

Perception of Noise Pollution in a Youth and Adults School in Curitiba-PR

Orlando Borges Filho¹ Angela Ribas¹ Claudia Giglio De Oliveira Gonçalves¹
 Adriana Bender Moreira Lacerda¹ Renato Riesemberg¹ Karlin Klagenberg¹

¹ Department of Speech Therapy, Universidade Tuiuti do Paraná, Curitiba, PR, Brazil

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Address for correspondence Angela Ribas, MD, Universidade Tuiuti do Paraná - Programa de Mestrado e Doutorado em Distúrbios da Comunicação da Universidade Tuiuti do Paraná, Rua Jose Isidoro Biazetto 845, Curitiba, PR 81200240, Brazil (e-mail: angela.ribas@utp.br).

Abstract

Introduction Nowadays noise remains the third largest cause of environmental pollution on Earth. It appears that despite the existing noise control legislation the issue deserves further supervision by the public authorities so that the ceilings established for the various activities are observed. People exposed to noise are more likely to develop numerous auditory and non-auditory problems directly impacting persona family and working life.

Objectives The objective of this study is to research and consequently understand how the population of students of a youth and adult school in Curitiba perceives noise pollution as well as look into the actions that the school adopts in order to guide the students on the topic.

Method We applied a structured questionnaire to 120 individuals and assessed the following variables: characterization of the place of residence occupation leisure health and perception of soundscapes. We also applied a closed questionnaire about educational actions for noise pollution to the school's geography teacher.

Results Questionnaire responses show that people perceive noise in the most diverse environments they frequent and are able to identify the source of the noise but this perception proved fragile as the majority does not take measures to prevent or mitigate these noises. At school there are no actions aimed at environmental education on the subject studied.

Conclusion The studied group does not perceive the noise as a harmful agent and does not prevent themselves from it and the school not work contents related to noise pollution leaving a significant gap in the awareness process of this population.

Keywords

- ▶ perception
- ▶ noise
- ▶ schools
- ▶ environmental pollution

Introduction

Loud sounds, known as noise, are present in a variety of activities and environments that people experience, with much being said about the damage noise causes to the human being in current research.^{1–5}

Indeed, noise is a trademark of modern society⁶ and people are generally aware of it, but why is so difficult to change their attitude toward this reality?

Research shows that people are aware of the fact that noise is harmful, but fail to avoid exposure to it, whether in leisure,^{7,8} occupational,^{9,10} or study environments,^{11,12} and even in homes.¹³

According to Floriani,¹⁴ knowing and appreciating is essential for people to realize the need for a change in their surroundings. Particularly with regards to knowledge, Ribas¹⁵ says that people must reach levels of emotional insight¹⁶ so that their behavior can change facing an imposed reality.

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Different specialties from distinct sectors of society have studied noise pollution, the third cause of the planet's pollution, as well as its harmful effects.¹⁷ Researchers believe that the key to improving knowledge and intensifying protective and preventive actions against noisy environments falls under the scope of the field of Environmental Education.^{11,18}

Environmental Education refers to processes through which the individual and society as a whole build social principles, knowledge, skills, attitudes, and competencies directed toward environmental conservation, an important asset for a community's well-being and its sustainable development.¹⁹

Environmental Education belongs to the field of Geography, which investigates the causes, effects, and prevention methods of noise pollution. Some studies stress the pressing need for investment in this field, to devise specific strategies that would help guide individuals in choosing or adapting their environment.²⁰

Environmental Education is an intentional social practice, which should instill in individuals development a social character in their relationship with nature and with other human beings. The aim is to strengthening this human activity interacting the social and environmental practice.²¹

This research is justified given the limited number of Brazilian studies available on the perception of noise among students from Youth and Adult Education schools (YAE), within an Environmental Education approach. The YAE typically caters to students that are formally or informally employed in commerce, services, industries, as well as stay-at-home workers, unemployed, or retirees. These students return to school outside the standard chronological timeline with an interest in getting hired, better jobs, promotions, and entering new markets. The minimum age to join the YAE is 15 years old for elementary and 18 for secondary education, with no maximum age limit. The system offers grades 5 to 8 of Basic Education and complete High School.²² The Brazilian Government officially informs the community that this type of education is available in the State Center for Basic Education for Youth and Adults in State Schools, prison units, and in learning centers, and Decentralized Pedagogical Actions.²¹

Given this context, our research had the following goals: a) to acquire a greater understanding of how the population of students of a Youth and Adult School in Curitiba perceives noise pollution; b) check the actions that the school adopts to guide the students on the topic.

The results of this study sheds light on the importance of educating youth and adults on issues related to noise pollution. In this sense, the YAE schools environment is conducive to the development of projects in this field. In addition to critically building their own foundations, preventing noise exposure, and avoiding its sequelae, the students become diffusers of such learning with their actions and knowledge in the immediate environment in which they live. Reaching people who are around them, the students start to multiply knowledge and share the various existing forms of intervention aimed at prevention and environmental comfort.

Materials and Methods

This is an exploratory research, of descriptive character, held in March 2015. This study is part of the research project titled "Reflections on the sound environment quality in the city of Curitiba," approved by the Institutional Ethics Committee under number CEP/UTP 017/2006.

The study included 120 adult volunteers, randomly selected in a YAE school in Curitiba and a Geography teacher. All signed the Free and Clarified Consent Form.

The study sample consisted of students who were attending classes in 2015 and had conditions to read and interpret the data collection protocol. We excluded from the sample students who did not understand the research terms.

We applied to all the participants a semi-structured¹⁵ questionnaire consisting of two parts, which investigated the following variables:

Part 1: characterization of the sample by age, gender, education, place of residence, and identification of negative points in the home region.

Part 2: characterization of work and leisure activities; health aspects in general; perception of noise in the environment they frequent.

We did not declare the objective of the research (to investigate the perception of noise) so as not to influence the respondents in the first part of the questionnaire, which sought to spontaneously identify noise as a harmful agent. Only after the completion of the first part did the students receive the second. We tabulated and qualitatively analyzed the answers to each question.

We also applied a structured questionnaire to the school geography teacher on educational activities focused on the issue of noise pollution, with answer choices being YES, NO, and I DO NOT KNOW.

Results

The sample was characterized by homogeneous regarding sex: 49% of women and 51% men. The mean age was 32.2 years, and the youngest respondent was 18 and the oldest was 57. The majority of respondents live in the outskirts of Curitiba (89%), in a house (72%), in a masonry house (77%).

When asked about the negative points observed in the region where they live, they indicated: violence (50%), infrastructure (22%), noise (20%), vehicle traffic (12%), public cleaning (11%), and other less relevant aspects.

The majority of the respondents is active from the occupational point of view and receives between one and three minimum wages per month (78%). They work in trade (45%) and industry (33%).

When asked about leisure activities, most (79%) referred practicing them often and 53% said that during this practice, there is often noise in environments such as gyms, bars, soccer stadium, church, among others.

Health problems were reported by 20% of respondents, and the signs and symptoms are shown in **Table 1**, but no respondents associated the complaint to exposure to noise,

Table 1 Characterization of the sample according to reported signs and symptoms (N = 120)

Symptoms	N	%
Anxiety	54	45
Stress	33	27.5
Nervousness	27	22.5
Vision problems	27	22.5
Irritability	22	18
Fatigue	19	16
Headache	16	13
Tinnitus	10	8
Gastric problems	7	6
Hearing Loss	3	2.5
Sleep disorders	4	3
Difficulty understanding speech	3	2.5

even those who work in noisy places (industrial workers). Regarding the perception that these subjects have about the noise, the data are recorded in **Table 2**, and the teacher's responses are presented in **Table 3**.

Discussion

According to the World Health Organization,²³ it is difficult to measure the noise impact on the quality of life because the factors are diverse. Nevertheless, the entity claims there is a need to study noise as this situation involves the world population at a large scale.

Exemplifying what happens to other populations also investigated about the perception of noise pollution,^{1,15} students who participated in this study have demonstrated little knowledge on the subject. Before being sensitized on the subject of the research, only 20% of the sample identified noise as a negative factor present in environments they frequent, and this perception has been supplanted by the sense of insecurity (50%) and infrastructure (22%). Those who state that noise is harmful to health are contradictory when exposed to loud sounds in leisure activities or producing noise without caring about neighbors, for example.

A justification for this behavior can be the average age of the sample and low education. The sample average age is relatively young (32 years). It is known that the loud sound associated with physical activity releases adrenaline, which generates pleasure,²⁴ and often there lies the justification for children, adolescents, and young adults to expose themselves to amplified music and other noises in their day-to-day activities.²⁵ As for education, studies say that the lower the education, the lower the capacity of reality perception. The students of the YAE are largely people who chronologically returned to study outside the conventional timeframe.

As noise and hearing loss do not appear, they are invisible to the eye, several times it is not perceived as something negative.^{26,27} However, noise does not appear, it is invisible to

Table 2 Noise perception among respondents

Questions	N	%
How is the noise in the area where you live?		
Low intensity	54	45
Moderate	57	47.5
Intense	9	7.5
What are the sources of noise where you live?		
Vehicle traffic	27	22
Neighbor's music	77	62
Other	19	16
Does noise prevent you from performing tasks at home?		
Yes	36	30
No	84	70
Do you do anything to avoid noise at home?		
Yes	66	55
No	54	45
Do you make noise capable of disturbing your neighbors?		
Yes	30	25
No	90	75
Do you do something to mitigate this noise?		
Yes	30	25
No	90	75
Would you change residence because of noise?		
Yes	24	20
No	96	80
Do you think that noise can cause damage to health?		
Yes	36	30
No	75	62.5
Do you know of any harm caused by noise?		
Yes	36	30
No	84	70
Do you prevent harm from hearing noise?		
Yes	48	40
No	72	60

the eye, and the main sequel, hearing loss, is invisible too. Unlike, for instance, other types of pollution (water and air) or other symptoms (cough, allergy, diarrhea, among others, caused by pollution of air and water).

In our study we found that 20% of respondents complained of health problems and many identified symptoms that could be related to exposure to loud sounds, such as anxiety, stress, nervousness, irritability, and fatigue. Some even mentioned hearing symptoms such as tinnitus, hearing loss, and difficulty understanding speech, but none associated the symptoms to exposure. Nevertheless, the number of respondents who are unaware of the effects of noise (70%) and do not protect themselves from it (72%) was elevated, even among those who

Table 3 Educational activities focused on the issue of noise pollution in the researched school

Question	Answers
Is Environmental Education addressed in the school curriculum?	YES
Is it included in the subject of Geography?	YES
How about in other disciplines?	YES
In this subject, is the topic noise pollution routinely addressed?	YES
Are the students interested in this topic?	NO
Do the students raise the issue in the classroom?	NO
Is the teacher interested in the topic?	YES
Does the teacher approach the subject in his or her classes?	YES
Is there sufficient time to address the issue in the subject?	YES
Does the school carry out actions aimed at the prevention of noise?	NO
Have you participated in any educational campaign on noise?	NO
Was the topic addressed in your teacher training?	NO
Does the community where the school is inserted have an interest in this topic?	NO

work in industry (33%) and formally receive guidance on the subject. In any case, if we do not create expectations of a certain event, it will hardly be valued as important. Floriani¹⁴ affirms that ecological problems only become a matter of concern when they impose significant harm to human beings and nature. The data in ►Table 2 reinforce the information that the sample studied does not value and, therefore, does not adequately perceive noise. Most participants state that noise does not bother them, does not interfere with performance of tasks, and do not recognize themselves as producers of noise. The population exposed to urban noise, even though aware of its presence, has no awareness of the effects that it can cause, which hinders initiatives being taken aimed at minimizing these effects.¹³

It is also necessary to think that it is common the sense of resignation and impotence before issues and situations involving modernity, among them noise pollution. After all, noise is an inherent part of the evolution of societies after the advent of the industrial revolution.²⁸

According to Ribas, Nazareno, and Schmid,¹³ the population must become aware of noise and act to seek solutions, whether in the public or private sphere, changing habits and attitudes, including inside their own home. In this context, Environmental Education inserted in schools in general, would be the ideal location for the development of these skills.

Studies conducted in Brazil and around the world show that strategies to change concepts and, consequently, change behaviors pervade the channel of Environmental Education,^{18,29} a subject present in the basic curriculum. In our research, the

teacher's report showed that the subject appears in the school program and noise is a topic of discussion in class out of his own initiative, but the school and the students are uninterested. This lack of interest, disregarding the negative connotation of the term, may be more a reflection of the superficiality with which the issue is addressed. In general, it is necessary to form a health consciousness awakening among the public to the subject, so that not only the individual is attentive towards the problem, but it faced collectively in a serious manner.¹³

In this sense, Geography can contribute significantly, as it studies the set of natural and human phenomena, which are aspects of the Earth's surface, considered in their distribution and mutual relations. When the interviewed teacher (►Table 3) states that he includes noise as a topic in the discipline that he teaches, it becomes, even if modestly, a means of spreading knowledge.

Noise does not show its effects at first, but long-term consequences of exposure is detrimental to the individual because hearing loss deprives human beings of communication and contact with others, leading to isolation and social alienation. Avoiding exposure to loud sounds is the best way to prevent the development of hearing loss and other symptoms (tinnitus, difficulty understanding speech, irritability, fatigue, among others).

Finally, we must consider the physical and historical space occupied by a YAE school. The set of actors involved in this space, mainly adult learners able to replicate knowledge and make a difference in society, should be utilized. Finally, according to Braga,³⁰ we must consider the physical and historical space occupied by a YAE school. The set of actors involved in this space, mainly adult learners able to replicate knowledge and make a difference in society, should be utilized.

Conclusion

Our study, of exploratory character and qualitative analysis, led us to the following considerations.

We were able to verify that the study group, formed by young people and adults, does not perceive noise as a harmful agent to the health of humans and, consequently, there is no prevention. This reality, based on other Brazilian and even international publications, reflects the way society as a whole deals with the issues of noise pollution.

Our results indicate that the population investigated does not demonstrate knowledge of existing measures to minimize the effects of noise. Finally, the study showed that the school investigated, destined for young and adult education, despite providing an environment that could enable the development of this knowledge, takes minimal action on the content, leaving a major gap in the awareness process of the student body towards the subject.

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