6% female, 56.8% university graduates, 61.4% employed). Air pollution and climate change were considered two priorities for environmental protection and public health by 72.1%, prompting about one third of the subjects to commit to increasing active commuting. The results of this pilot survey indicate a diffuse awareness of air pollution and climate change as main environmental determinants to be tackled in order to protect public health.

**Keywords:** perception; climate change; good health and well-being; pollution; citizen science; pilot study



**Citation:** Stanisci, I.; Sarno, G.; Curzio, O.; Maio, S.; Angino, A.A.; Silvi, P.; Cori, L.; Viegi, G.; Baldacci, S. Air Pollution and Climate Change: A Pilot Study to Investigate Citizens' Perception. *Environments* **2024**, *11*, 190. <https://doi.org/10.3390/environments11090190>

Academic Editor: Peter Brimblecombe

Received: 16 July 2024

Revised: 30 August 2024

Accepted: 3 September 2024

Published: 5 September 2024



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## 1. Introduction

### 1.1. Air Pollution

Air pollution is one of the largest environmental threats to human health, together with climate change. It is responsible for the premature death of seven million people every year [1]. According to the World Health Organization (WHO) estimates, 9 in 10 people breathe polluted air, and fossil fuel-related air pollution kills 13 people every minute due to diseases such as chronic obstructive pulmonary disease (COPD), lung cancer, heart disease and stroke [2]. In particular, the WHO estimated that outdoor air pollution in cities and rural areas caused 4.2 million premature deaths worldwide in 2019 [3].

Air pollutants can have both direct and indirect health effects. Airborne particles, mainly those deriving from combustion, can have direct effects in terms of mortality due to cardiopulmonary causes, hospitalizations and respiratory morbidity [4]. Short- and long-term exposures to particulate matter increase mortality and reduce life expectancy [5–8]. Indeed, a 10  $\mu\text{g}/\text{m}^3$  increase in  $\text{PM}_{10}$  concentration increases the risk of death from non-accidental causes [9–11].

In addition, primary and secondary pollutants may have an indirect effect on human health through extreme temperatures produced by climate change. In fact, extreme temperatures are associated with increased risks for every cause-specific mortality outcome

and for most morbidity outcomes, particularly in the most susceptible subjects such as the elderly [12].

Secondary pollutants such as ozone can also have modifying effects on soil, damaging crops and reducing yields and, interacting with climate change, can affect food safety and public health [4]. In addition, air quality is an important issue not only in terms of health but also in terms of tourism. It has been seen, in fact, that air quality constitutes an important factor that can influence the number of tourists, and this appears to have a great influence on tourist cities [13,14].

### 1.2. Climate Change

The words “climate change” refer to long-term changes in temperatures and weather patterns. In addition to natural factors which are represented, for example, by variations in the solar cycle, earth’s orbit, ocean cycles and volcanoes (and other geologic activity), anthropic activities such as production processes (energy, goods and food), deforestation, the use of transport and the supply and consumption of electricity for buildings have become, starting from the nineteenth century, the main factors causing climate change [15]. In March 2023, the Latest Assessment Report on Climate Change was published by the Intergovernmental Panel on Climate Change (IPCC). This scientific body was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) with the aim of providing political leaders with periodic scientific assessments on climate change. The report highlights how much over a century of fossil fuel use, as well as inequitable and unsustainable use of energy and land, have led to global warming of 1.1 °C above pre-industrial levels. The latter aspect has been associated with more frequent, more intense and more dangerous extreme weather events. More intense heat waves, more violent rainfall and other extreme weather events further increase risks to human health and ecosystems, which are even more difficult to manage if they combine with other adverse events, such as pandemics or conflicts [16].

The WHO estimated that climate change will cause around 250,000 additional deaths per year due to malnutrition, malaria, diarrhoea and heat stress between 2030 and 2050. Direct health costs are estimated to be between USD 2 billion and USD 4 billion per year by 2030 [17].

### 1.3. Population Perception

Although climate change and air pollution are of current concern, there is still a part of the population that is not interested or does not place particular importance on these issues. Psychological distance is one of the main constructs that explains the concrete or abstract perception of objects and events: when an object or event is perceived as psychologically close (i.e., close to you), it is represented as concrete, while when it is perceived as psychologically distant the representation is more abstract. Psychological distance might be a determinant of the behaviours that individuals adopt towards environmental changes: if climate change is perceived as psychologically distant, the threat is perceived as less real, tangible or relevant, thus triggering uncooperative behaviours of citizens [18]. As a consequence, extreme weather events may have a limited impact on the judgments and decisions of individuals, particularly those who have strong pre-existing beliefs and reject the reality of climate change [19]. Such individuals have also been called “the asymptomatic of the climate crisis” [20].

In general, concern about climate change and the greenhouse effect is growing in Italy; in 2022, 56.7% of those interviewed believed that the greatest environmental concern is climate change, followed by problems related to air pollution, felt by 50.2% [21]. It was seen that climate change knowledge is a pre-requisite for risk perception and pro-environmental behaviour [22–26]. Individuals with high knowledge and positive environmental attitudes are prone to engage in environmentally friendly behaviours [27,28]. These considerations highlight how environmental education is important for the accurate perception of risks related to climate change [29]. Moreover, risk perception is a “subjective” concept that is

influenced by factors such as personality traits, culture and socioeconomic status; there is no “objective” perception of risk [30].

Mitigating climate change together with reducing air pollution would undoubtedly contribute to protecting and improving a population’s health [31]. It was seen, for example, that the presence of greenness, associated with better air quality, is linked to a lower risk and burden of low birth weight [32].

#### *1.4. Rationale and Aim of the Study*

Air quality and climate change are therefore crucial emergencies for our society, whose complex interrelationship suggests the need for an integrated and participatory approach, since they depend on political decisions and individual choices at different levels. The involvement in research of various non-expert interlocutors, including citizens and political decision-makers, represents a priority according to the indications relating to Responsible Research and Innovation (RRI) at the European level [33]. Therefore, to combat climate change, actions are needed from various sides in order to achieve more responsible behaviour towards the environment. This will demand an increase in the population’s awareness about this topic, as well as a better understanding of causes and consequences of climate change [34,35]. Citizens with a deep knowledge about causes and consequences of climate change will be more likely to act to fight it, since they will recognize that it constitutes a risk for their future [36,37]. In other words, an aware population will be fundamental in order to fight global warming [38].

The purpose of our pilot study is to describe the level of perception of a convenient sample of citizens, who have participated in the public event BRIGHT-NIGHT (European Night of Researchers), on issues regarding air pollution and climate change. The information on environmental issues obtained through this study could constitute an important means of communication, especially for local policy makers who could be influenced in making decisions necessary to improve the environmental and health conditions of the general population. Furthermore, thanks to the study of these public events such as BRIGHT-NIGHT, it is possible to understand the level of knowledge of the population regarding environmental issues and create information events dedicated to the population regarding specific topics.

## **2. Materials and Methods**

During the BRIGHT-NIGHT event, which took place at the Research Campus of the National Research Council (CNR) in Pisa (Italy) on 30 September 2022, an “environmental epidemiology laboratory” called “Everything you wanted to know about environmental epidemiology (but were afraid to ask)” was set up, to raise awareness and distribute information on environmental hazards like air pollution and climate change. The BRIGHT-NIGHT event takes place every year and is organized by the European Union with the aim of spreading scientific culture, bringing the world of science closer to citizens. This event was an interesting opportunity to try to understand how much the participants were already aware of the topics, what measures they declared themselves willing to adopt for the reduction of these hazards and their general interest in these issues. As part of this laboratory, researchers and technicians from the Pulmonary Environmental Epidemiology unit of the CNR Institute of Clinical Physiology (IFC-CNR) in Pisa met with citizens, presenting the main research projects carried out over the years on the topic of environment and health [39–42]. Furthermore, an interactive demonstration of the tools that are normally used during epidemiological analytical studies for the objective evaluation of respiratory health (spirometers, rhinometers, exhaled nitric oxide meters, etc.) and exposure to outdoor and indoor environmental pollution (active/passive samplers for measurement of air pollutants, humidity and temperature) was also performed. During the event, the researchers carried out educational activities for the interested public, also answering various questions from the audience. On this occasion, in collaboration with the IFC-CNR Communication Laboratory in Risk Areas, a completely anonymous self-administered

questionnaire (Supplementary Material) was also distributed among the participants: it was filled in on a voluntary basis. The respondents ( $n = 44$ ) may be considered a convenient sample of citizens who take an informal interest in social and cultural events. The small sample size is linked to the pilot study design (a small-scale study conducted in preparation for a wider survey). This small sample study was supposed to represent a feasibility model to be applied in future studies with larger samples. In addition, we subsequently had the possibility to make some comparisons with an ongoing study involving a larger sample of Pisa high school students. The questionnaire, called “Bright on Environment and Health—BEH”, consisted of 16 questions on general characteristics and perception, knowledge, opinions and attitudes in relation to 12 different environmental risks, from both natural and anthropic origin, and in particular floods, earthquake-tsunami, noise, waste, radon, power lines, mobile phone-antennas, climate change, dangerous industries, air, water and food pollution. The questionnaire was defined by selecting some questions from previously validated questionnaires used in a series of environmental epidemiology research projects, enriched by two questions on the willingness to adopt measures to reduce the health risk of environmental exposures (Supplementary Material) [43,44].

The questionnaire was shortened and adapted to be self-completed during the BRIGHT-NIGHT event: before the event, it was tested on seven subjects with different educational backgrounds and variations in age and gender for understandability and finally approved by the research group. The questionnaire does not request any sensitive data, it is completely anonymous and no information capable of identifying the subjects who responded to the questionnaire is requested. Therefore, in accordance with the European and Italian regulations (Official Journal of EU, L119/5, GDPR 2016/679), it was not necessary to request approval from the ethics committee.

The data obtained from the questionnaires were analyzed using descriptive statistics, bivariate and multivariate analyses with the Statistical Package for the Social Sciences (SPSS version 26.0). Bivariate analyses were performed using the chi-square test to investigate the association between risk perception (dependent variable) and kind of information sources (expert/researcher, local/national healthcare), educational level, gender and age (independent variables). A logistic regression model was carried out to predict the determinants of risk perception considering the independent effect of expert and researcher as information sources, local and national healthcare as information sources, educational level, gender, age.

Results were expressed as odds ratio (OR) and 95% confidence interval (CI). The significance level was set at 0.05. Statistically significant results are shown in bold.

### 3. Results

The BEH questionnaire was completed by 44 people, of which 47.6% were females (Table 1). The 45–65 year age group was the most represented (41.8%), followed by the 25–44 year age group who made up 23.3% of interviewees. Overall, 77.0% of the subjects resided in the province of Pisa and 45.2% of the subjects in the municipality of Pisa (60.6% of those residing in the province of Pisa). Regarding the level of education (Table 1), 56.8% of the interviewees had a bachelor’s or post-graduate diploma and 29.5% had a high school diploma.

With regard to working condition, 61.3% of the subjects were employed: the majority of subjects reported being office workers (52.3%). Among the unemployed, the majority reported being retired (18.2%) or students (18.2%) (Table 2).

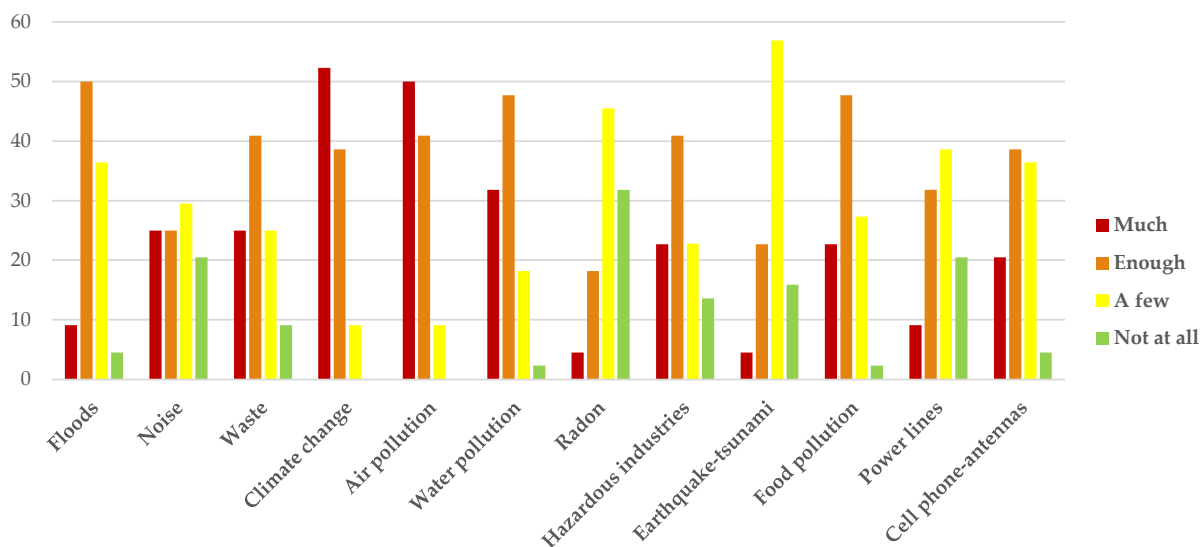
The first question in the questionnaire was the following: “You are faced with a list of different dangers: How much you feel personally exposed to each of them?” (Figure 1). As expected, citizens predominantly felt “much” exposed to climate change (52.3%), air pollution (50.0%) and water pollution (31.8%), which are very sensitive issues; on the other hand, 31.8%, 20.5% and 20.5%, respectively, felt “not at all exposed” to radon, noise and power lines.

**Table 1.** General characteristics of the sample (n = 44).

General Characteristics	%
Gender	
Female	47.6
Male	50.0
Missing	2.4
Age groups (year)	
15–24	18.6
25–44	23.3
45–65	41.8
65+	16.3
Municipality of residence	
Pisa	45.2
Other municipalities	54.8
Province of residence	
Pisa	77.0
Other provinces	23.0
Educational level	
No qualifications or elementary school diploma	2.3
Middle school diploma	11.4
High school graduation	29.5
Graduate or postgraduate	56.8

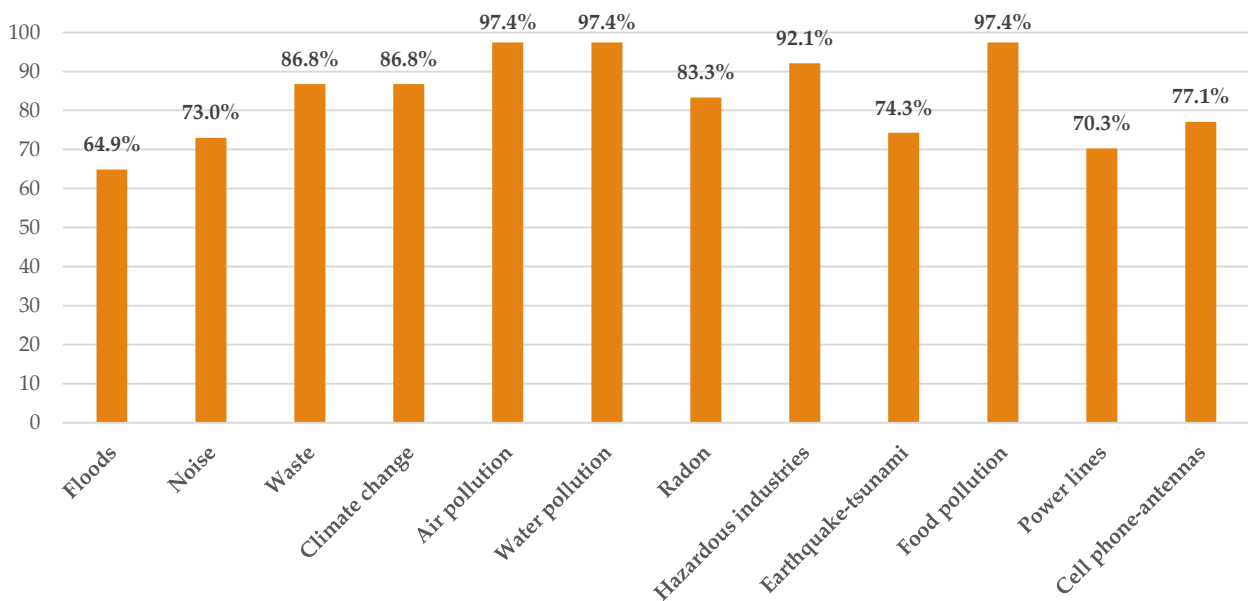
**Table 2.** Working condition of the sample.

Working Condition	%
Employed	61.3
Freelance, professional manager	4.5
Office worker	52.3
Self-employed worker, project employee	4.5
Unemployed	38.7
Housewife, househusband	2.3
Student	18.2
Retired	18.2



**Figure 1.** Frequency (%) of answers to the question "You are faced with a list of different dangers: How much do you feel personally exposed to each of them?".

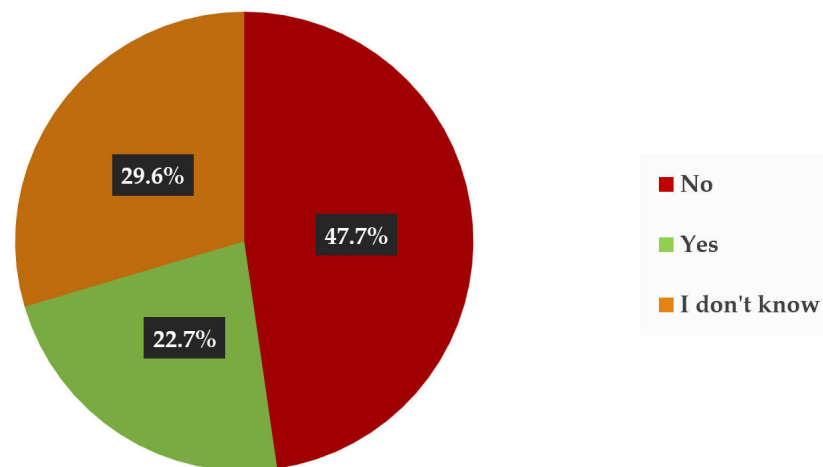
Subsequently, participants were asked which hazards may represent a health risk to people exposed to them (Figure 2).



**Figure 2.** Frequency (%) of answers to the question “What hazards can pose a risk to the health of exposed people?”.

Even in this case, the subjects indicated air pollution (97.4%) and water pollution (97.4%) as the riskiest factors for their health, in addition to food pollution (97.4%) and hazardous industries (92.1%). Noise (73.0%), power lines (70.3%) and floods (64.9%) were considered less risky for health.

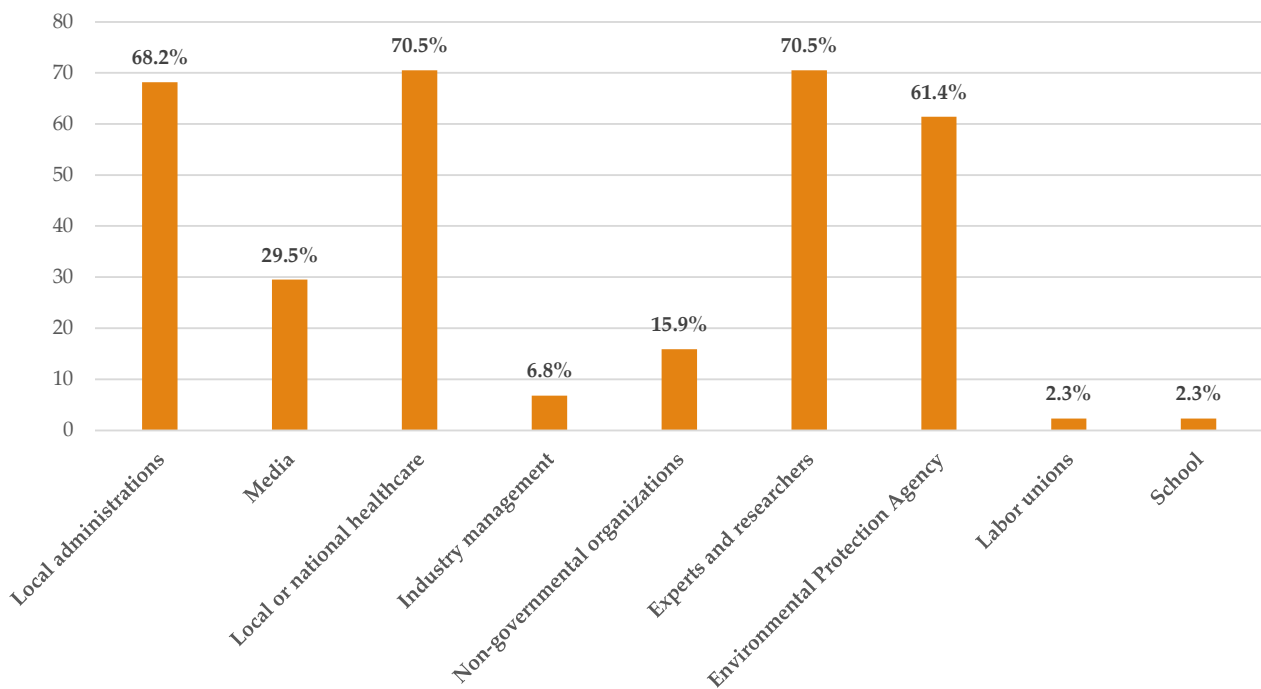
Unexpectedly, with regard to the level of information on environmental and health risks in the area of residence, only 22.7% of subjects believed they were sufficiently informed (Figure 3), suggesting a larger level of information when dealing with global emergencies with respect to local specific issues.



**Figure 3.** Frequency (%) of answers to the question “Do you feel sufficiently informed about the risks to the environment and health in your area of residence?”.

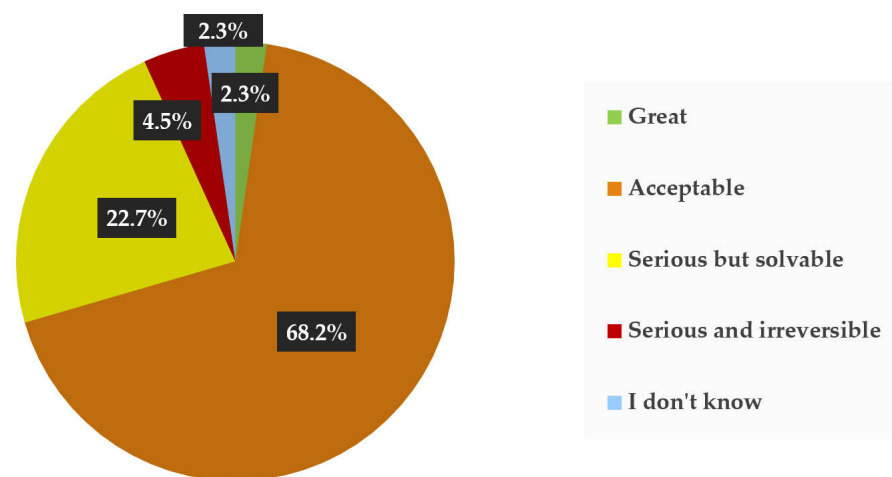
In relation to the previous question, citizens were asked whom they would like to be informed by about environmental and health risks in their area of residence. It was seen that subjects preferred to be mainly informed on these topics by experts and researchers (70.5%) or by local or national healthcare representatives (70.5%), then by local administrations

(68.2%) and environmental agencies (61.4%), demonstrating that citizens had confidence in these authoritative sources of information (Figure 4).



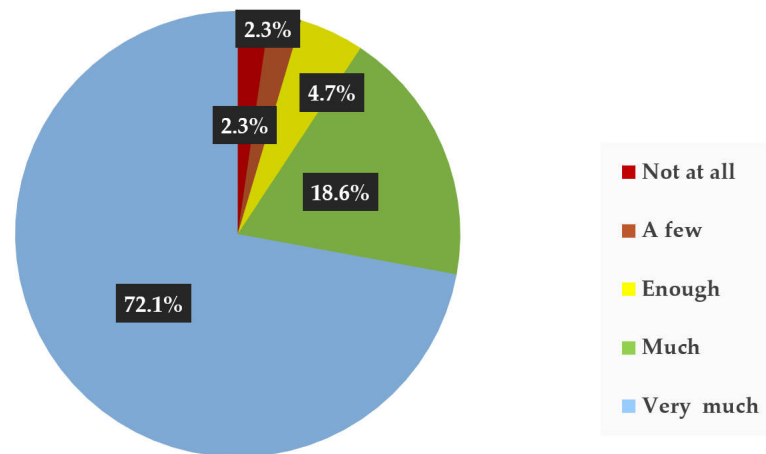
**Figure 4.** Frequency (%) of answers to the question “By whom would you like to be informed regularly about environmental and health risks in your area of residence?”.

In accordance with Figure 3 results, regarding the environmental situation of the municipality in which they lived, 68.2% of people considered the situation acceptable and 22.7% serious but solvable (Figure 5), revealing a larger, but probably superficial, knowledge of the local environmental issues.



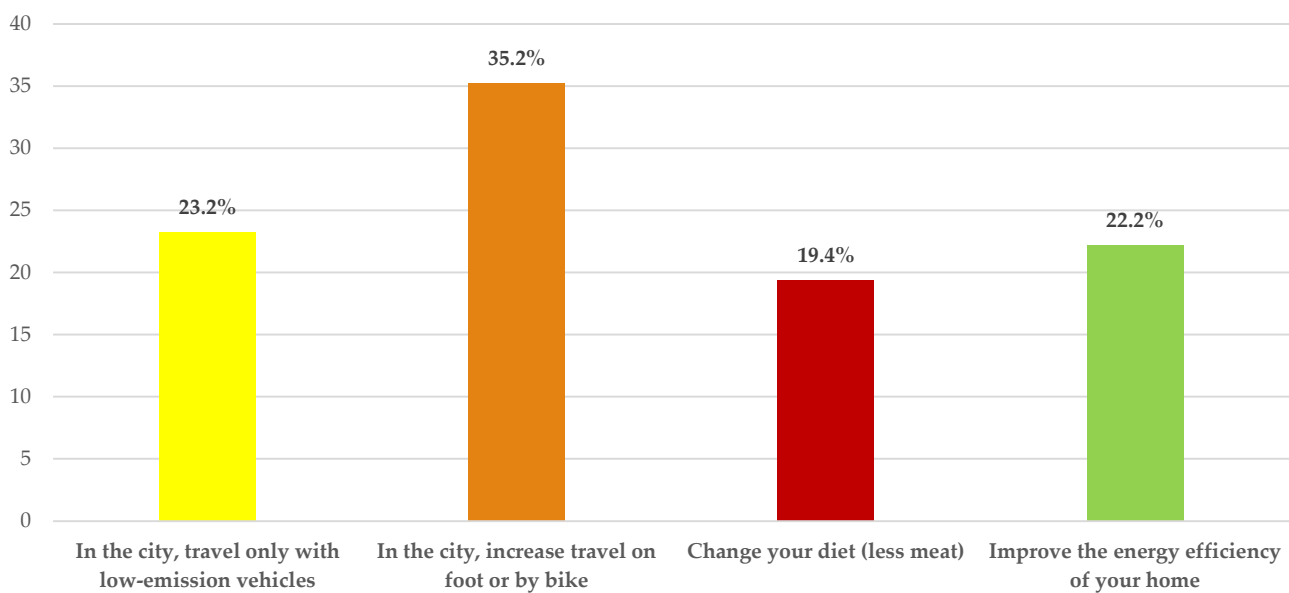
**Figure 5.** Frequency (%) of answers to the question “How do you judge the environmental situation of the municipality where you live?”.

When asked “Do you agree with the statement: ‘Improving the air quality of cities and reducing harmful emissions to combat climate change are two priorities for protecting the environment and public health?’”, approximately 91.0% of the subjects answered “much” and “very much” in accordance (Figure 6). These figures highlight the awareness of the surveyed sample concerning environmental problems.



**Figure 6.** Frequency (%) of answers to the question “Do you agree with the statement: ‘Improving the air quality of cities and reducing harmful emissions to combat climate change are two priorities for protecting the environment and public health?’”.

With regard to the measures to be applied to reduce air pollution and promote a healthy lifestyle, over 58.4% of the sample declared themselves willing to increase active mobility trips by bike or on foot (35.2%), with low emission vehicles (23.2%) (Figure 7). These results suggest an availability of citizens to be actively engaged in sustainable mobility measures to reduce urban air pollution.



**Figure 7.** Frequency (%) of answers to the question “Which of the following measures would you be willing to take to reduce air pollution and promote a healthy lifestyle?”.

Table 3 shows the association between risk perception and gender, age, educational level, information from experts and researchers and information from local and national healthcare by chi-square test. Only the prevalence of those informed by local and national healthcare is borderline higher in those with a high risk perception (82.6%) than in those with a low risk perception (57.1%).

Lastly, through a logistic regression model (Table 3), those receiving information from medical personnel (at local or national level) showed a significantly lower probability (−83%) of reporting a low perception of environmental risk factors, taking into account the independent effects of gender, age, educational level and information from experts and



researchers. Thus, these figures seem to suggest the relevance of information coming from local and national health professionals, who therefore constitute authoritative sources of communication, in increasing the environmental consciousness. Public healthcare agencies and healthcare professionals should have a leading role in promoting environmental health [45].

**Table 3.** Associations between risk perception and determinants: prevalence rates (%) and ORs, 95% CI.

Variables	High Risk Perception <i>n</i> (Row %)	Low Risk Perception <i>n</i> (Row %)	OR (95% CI)
Gender			
Female	12 (52.2%)	9 (42.9%)	a
Male	11 (47.8%)	12 (57.1%)	1.49 (0.40–5.53)
Age			
15–44	9 (39.1%)	9 (42.9%)	a
45–65+	14 (60.9%)	12 (57.1%)	1.34 (0.32–5.62)
Education level			
High	12 (52.2%)	13 (61.9%)	a
Low	11 (47.8%)	8 (38.1%)	0.42 (0.10–1.70)
Information from experts and researchers			
No	8 (34.8%)	5 (23.8%)	a
Yes	15 (65.2%)	16 (76.2%)	2.20 (0.51–9.47)
Information from local and national healthcare			
No	4 (17.4%)	9 (42.9%) <sup>brl</sup>	<b>a</b>
Yes	19 (82.6%)	12 (57.1%)	<b>0.17 (0.03–0.93)</b>

a reference category. <sup>brl</sup> borderline values,  $0.05 < p < 0.10$  according to the chi-square test. Statistically significant values are reported in **bold**. Note: The logistic regression model included risk perception (high: subjects who responded much/enough to more than six risk factors; low: subjects who responded much/enough to less than six risk factors) as dependent variable; expert and researcher as information sources (yes or no), local and national healthcare as information sources (yes or no), educational level (low  $\leq$  high school graduation, high  $>$  high school graduation), gender (males, females), age (15–44, 45–65+) as independent variables.

## 4. Discussion

### 4.1. Risk Perception of the Sample

This cross-sectional pilot study conducted as part of the BRIGHT-NIGHT event made it possible to investigate the risk perception, knowledge and interest of a convenient sample of the general population concerning different environmental risks.

The results of this survey highlight how most individuals feel particularly exposed to climate change and air and water pollution, data largely confirmed by the fact that water and air pollution are considered the riskiest factors for the health of exposed people, in addition to food pollution. Preliminary results confirm the main relevance of the same environmental factors and health hazards also in a larger Pisa sample involving high school students ( $n = 215$ ) (Supplementary Material).

As already seen in previous studies, the perception could derive from the fact that these risk factors are those currently best known by the general population, because they receive larger attention from the media, especially social networking sites [46,47]. In fact, in a study conducted among students of 15 Italian universities, it was observed that the perception of environmental health risk was larger in those who used the Internet and social media as their main sources of information [48]. Furthermore, it must be highlighted that each individual's risk perception derives from a series of factors, including personal experience, individual preferences, influence of living environment and cultural aspects [49–51].

The data obtained in this pilot study were likely influenced by other factors, including the composition of our convenient sample, mostly represented by adult individuals aged

between 45 and 65. It is known, in fact, that the perception of risk tends to increase with age in people over 25 years of age, while it decreases in the elderly (less represented group within our sample) [52]. Furthermore, our convenient sample had a high percentage of individuals with a bachelor's or post-graduate degree: the high level of education might be correlated with easier access to information and therefore to greater awareness of environmental risks. Schooling may be related to easier access to information and therefore to larger environmental awareness, but it may also constitute a proxy for income, social class and prestige [53]. For example, in the study conducted among students of 15 Italian universities, it was confirmed that the perception of environmental risk for health was larger in those with high health literacy [48]. In conclusion, higher education provides a unique intellectual contribution to the formation of environmental citizenship and can help achieve environmental sustainability through the development of pro-environmental attitudes, commitments and motivations, as well as the knowledge and skills required to respond effectively [29].

#### 4.2. Comparison with Larger Studies

In general, the results obtained from this study are in line with other studies of larger sample sizes carried out both in Europe and in Italy. In January 2021, for example, the results of "The Peoples' Climate Vote", the largest global survey ever conducted on public opinion on climate change, organized by the United Nations Development Program (UNDP) and supported by various partners, were published. The survey involved 1.2 million respondents from 50 countries, whose populations cover 56% of the world's population. Even though the survey was conducted during the COVID-19 pandemic, 64% of people in all countries claimed climate change to be an emergency, calling on decision makers to step up mitigation measures. The percentage of people who considered climate change a global emergency ranged from 61% in sub-Saharan Africa to 72% in Western Europe and North America. In total, 59% of the sample said the world should do everything necessary, urgently, to address the problem. The survey showed a direct link between education level and desire to take climate action: recognition of the climate emergency was very high among those who had attended university or college. Young people (<18 years) were more likely to recognize this link than those of other age groups, but a substantial majority of older people agreed with them, although the percentage decreased with ageing: almost 70% of <18 year-old individuals said that climate change is a global emergency, compared to 65% of 18–35 year-old, 66% of 36–59 year-old and 58% of over 60 year-old subjects [54].

In other studies, which used a questionnaire similar to ours, the most significant questions concerned personal exposure to pollution and the risk of health consequences of such pollution. In places where the inhabitants define the situation as "serious and reversible" and often "serious and irreversible", there are various health outcomes linked to environmental problems about which the population is worried. Even in these studies, the analyzed samples show different levels of risk perception depending on the specific situation and history of the territory, exposure to information, direct experience and social influence [55–57].

The results of the latest annual "Climate Survey", conducted in August 2022 by the European Investment Bank (EIB), show that in Italy the concern for climate change comes immediately after the concern for unemployment in so far as 44% considers it as the greatest challenge, with an increase of 5 percentage points compared to 2021. This figure is particularly high among Italians over 65 years old (53%, up 10 percentage points compared to 2021) [58].

#### 4.3. Level of Information and Awareness of the Sample

It is important to note the low level of information in Italy: our study shows that only 23% of those interviewed consider information on the risks in their area of residence sufficient, which suggests the need for information measures on territorial risks at a local

level. The information measures, according to those interviewed, should preferably be carried out by local or national health personnel, experts and researchers, environmental agencies or local administrations. Therefore, it is clear that people need to be informed by authoritative figures who are able to guarantee reliable answers to their questions. In fact, to reach the recipients in a widespread and timely manner, communication must be scientifically valid, clear, objective and convincing [59–62]. It should act on awareness, trust, perception, knowledge and preparation, through adequate channels and contents easily understandable by the different recipients [63]. These statements are further confirmed by the result of the logistic regression in which information from local and national healthcare professionals, relying on the judgment of trusted physicians or authoritative medical guidelines, is associated with a low probability of a low perception of environmental risks. This seem to also be suggested by a study in which greater trust in institutions as a source of information would correspond to more accurate information from an environmental point of view [43]. Although some studies suggest the importance of being informed by authoritative sources, such as healthcare professionals, other studies highlight how in reality this communication to citizens does not occur. Despite the great interest and concerns of citizens and epidemiologists, the perception of pollution as a serious health hazard is often low among doctors, as evidenced by the scarce presence of environmental health in most clinical guidelines, in conferences of scientific societies and study programs of medical associations [64,65].

Indeed, in a sample of the general Italian population, despite the high coverage by the media and the satisfactory self-perceived knowledge, the majority of participants negatively judged the information received as untruthful and incomplete. Moreover, they declared a limited adoption of behavior in favor of the environment: the lack of support from the institutions represents the main obstacle to the process of behavioral change, with the exception of the use of public transport and products with low environmental impact, for which the main obstacles are represented by lack of time and costs, respectively [66].

The awareness of the population under study concerning environmental problems is evident. In fact, 72% of those interviewed agreed with the statement “Improving the air quality of cities and reducing harmful emissions to combat climate change are two priorities for protecting the environment and public health”. Individuals also seem to understand the need for changes in lifestyles to improve the environmental situation and seem to be willing to make a series of changes to their lifestyles in order to contribute to improving the environment and reducing air pollution. Even if this study shows the desire to change one’s lifestyle in order to improve air quality, there is still a long way to go to change people’s behaviour. In fact, in the latest Italian National Statistics Institute (ISTAT) analyses, it appears that out of 20,000 families interviewed, 64.4% use private transport to go to school or work [67].

Climate change has already had a direct and indirect impact on the lives of people, animals and the ecosystem for years and it also appears to have an economic impact [13,14]; for this reason, the action of each individual is necessary to combat climate change [68]. In a study carried out in 15 Italian universities, in which 4,778 questionnaires were filled in, awareness of environmental risks to health was associated with behaviours in favour of environment. The correspondence between these positive attitudes and their actual adoption was 20%, a discrepancy probably due to external factors (e.g., lack of time, costs, lack of support) [69].

#### 4.4. Pilot Study

Our pilot study represents a possible methodological basis for future studies in which opinions regarding environmental issues and risk perception will be investigated and monitored over time in larger and more heterogeneous population samples. Our study, even if it has limitations, presents various potentials in so far as it investigated the risk perception not only of air pollution, as happens in many studies [70,71], but included a wide range of environmental risks, using a simple and easy-to-understand questionnaire.

In any case, only large samples allow one to carry out robust multivariate statistical analyses taking into account confounding factors and/or effect modifiers beyond age and education. Moreover, even taking into account some weaknesses such as low size and representativeness of the sample, our study constitutes an example of “citizen science” with the aim of laying the foundations for environmental change starting from citizen participation at a local level.

## 5. Conclusions

The data from this pilot study highlight how there is a high awareness of individuals concerning environmental issues, both at a local and national level. The need to be informed with continuity and accuracy is clearly expressed, in particular from the world of research, from health and environmental control structures and from local authorities. This can be a specific stimulus for local authorities to improve and expand communication activities regarding health and environmental sectors, specifically on the link between environment and health, in their territory. Citizens also have a willingness to support measures aimed at containing pollution and improving public health. It is therefore desirable to conduct further studies with the aim of informing political decision makers and pushing them to consider the concerns and willingness to change expressed by their fellow citizens.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/environments11090190/s1>, References [43,44,56,57,72–76] are cited in the supplementary materials.

**Author Contributions:** Conceptualization, S.B., O.C. and L.C.; methodology, S.M.; formal analysis, A.A.A.; investigation, S.B., O.C., L.C., I.S., S.M., G.S. and P.S.; data curation, A.A.A.; writing—original draft preparation, I.S.; writing—review and editing, G.S., I.S., O.C., S.M., L.C., G.V. and S.B.; supervision, G.V.; project administration, P.S. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Data Availability Statement:** The original contributions presented in the study are included in the article and Supplementary Materials, further inquiries can be directed to the corresponding author.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

1. World Health Organization (WHO). New WHO Global Air Quality Guidelines Aim to Save Millions of Lives from Air Pollution. Available online: <https://www.who.int/news/item/22-09-2021-new-who-global-air-quality-guidelines-aim-to-save-millions-of-lives-from-air-pollution> (accessed on 19 September 2023).
2. World Health Organization (WHO). World Health Day 2022. Available online: <https://www.who.int/campaigns/world-health-day/2022> (accessed on 19 September 2023).
3. World Health Organization (WHO). World Health Organization Ambient (Outdoor) Air Pollution. Available online: [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health) (accessed on 2 August 2023).
4. Orru, H.; Ebi, K.L.; Forsberg, B. The Interplay of Climate Change and Air Pollution on Health. *Curr. Environ. Health Rep.* **2017**, *4*, 504–513. [[CrossRef](#)] [[PubMed](#)]
5. Anenberg, S.C.; Henze, D.K.; Lacey, F.; Irfan, A.; Kinney, P.; Kleiman, G.; Pillarisetti, A. Air Pollution-Related Health and Climate Benefits of Clean Cookstove Programs in Mozambique. *Environ. Res. Lett.* **2017**, *12*, 025006. [[CrossRef](#)]
6. Anenberg, S.C.; West, J.J.; Yu, H.; Chin, M.; Schulz, M.; Bergmann, D.; Bey, I.; Bian, H.; Diehl, T.; Fiore, A.; et al. Impacts of Intercontinental Transport of Anthropogenic Fine Particulate Matter on Human Mortality. *Air Qual. Atmos. Health* **2014**, *7*, 369–379. [[CrossRef](#)]
7. Anenberg, S.C.; West, I.J.; Fiore, A.M.; Jaffe, D.A.; Prather, M.J.; Bergmann, D.; Cuvelier, K.; Dentener, F.J.; Duncan, B.N.; Gauss, M.; et al. Intercontinental Impacts of Ozone Pollution on Human Mortality. *Environ. Sci. Technol.* **2009**, *43*, 6482–6487. [[CrossRef](#)] [[PubMed](#)]
8. Apte, J.S.; Marshall, J.D.; Cohen, A.J.; Brauer, M. Addressing Global Mortality from Ambient PM<sub>2.5</sub>. *Environ. Sci. Technol.* **2015**, *49*, 8057–8066. [[CrossRef](#)]
9. Brauer, M.; Amann, M.; Burnett, R.T.; Cohen, A.; Dentener, F.; Ezzati, M.; Henderson, S.B.; Krzyzanowski, M.; Martin, R.V.; Van Dingenen, R.; et al. Exposure Assessment for Estimation of the Global Burden of Disease Attributable to Outdoor Air Pollution. *Environ. Sci. Technol.* **2012**, *46*, 652–660. [[CrossRef](#)]

10. Brauer, M.; Freedman, G.; Frostad, J.; van Donkelaar, A.; Martin, R.V.; Dentener, F.; Dingenen, R.V.; Estep, K.; Amini, H.; Apte, J.S.; et al. Ambient Air Pollution Exposure Estimation for the Global Burden of Disease 2013. *Environ. Sci. Technol.* **2016**, *50*, 79–88. [[CrossRef](#)]
11. Burnett, R.; Chen, H.; Szyszkwicz, M.; Fann, N.; Hubbell, B.; Pope, C.A., 3rd; Apte, J.S.; Brauer, M.; Cohen, A.; Weichenthal, S.; et al. Global Estimates of Mortality Associated with Long-Term Exposure to Outdoor Fine Particulate Matter. *Proc. Natl. Acad. Sci. USA* **2018**, *115*, 9592–9597. [[CrossRef](#)] [[PubMed](#)]
12. Bunker, A.; Wildenhain, J.; Vandenberg, A.; Henschke, N.; Rocklöv, J.; Hajat, S.; Sauerborn, R. Effects of Air Temperature on Climate-Sensitive Mortality and Morbidity Outcomes in the Elderly; a Systematic Review and Meta-Analysis of Epidemiological Evidence. *eBioMedicine* **2016**, *6*, 258–268. [[CrossRef](#)]
13. Yuan, H.; Nie, K.; Xu, X. Relationship between Tourism Number and Air Quality by Carbon Footprint Measurement: A Case Study of Jiuzhaigou Scenic Area. *Environ. Sci. Pollut. Res.* **2021**, *28*, 20894–20902. [[CrossRef](#)]
14. Eusébio, C.; Carneiro, M.J.; Rodrigues, V.; Robaina, M.; Madaleno, M.; Gama, C.; Oliveira, K.; Monteiro, A. Factors Influencing the Relevance of Air Quality in the Attractiveness of a Tourism Destination: Differences between Nature-Based and Urban Destinations. *Tour. Manag. Perspect.* **2022**, *44*, 101045. [[CrossRef](#)]
15. Centro Regionale di Informazione delle Nazioni Unite (UNRIC). Che Cosa Sono i Cambiamenti Climatici? Available online: <https://unric.org/it/che-cosa-sono-i-cambiamenti-climatici/> (accessed on 19 September 2023).
16. International Panel of Climate Change (IPCC). Urgent Climate Action Can Secure a Liveable Future for All. Available online: [https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC\\_AR6\\_SYR\\_PressRelease\\_en.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC_AR6_SYR_PressRelease_en.pdf) (accessed on 19 September 2023).
17. World Health Organization (WHO). Climate Change and Health. Available online: <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health> (accessed on 19 September 2023).
18. McDonald, R.I.; Chai, H.Y.; Newell, B.R. Personal Experience and the ‘Psychological Distance’ of Climate Change: An Integrative Review. *J. Environ. Psychol.* **2015**, *44*, 109–118. [[CrossRef](#)]
19. Sambrook, K.; Konstantinidis, E.; Russell, S.; Okan, Y. The Role of Personal Experience and Prior Beliefs in Shaping Climate Change Perceptions: A Narrative Review. *Front. Psychol.* **2021**, *12*, 669911. [[CrossRef](#)] [[PubMed](#)]
20. Cori, L.; Re, S.; Bianchi, F.; Carra, L. Gli Asintomatici Della Crisi Climatica. In *Comunicare Ambiente e Salute. Aree Inquinare e Cambiamenti Climatici in Tempi di Pandemia*; Edizioni ETS: Pisa, Italy, 2021.
21. Istituto Nazionale di Statistica (ISTAT). Preoccupazioni Ambientali e Comportamenti Ecocompatibili. Available online: <https://www.istat.it/it/archivio/284910> (accessed on 22 September 2023).
22. Hines, J.M.; Hungerford, H.R.; Tomera, A.N. Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis. *J. Environ. Educ.* **1987**, *18*, 1–8. [[CrossRef](#)]
23. Catherine Gautier, K.D.; Rebich, S. Misconceptions About the Greenhouse Effect. *J. Geosci. Educ.* **2006**, *54*, 386–395. [[CrossRef](#)]
24. Dupigny-Giroux, L.-A. Introduction—Climate Science Literacy: A State of the Knowledge Overview. *Phys. Geogr.* **2013**, *29*, 483–486. [[CrossRef](#)]
25. Leiserowitz, A.; Smith, N.; Marlon, J.R. *American Teens’ Knowledge of Climate Change*; Yale University: New Haven, CT, USA, 2011.
26. Dijkstra, E.M.; Goedhart, M.J. Development and Validation of the ACSI: Measuring Students’ Science Attitudes, pro-Environmental Behaviour, Climate Change Attitudes and Knowledge. *Environ. Educ. Res.* **2012**, *18*, 733–749. [[CrossRef](#)]
27. Moser, S.C.; Dilling, L. Communicating Climate Change: Closing the Science-Action Gap. In *The Oxford Handbook of Climate Change and Society*; Dryzek, J.S., Norgaard, R.B., Schlosberg, D., Eds.; Oxford University Press: Oxford, UK, 2011; pp. 161–174. ISBN 978-0-19-956660-0.
28. Di Giusto, B.; Lavalley, J.P.; Yu, T.-Y. Towards an East Asian Model of Climate Change Awareness: A Questionnaire Study among University Students in Taiwan. *PLoS ONE* **2018**, *13*, e0206298. [[CrossRef](#)]
29. Yu, T.-K.; Lavalley, J.P.; Di Giusto, B.; Chang, I.-C.; Yu, T.-Y. Risk Perception and Response toward Climate Change for Higher Education Students in Taiwan. *Environ. Sci. Pollut. Res. Int.* **2020**, *27*, 24749–24759. [[CrossRef](#)]
30. Slovic, P. Perception of Risk. *Science* **1987**, *236*, 280–285. [[CrossRef](#)]
31. World Health Organization (WHO). *WHO Global Air Quality Guidelines: Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>), Ozone, Nitrogen Dioxide, Sulfur Dioxide and Carbon Monoxide*; World Health Organization: Geneva, Switzerland, 2021; ISBN 978-92-4-003422-8.
32. Luo, S.; Wang, Y.; Mayvaneh, F.; Relvas, H.; Baaghideh, M.; Wang, K.; Yuan, Y.; Yin, Z.; Zhang, Y. Surrounding Greenness Is Associated with Lower Risk and Burden of Low Birth Weight in Iran. *Nat. Commun.* **2023**, *14*, 7595. [[CrossRef](#)]
33. Unione Europea Ricerca e Innovazione-Azioni dell’UE | Unione Europea. Available online: [https://european-union.europa.eu/priorities-and-actions/actions-topic/research-and-innovation\\_it](https://european-union.europa.eu/priorities-and-actions/actions-topic/research-and-innovation_it) (accessed on 22 September 2023).
34. Moser, S.C. Communicating Climate Change: History, Challenges, Process and Future Directions. In *Wiley Interdisciplinary Reviews: Climate Change*; WIREs Clim Change; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2010; Volume 1, pp. 31–53. [[CrossRef](#)]
35. Körffgen, A.; Keller, L.; Kuthe, A.; Oberrauch, A.; Stötter, H. (Climate) Change in Young People’s Minds—From Categories towards Interconnections between the Anthroposphere and Natural Sphere. *Sci. Total Environ.* **2017**, *580*, 178–187. [[CrossRef](#)]
36. O’Connor, R.E.; Bord, R.J.; Fisher, A. Risk Perceptions, General Environmental Beliefs, and Willingness to Address Climate Change. *Risk Anal.* **1999**, *19*, 461–471. [[CrossRef](#)]
37. Stevenson, K.T.; Peterson, M.N.; Bondell, H.D.; Moore, S.E.; Carrier, S.J. Overcoming Skepticism with Education: Interacting Influences of Worldview and Climate Change Knowledge on Perceived Climate Change Risk among Adolescents. *Clim. Chang.* **2014**, *126*, 293–304. [[CrossRef](#)]

38. De Paula Baer, A.; Sestili, C.; Cocchiara, R.A.; Barbato, D.; Del Cimmuto, A.; La Torre, G. Perception of Climate Change: Validation of a Questionnaire in Italy. *Clin. Ter.* **2019**, *170*, e184–e191. [CrossRef]
39. Baldacci, S.; Maio, S.; Cerrai, S.; Sarno, G.; Baiz, N.; Simoni, M.; Annesi-Maesano, I.; Viegi, G. Allergy and Asthma: Effects of the Exposure to Particulate Matter and Biological Allergens. *Respir. Med.* **2015**, *109*, 1089–1104. [CrossRef] [PubMed]
40. Maio, S.; Baldacci, S.; Tagliaferro, S.; Angino, A.; Parmes, E.; Pärkkä, J.; Pesce, G.; Maesano, C.N.; Annesi-Maesano, I.; Viegi, G. Urban Grey Spaces Are Associated with Increased Allergy in the General Population. *Environ. Res.* **2022**, *206*, 112428. [CrossRef] [PubMed]
41. Maio, S.; Baldacci, S.; Simoni, M.; Angino, A.; La Grutta, S.; Muggeo, V.; Fasola, S.; Viegi, G.; The Agave Pisa Group. Longitudinal Asthma Patterns in Italian Adult General Population Samples: Host and Environmental Risk Factors. *J. Clin. Med.* **2020**, *9*, 3632. [CrossRef]
42. Maio, S.; Sarno, G.; Tagliaferro, S.; Pirona, F.; Stanisci, I.; Baldacci, S.; Viegi, G. Outdoor Air Pollution and Respiratory Health. *Int. J. Tuberc. Lung Dis.* **2023**, *27*, 7–12. [CrossRef]
43. Coi, A.; Minichilli, F.; Bustaffa, E.; Carone, S.; Santoro, M.; Bianchi, F.; Cori, L. Risk Perception and Access to Environmental Information in Four Areas in Italy Affected by Natural or Anthropogenic Pollution. *Environ. Int.* **2016**, *95*, 8–15. [CrossRef]
44. Bena, A.; Gandini, M.; Crosetto, L.; Ivaldi, C.; Procopio, E.; Salamina, G.; Oreggia, M.; Farina, E. Perceived Risk in the Population Living near the Turin Incinerator: Comparison between before and at Three Years of Operation. *Int. J. Environ. Res. Public Health* **2021**, *18*, 9003. [CrossRef] [PubMed]
45. McKinnon, S.; Breakey, S.; Fanuele, J.R.; Kelly, D.E.; Eddy, E.Z.; Tarbet, A.; Nicholas, P.K.; Ros, A.M.V. Roles of Health Professionals in Addressing Health Consequences of Climate Change in Interprofessional Education: A Scoping Review. *J. Clim. Chang. Health* **2022**, *5*, 100086. [CrossRef]
46. Mereu, A.; Minerba, L.; Sardu, C.; Scarpa, B.; Contu, P. Survey about risk perception between citizens resident in a municipal at high risk of environmental crisis. *Epidemiol. Prev.* **2005**, *29*, 19–25.
47. Shah, Z.; Wei, L.; Ghani, U. The Use of Social Networking Sites and Pro-Environmental Behaviors: A Mediation and Moderation Model. *Int. J. Environ. Res. Public Health* **2021**, *18*, 1805. [CrossRef]
48. Carducci, A.; Fiore, M.; Azara, A.; Bonaccorsi, G.; Bortoletto, M.; Caggiano, G.; Calamusa, A.; De Donno, A.; De Giglio, O.; Dettori, M.; et al. Environment and Health: Risk Perception and Its Determinants among Italian University Students. *Sci. Total Environ.* **2019**, *691*, 1162–1172. [CrossRef]
49. Cori, L.; Donzelli, G.; Gorini, F.; Bianchi, F.; Curzio, O. Risk Perception of Air Pollution: A Systematic Review Focused on Particulate Matter Exposure. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6424. [CrossRef] [PubMed]
50. Rosa, E.A.; Renn, O.; McCright, A.M. *The Risk Society Revisited*; Temple University Press: Philadelphia, PA, USA, 2014; ISBN 978-1-4399-0258-5.
51. Slovic, P.; Peters, E.; Finucane, M.L.; Macgregor, D.G. Affect, Risk, and Decision Making. *Health Psychol.* **2005**, *24*, S35–S40. [CrossRef] [PubMed]
52. Raphael, B.; Taylor, M.; Stevens, G.; Barr, M.; Gorrige, M.; Agho, K. Factors Associated with Population Risk Perceptions of Continuing Drought in Australia. *Aust. J. Rural Health* **2009**, *17*, 330–337. [CrossRef]
53. Marcon, A.; Nguyen, G.; Rava, M.; Braggion, M.; Grassi, M.; Zanolin, M.E. A Score for Measuring Health Risk Perception in Environmental Surveys. *Sci. Total Environ.* **2015**, *527–528*, 270–278. [CrossRef]
54. UNDP and University of Oxford. The Peoples’ Climate Vote | United Nations Development Programme. Available online: <https://www.undp.org/publications/peoples-climate-vote> (accessed on 19 September 2023).
55. Bena, A.; Gandini, M.; Cadum, E.; Procopio, E.; Salamina, G.; Oreggia, M.; Farina, E. Risk Perception in the Population Living near the Turin Municipal Solid Waste Incineration Plant: Survey Results before Start-up and Communication Strategies. *BMC Public Health* **2019**, *19*, 483. [CrossRef]
56. Bianchi, F.; Minoia, C.; Minichilli, F.; Cori, L.; Bustaffa, E.; Leoni, E.; Migliore, S.; Ronchi, A.; Turci, R. Biomonitoring Studies: Bioaccumulation of Polychlorinated Biphenyls and Heavy Metals. In *Human Health in Areas with Industrial Contamination*; WHO Regional Office for Europe: Copenhagen, Denmark, 2014.
57. De Felip, E.; Bianchi, F.; Bove, C.; Cori, L.; D’Argenzio, A.; D’Orsi, G.; Fusco, M.; Miniero, R.; Ortolani, R.; Palombino, R.; et al. Priority Persistent Contaminants in People Dwelling in Critical Areas of Campania Region, Italy (SEBIOREC Biomonitoring Study). *Sci. Total Environ.* **2014**, *487*, 420–435. [CrossRef] [PubMed]
58. European Investment Bank (EIB). Three-Quarters of Italians Say the War in Ukraine and High Energy Prices Should Accelerate the Green Transition. Available online: <https://www.eib.org/en/press/all/2022-432-tre-quarti-degli-italiani-affermano-che-la-guerra-in-ucraina-e-il-caro-energia-contribuiranno-ad-accelerare-la-transizione-verde> (accessed on 19 September 2023).
59. Arpae Emilia-Romagna. Documento Guida di Comunicazione del Rischio Ambientale per la Salute. Available online: <https://www.arpae.it/it/documenti/pubblicazioni/quaderni/documento-guida-di-comunicazione-del-rischio-ambientale-per-la-salute/view> (accessed on 22 September 2023).
60. Cori, L.; Bianchi, F.; Sprovieri, M.; Cuttitta, A.; Ruggieri, S.; Alessi, A.L.; Biondo, G.; Gorini, F. Communication and Community Involvement to Support Risk Governance. *Int. J. Environ. Res. Public Health* **2019**, *16*, 4356. [CrossRef]
61. Cori, L. Risk Communication and the Role of Knowledge Broker, Experiences in Italy. *Toxicol. Environ. Chem.* **2016**, *98*, 1100–1109. [CrossRef]

62. Leone, U.; Postiglione, T.; Greco, P.; Carra, L.; Cerroni, A.; Manzoli, F.; Cambi, I.; Lanza, T.; Balzan, S.; Fabbri, M.; et al. *La Comunicazione del Rischio*; Doppia voce: Napoli, Italy, 2014.
63. Carnelli, F.; Pedoth, L.; Gallmetzer, W.; Marangoni, N.; Macconi, P.; Krenn, P. Relazione Finale: Raccomandazioni per la Comunicazione del Rischio Verso la Popolazione, le Istituzioni e gli Altri Attori. Available online: [https://appc.provincia.bz.it/downloads/RiKoST\\_WP4\\_Recommendations\\_Eurac\\_DEF\\_IT.pdf](https://appc.provincia.bz.it/downloads/RiKoST_WP4_Recommendations_Eurac_DEF_IT.pdf) (accessed on 19 September 2023).
64. Di Ciaula, A.; Mannucci, P.M.; Portincasa, P. Environmental Health and Clinicians: Time to Promote More Action. *Intern. Emerg. Med.* **2024**, *19*, 1203–1207. [[CrossRef](#)]
65. Doheny, B.M.; Inglis, J.J.; Boll, K.A.; Lunos, S.; Surapaneni, V.L. Short Animated Video Increases Knowledge and Perceived Comfort in Clinical Counseling on Inequitable Health Impacts of Air Pollution among Interprofessional Health Learners and Clinicians. *BMC Med. Educ.* **2023**, *23*, 858. [[CrossRef](#)]
66. Carducci, A.; Donzelli, G.; Cioni, L.; Palomba, G.; Verani, M.; Mascagni, G.; Anastasi, G.P.; Pardini, L.; Ceretti, E.; Grassi, T.; et al. Air Pollution: A Study of Citizen's Attitudes and Behaviors Using Different Information Sources. *Epidemiol. Biostat. Public Health* **2017**, *14*, 2. [[CrossRef](#)]
67. Ambiente e Non Solo. Mobilità e Ambiente Nelle Risposte All'indagine Multiscopo ISTAT 2022 Sulla Vita Quotidiana. Available online: <https://datawrapper.dwcdn.net/HKwQr/1/> (accessed on 22 May 2024).
68. Pirni, A.; Buizza, R. Il Ruolo Degli Individui E Delle Istituzioni Nell'affrontare Il Cambiamento Climatico. *Etica Politica* **2022**, *24*, 323–348.
69. Carducci, A.; Fiore, M.; Azara, A.; Bonaccorsi, G.; Bortoletto, M.; Caggiano, G.; Calamusa, A.; De Donno, A.; De Giglio, O.; Dettori, M.; et al. Pro-Environmental Behaviors: Determinants and Obstacles among Italian University Students. *Int. J. Environ. Res. Public Health* **2021**, *18*, 3306. [[CrossRef](#)]
70. Noël, C.; Van Landschoot, L.; Vanroelen, C.; Gadeyne, S. The Public's Perceptions of Air Pollution. What's in a Name? *Environ. Health Insights* **2022**, *16*, 11786302221123563. [[CrossRef](#)] [[PubMed](#)]
71. Patel, J.; Katapally, T.R.; Khadilkar, A.; Bhawra, J. The Interplay between Air Pollution, Built Environment, and Physical Activity: Perceptions of Children and Youth in Rural and Urban India. *Health Place* **2024**, *85*, 103167. [[CrossRef](#)] [[PubMed](#)]
72. Bustaffa, E.; Minichilli, F.; Andreassi, M.G.; Carone, S.; Coi, A.; Cori, L.; Faita, F.; Faita, F.; Grecchi, S.; Minoia, C.; et al. Studies on markers of exposure and early effect in areas with arsenic pollution: Methods and results of the project SEpiAs. Epidemiological surveillance in areas with environmental pollution by natural or anthropogenic arsenic. *Epidemiol. Prev.* **2014**, *38* (Suppl. S1), 27–94. [[PubMed](#)]
73. Bena, A.; Oreggia, M.; Cadum, E.; Farina, E.; Alimonti, A.; Bocca, B.; Chiusolo, M.; De Felip, E.; Gandini, M.; Iamiceli, A.L.; et al. Biomonitoring and exposure assessment of people living near or working at an Italian waste incinerator: Methodology of the SPoTT study. *Environ. Monit. Assess.* **2016**, *188*, 607. [[CrossRef](#)]
74. Nuvolone, D.; Petri, D.; Pepe, P.; Voller, F. Health effects associated with chronic exposure to low-level hydrogen sulfide from geothermoelectric power plants. A residential cohort study in the geothermal area of Mt. Amiata in Tuscany. *Sci. Total Environ.* **2019**, *659*, 973–982. [[CrossRef](#)] [[PubMed](#)]
75. Nuvolone, D.; Stoppa, G.; Petri, D.; Profili, F.; Bartolacci, S.; Monnini, M.; Crocetti, M.; Voller, F. Geotermia e salute in Toscana. Florence, Italy. 2021, Volume 1-3. Available online: <https://www.ars.toscana.it/2-articoli/4688-geotermia-e-salute-in-toscana-rapporto-2021.html> (accessed on 27 July 2022).
76. Bustaffa, E.; Curzio, O.; Bianchi, F.; Minichilli, F.; Nuvolone, D.; Petri, D.; Stoppa, G.; Voller, F.; Cori, L. Community Concern about the Health Effects of Pollutants: Risk Perception in an Italian Geothermal Area. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14145. [[CrossRef](#)] [[PubMed](#)]

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