

Feasibility of a questionnaire on asbestos awareness among students: a pilot study

Fattibilità di un questionario sulla consapevolezza dell'amianto tra gli studenti: uno studio pilota

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ABSTRACT

Background: there is no resolutive treatment for asbestos-related diseases, but prevention plays a key role. This survey was conducted to test the feasibility of a questionnaire to measure the awareness on asbestos among the students in a specific asbestos polluted area. Furthermore, we carried out a preliminary assessment of student awareness on this topic.

Methods: a questionnaire was used among secondary school students of Casale Monferrato. This considered the levels of sensitivity, knowledge, and experienced emotions.

Results: 788 students completed the questionnaire out of a total of 3600 (22.2%). Thirty-five percent of the students were poorly informed about the asbestos issue, 26% felt that they had basic information on this topic. Twelve percent of the students thought that asbestos is no longer a problem.

Conclusions: it emerges the strong need to become more knowledgeable on asbestos' history. A questionnaire is a useful tool, but structural changes are needed to facilitate the analysis of the results.

Background: un trattamento risolutivo per le malattie legate all'amianto non è ancora disponibile, ma la prevenzione gioca un ruolo chiave. Questa indagine è stata condotta per testare la fattibilità di un questionario rivolto agli studenti delle scuole secondarie di Casale Monferrato, area geografica caratterizzata da passata esposizione all'amianto.

Metodi: il questionario proposto agli studenti permette di valutare la consapevolezza della problematica amianto e del rischio ad esso legato. Le domande indagano infatti i livelli di sensibilità, conoscenza della storia e del rischio da amianto ed emozioni vissute.

Risultati: 788 (22%) studenti su 3600 hanno compilato il questionario. Il 35% è poco informato sul tema amianto e il 26% ritiene di avere informazioni basilari. Il 12% pensa che l'amianto non rappresenti più un problema per la comunità.

Conclusioni: emerge la forte necessità di approfondire la conoscenza della storia dell'amianto. Il questionario è uno strumento utile, ma sono necessarie modifiche strutturali al fine di facilitare l'analisi dei risultati.

INTRODUCTION

The natural properties of asbestos (*i.e.*, strength, durability, flexibility, and resistance to corrosion, heat, and fire) have promoted its popularity for commercial applications, with widespread commercial use as a building material for many decades, mostly in the construction, automotive, and shipbuilding industries (Asbestos-Containing Materials, ACMs),^{1,2} widely used in Italy until the late 80s.

Both chrysotile and amphibole asbestos types have been used in Italy until 1986, the year of the ban of crocidolite use in asbestos-cement products. In 1992, the Italian regulation banned the use and production of asbestos and ACMs. Unfortunately, there is still the risk of asbestos exposure, because most of ACMs have not been removed yet and are also located in public buildings.^{3,4} Asbestos exposure can occur in occupational and/or environmental settings, although asbestos is banned in most industrialized countries because of its harmful effects on human health.⁵

Damaged ACMs can release airborne fibers which, if inhaled can lead to Asbestos-Related Diseases (ARDs), ranging from non-neoplastic to neoplastic diseases, such as lung cancer, mesothelioma, asbestosis, pleural plaques, diffuse pleural thickening and many others.⁶⁻⁸ Unfortunately, there is currently no treatment for ARDs, but prevention could play a key role.⁹

In Italy, the National Priority Contaminated Sites Legislation adopted in 1998 recognized the town of Casale Monferrato, in Piedmont, and its neighboring municipalities as a prioritized asbestos-contaminated site for decontamination and remediation, due to the presence of the largest Italian asbestos-cement factory that was active from 1907 to 1986 (*i.e.*, the company called Eternit).¹⁰ Casale Monferrato has become the Italian emblem of the collective struggle against asbestos. The factory impact was not limited to the health of workers employed at the plant only, but also to that of their relatives and other residents. For several decades, the town of Casale Monferrato has been experiencing the most severe burden of asbestos-related diseases observed in Italy, with a high incidence of mesothelioma disease. In this context, the local education system has developed a network of schools, Rete ScuoleInsieme (that means “SchoolsTogether”), with a synergic collaboration with institutional and social stakeholders involved (*i.e.*, local authorities, environmental and health professionals, social organizations) for environmental and health education and communication on asbestos. Specifically, at the Cesare Balbo High School the asbestos topic is the center of the interactive Asbestos Classroom project (Aula Amianto/Asbesto – website: www.amiantoasbesto.it).

In Casale Monferrato, the Association “Relatives of Asbestos Victims” (Associazione Familiari Vittime Amianto, AFeva) and the school networks represents two important realities for raising awareness on the asbestos issue, in particular from three different perspectives: decontamination, justice and scientific research. Together with the support of Ecofficina Ltd., a company experienced in creating original multimedia and interactive exhibitions, they have built the contents of the interactive Asbestos Classroom, a tool with high educational value for students of all school grades. The main goal of the multimedia Asbestos Classroom is to build a permanently sustainable tool to increase knowledge of the asbestos risk and health impact, especially among young people, for students at all levels of education.

The primary objective of the survey promoted by the Asbestos Classroom was to test the feasibility of a questionnaire for measuring the level of awareness to the asbestos topic among

students of Casale Monferrato. The secondary objective was to carry out a preliminary assessment of the level of awareness of students in Casale Monferrato on the asbestos topic.

MATERIALS AND METHODS

Participants

This pilot survey addressed a sample of secondary school students (11-19 years old), in the town of Casale Monferrato in the Piedmont Region, Italy. In our study, a formal institutional review board was not necessary, since students were not subjected to any experimental/clinical/diagnostic procedures after receiving information about the survey’s aims. The survey was conducted between March and April 2021.

Instrumentation

We developed an 8-items questionnaire for addressing the study’s aims. The aim of the survey, promoted by the interactive Asbestos Classroom, was to collect information, opinions, emotions, level of involvement and questions on aspects of the long history of asbestos and its heavy impact on the affected community of Casale Monferrato testing the feasibility of a questionnaire. Of the eight questions, six were designed to gather respondents’ opinions, and only two were numerical. The questionnaire is reported in Table 1.

Procedure

The project was explained to the students by the teachers and referents of the Asbestos Classroom project of the ScuoleInsieme network. A paper copy of the questionnaire was then delivered to the students, who have freely decided whether to participate or not. The completed paper questionnaires completely anonymous were returned directly to the teachers.

Data analysis

Descriptive analyses were performed.

RESULTS

In this survey, we collected the answers of 788 students (corresponding to about the 22.2% of the student population of the two school levels considered, about 3600 students).

Table 1. Questionnaire.

1.	What do you recollect about the tragic history of asbestos in Casale Monferrato?
2.	Is there anything about the history of asbestos in Casale Monferrato that you would like to know and understand?
3.	Do you think that the fight against asbestos (with the issues of remediation, care, research and justice) is still a problem present in our community?
4.	Do you think that asbestos is a problem exclusively present in Casale Monferrato or is it still present widely throughout Italy and in many countries around the world?
5.	Can you give an example of the concrete health hazards of asbestos exposure even today?
6.	Do you think it is important to have justice with regard to those responsible for asbestos-related deaths? (including individual and collective compensation and recognition of omissions)
7.	Could you point out one or more current messages that the fight against asbestos in Casale Monferrato conveys with consideration to the environment and its defense?
8.	Would you be willing to dedicate some time to the activities of the amianto/asbesto classroom? If yes, how would you like to be involved?

Question 1

The survey's answers allow us to divide the students into two groups, a group of informed students and a group of poorly informed/uninformed students (744/788 replies, 94.4%). One-hundred-and-eight students admit that they know little or nothing about the topic (1/7 of the students). The number of students grows (156 replies) if we included the answers from the new residents in Casale Monferrato: "I know little about it because I have just moved to town recently" or "Nothing because I lived elsewhere".

Some significant recurring answers among the uninformed/poorly informed were: "I know a few things because I heard something about it, especially in primary school" or "A little because the Eternit factory had been closed from many years when I was born"; "Unfortunately I don't know much. I heard only that many people have died from asbestos"; "I do not remember"; "Nothing"; "I only know that in Casale there are many areas with asbestos"; "Sometimes I talk about it with my family but never in-depth".

Among the informed students (480, 65% of the total), the most frequently used terms, were "victims", "amount of death", "mesothelioma", "lives lost". About the 9% of the students refer to their family's direct contact with asbestos (grandparents, fathers, uncles, friends and relatives), some of whom died before the student was born; often (over 20 replies) they were employed in the Eternit factory.

The predominantly expressed emotions were "fear", "sadness", and "bitterness". They talk of "an injustice", "a tragedy". They were aware of "the fear of the citizens of Casale Monferrato who fear contracting the asbestos disease" and they said "Fear is due to the awareness that asbestos pollution still exists".

Question 2

Among those who responded (687 of 788 replies), 133 students thought that they "knew about the subject".

The most significant answers were: "I have at least basic information about it", or "I have already talked a lot about it". Forty-eight students felt they had received enough information at school, partly due to participation in the interactive Asbestos Classroom activity.

Question 3

Although the question was referred specifically to Casale Monferrato about the 10% of the students also referred to other reality, not only Italian. Seven hundred and sixty-three of 788 replies and only 45 students (6%) answered that asbestos "is no longer a problem" or "I don't know". Forty-eight students (6%) specified that "asbestos is partially still present". Three-hundred-forty-nine (46%) replied simply "Yes", "Sure", "Definitely". Three-hundred-twenty-one (42%) added a comment such as "I think it's better than before, but we haven't reached the finish line yet", "Justice has not been definitively obtained yet", "Surely it is a problem until we find a cure for mesothelioma".

Considering the global situation, some students thought about other cities and countries where asbestos is still present: "The problem of asbestos is underestimated just as soon as you leave Casale Monferrato", "Entire areas of Asia have productions still in progress".

Question 4

There are 4 categories of answers: the majority of students (518, 67%) asserted, "The asbestos problem is worldwide".

One-hundred twenty-seven students (16%) believed that the problem is present throughout Italy, with poor knowledge of other countries. Eighty-nine students (11%) were "not informed about it" and 41 (5%) were convinced that Casale Monferrato was the only place where asbestos causes diseases and deaths.

Question 5

Three hundred forty-seven students (48%) defined mesothelioma as the main disease related to asbestos. Two hundred thirty answers (31%) referred to various diseases, including mesothelioma but also cancer or tumor, asbestosis, 68 described respiratory system/lung diseases (9%). Eighty-eight respondents did not indicate particular diseases (12%).

Question 6

The issue of justice seems to be important in the opinion of young people. The 93.9% of the students expressed an answer, *i.e.*, "Eternit: justice!", "Resilience is the banner of the battle against asbestos", "Casale wants justice for the victims", and "We must fight for our rights, especially the right to health".

Question 7

Only 297 students replied to this question with some comments, in particular the issues about justice and resilience (92 replies), remediation (80 replies), safety (89 replies), and other topics (36 replies). For what concerns remediation they thought, "The incentives to encourage asbestos and its dust are very important". Twelve students emphasized scientific research, primarily on mesothelioma.

Question 8

Fifty-six point seven percent of the students were willing to dedicate some time to the Asbestos Classroom activities. Almost all were interested "in living the experience of being an entertainer and tutor towards their classmates or lower school grades" on both the asbestos and environmental issues.

DISCUSSION

Between March and April 2021, we conducted a pilot survey addressed to a sample of students in the town of Casale Monferrato. We developed an 8-items questionnaire for addressing the study aims. We conducted the present survey study as a pilot to test a questionnaire's feasibility to measure the level of awareness to the asbestos topic among students in Casale Monferrato. The secondary study aim was to carry out a preliminary assessment of the level of awareness of students in Casale Monferrato, on the asbestos topic. Collecting information, opinions, emotions, level of involvement and questions on aspects of the long history of asbestos and its heavy impact on the Casale Monferrato community involved, among the school population of middle and secondary schools (11-19 years old). Of the eight questions, six were designed to gather respondents' opinions, and only two were numerical.

The analysis of data obtained revealed that about 35% of total students were uninformed/poorly informed about the asbestos issue. In many answers, it emerged how the students would like to know the whole history of asbestos in Casale Monferrato because they felt that their knowledge is often incomplete and fragmentary, and

they would like a more complete overall vision. One-hundred-eighty-one students (26%) felt that they had basic information on the asbestos topic, confirming that they had enough knowledge also due to the participation in Asbestos Classroom activities. The rest of the students (74%) felt the need to investigate the matter further. About 12% of total students thought that asbestos is no longer a problem, or it is a limited problem.

Most of the respondents (67%) knew that the asbestos issue is widespread in several countries worldwide, while some of them thought that it is only an Italian problem (16%) and the 5% of the students thought it was exclusively present in the town of Casale Monferrato.

Strangely, many attributed the presence of asbestos to “poor” or developing countries, ignoring that some among the most industrialized countries have produced and used asbestos until recent years (*i.e.*, Canada and the United States).

For what concerns the asbestos-related diseases, the 48% of the students knew about mesothelioma disease, 31% added to mesothelioma other diseases, such as tumors or asbestosis, 9% replied with generic lung diseases, while 12% had not indicated any diseases. Overall, the 88% of the students are knowledgeable of the possible serious health consequences of asbestos exposure. A certain number of students (about 20%) mentioned it in the past.

The issue of justice seems to be of interest in the opinion of young people, together with the issues of reclamation and health care/research: they expressed, by a large majority (94%), for a resumption of the process, after many postponements.

Regarding the environmental topic, a strong awareness was shown with the request of brainstorming ideas to improve the environmental issues (not only regarding asbestos) and for implementing them. At the last question, the 56,7% of the students were available to dedicate some time to the activities of the Asbestos Classroom. The environmental health education initiatives can be seen as a direct contribution to environmental health literacy aimed at increasing the resilience of affected communities. Environmental health literacy and risk communication are globally recognized actions suitable for managing environmental contamination and its adverse health effects on the population living in contaminated sites. This paper emphasizes the importance of preserving the history and the memory of the environmental and health impacts of asbestos in contaminated communities and the proactive engagement of young people in contributing to community resilience.

Limitations

Our study has certainly some limitations. First, the questions designed to collect the opinions of the interviewees are useful for gathering more information on the one hand, as they allow the students to freely express anything they know and to reflect about the proposed topic. However, on the other hand, this type of answer is not easy to analyze with a large population sample, therefore it is desirable to develop further studies with closed-ended questions, easier to analyze.

Moreover, the questionnaire adherence was quite low, reaching the 22.2% of the student population. For further studies, it will be useful to implement communication among students to emphasize the importance of participating in this type of survey.

Our preliminary findings further highlight the necessity of improving knowledge and awareness of the asbestos topic among students and young people.

CONCLUSIONS

From this survey emerges the strong need for young people to become more knowledgeable on the history of asbestos, which characterized Casale Monferrato. In fact, the students requested more information to address the problem in a contemporary manner, a necessarily different vision of the issue, than those who belonged to the previous generations when they directly experienced the most critical phase of the fight against asbestos.

In conclusion, the students need greater knowledge about the whole history of asbestos the health aspects, the issue of justice, and the remediation. The students' answers reveal a great desire to know more and to be informed about these issues. The answers given by students may certainly have been influenced by the historical period they were living through, the Sars-CoV-2 pandemic. The authors, for this and other reasons, are already working to design a new project with a higher sample size. In this way, they will try to reduce the limits as much as possible.

By modifying the proposed questionnaire and using a better communication strategy, the data analysis can be made more effective, it could be useful to deepen further students' knowledge of the asbestos issue. In addition, it was necessary to include at least one question in the survey regarding the social media's influence in students' learning process.

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