http://dx.doi.org/10.23925/2176-2724.2019v31i1p22-32

Implementation of an environmental education program to prevent and control noise pollution in an elementary school in the city of São Paulo

Implementação de um Programa de Educação Ambiental para prevenção e controle da poluição sonora em uma escola de ensino fundamental da cidade de São Paulo

Implementación de un programa de educación ambiental para la prevención y control de la contaminación acústica en una escuela primaria de la ciudad de São Paulo

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Abstract

Introduction: Some studies have shown that children that live in noisy environments have more difficulty concentrating and learning. The school environment may be negatively affected by the teacher and students' own production activities. Noise reduction in school may result in calmer, more attentive, more interested and less agitated children. **Objectives:** To develop interactive noise control activities with students within their learning environment. **Methods:** This is an exploratory descriptive study developed

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Authors' contributions:
FCRMM research design, literature review, application of procedures, survey and data analysis.
TMMS reflections on the subject field, notes to define the object of the research, literature guidance, guidance in the methodological definition, monitoring of procedures, and reflections for data analysis.
RRRP monitoring the elaboration of the article, reflections for data analysis, and follow-up for the completion of the article.

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Received: 04/16/2018
Accepted: 12/13/2018

by means of an intervention research. The sample comprised 11 classes of third and fourth grade students from a public Elementary School in the State of São Paulo. The activities included: story writing, music composition, the development of a toy, the production of a t-shirt with the project's logo – "Pass On" project, and the presentation of a lecture to the children. **Results:** Children started to notice how noise was present within the school environment as well as in other daily situations. This study was successful in bringing awareness to the students regarding the consequences of a noisy school environment, allowing them to improve their processing of the information provided by teachers. **Conclusion:** This study allowed children to identify noise, to get to know their effects, the importance of protecting themselves from this type of pollution, and to acquire healthy hearing habits. We suggest that other programs should be conducted to stablish a routine, providing broader results.

Keywords: Hearing; Noise; Learning.

Resumo

Introdução: O ruído tem feito parte do cotidiano dos grandes centros urbanos e pode causar efeitos negativos sobre a população em geral. Estudos têm evidenciado esses efeitos que começam a ser muito significativos, em especial na vida das crianças em fase escolar. Esses efeitos têm modificado não só a audição dessas crianças, mas a aprendizagem em geral. **Objetivo:** Implementar um programa de educação ambiental, visando o controle da poluição sonora em um ambiente escolar **Método:** Trata-se de um estudo exploratório e descritivo realizado por meio de uma pesquisa de intervenção. Casuística: 11 classes de 25 alunos cada, da 4ª série do EF. Procedimentos: aplicação com as crianças, de 5 atividades interativas educativas. **Resultados:** As atividades educativas desenvolvidas permitiram que as crianças percebessem o excesso de ruídos que circulam no ambiente, a necessidade de controlá-los e os meios para fazê-lo. Tais ações educativas apontaram a importância de se proteger deste tipo de poluição, obtendo, por consequência, saúde auditiva. **Discussão:** Há grande necessidade de implementação deste assunto no ambiente escolar, pois vários estudos reconhecem o problema, mas ainda existem poucas propostas de solução. Seria mais efetiva uma inclusão destes métodos no currículo escolar, e uma orientação para profissionais que atuam nesses ambientes. **Conclusão:** O Programa Educativo aplicado, visando o esclarecimento acerca das consequências danosas da poluição sonora, bem como a elaboração de soluções possíveis e eficazes, foi efetivo. Sugere-se a criação de outros programas e a sua implementação no cotidiano escolar, ligado a uma política de eficácia na aprendizagem e uma maior concientização popular do problema exposto.

Palavras-chave: Audição; Ruído; Aprendizagem.

Resumen

Introducción: El ruido ha sido parte del cotidiano de los grandes centros urbanos, y puede causar efectos negativos sobre la población en general, los estudios han evidenciado estos efectos que empiezan a ser muy significativos y en especial en la vida de los niños en fase escolar. Este efecto ha modificado no sólo la audición de estos niños, sino el aprendizaje en general. **Objetivo:** Implementar un programa de educación ambiental, buscando el control de la contaminación acústica en un ambiente escolar **Método:** Se trata de un estudio exploratorio y descriptivo realizado por medio de una investigación de intervención. **Resultados:** Las actividades educativas desarrolladas (presentación de charlas para los niños) permitieron a los niños percibir el exceso de ruidos que circulan en el ambiente, la necesidad de controlarlos y los medios para hacerlo. Tal acción educativa apuntó la importancia de protegerse de este tipo de contaminación, obteniendo, por consiguiente, salud auditiva. **Discusión:** Hay gran necesidad de implementación de este asunto en el ambiente escolar, pues varios estudios reconocen el problema, pero todavía hay pocas propuestas de solución. Serían más efectivos una inclusión de estos métodos en el currículo escolar y en la orientación de profesionales que actúan en estos ambientes. **Conclusión:** El programa educativo aplicado, con el fin de aclarar las consecuencias dañinas de la contaminación acústica, así como la elaboración de soluciones posibles y eficaces, fue efectivo. Se sugiere la creación de otros programas y su implementación en el cotidiano escolar, ligado a una política de eficacia en el aprendizaje y una mayor concientización popular del problema expuesto.

Palabras claves: Audición; Ruido; Aprendizaje.

Introduction

Sound pollution is a hallmark of large urban centers, such as São Paulo, and causes losses that sometimes are irreparable in the quality of life of adults and children, affecting their physical and emotional well-being[1].

Of course, the effects caused by noise exposure will depend on factors, such as: duration, rythm, intensity and individual attitude towards the sound, but its excess is determinant of adverse conditions[7].

From very young ages, children are exposed to noisy environments, which are unfavorable for the development of communication, social interaction, as well as for schooling itself.

The first consequences of excess noise are linked in the school environment, among other aspects, to problems of perception, attention and concentration that, in turn, compromise learning[1]. The Brazilian Technical Standards Association (ABNT)[8] recommends that classrooms have a noise level between 40 and 50 dBA.

Sound level control is important in a classroom as, given its size and number of people interacting, the circulation of the speech sound of those involved in the learning process is impaired[4], leading the most vulnerable individuals, that is, the developing children, to difficulties in the apprehension and integration of knowledge.

Studies show the effects of noise pollution in children who study in schools located in places of intense noise, which show significantly reduced attention and social adaptability, an opposite behavior when compared to children whose schools are in quieter places. Furthermore, many of these studies also recommend assessments in order to identify the psychological well-being of children[5,6], which is another important consequence of the noise problem.

A comparative study of 54 elementary school children, their parents and 5 teachers responsible for the classes, characterized the auditory habits and the noise conditions of the homes of these children while doing their homework. The results show that 80% of the children reported that the TV used to be on, and 58% reported that the radio/sound system was on while doing their homework, while the parents reported different numbers: 70% and 23% of the parents reported that the TV and the radio/sound system used to be on in this situation, respectively[10]. That is, the study shows that there is too much noise in study situations, even when the child is not in school.

This research also warns that 58% of the children reported that they either do not study due to the dispersion caused by the noise or that they do their homework with headphones connected to portable sound devices, which provides a quick shift of the immediate situation, justifying an increased attention span. The most alarming finding of the research is that 57% of the children reported to experience tinnitus, which shows that they are already suffering from the functional effect of this exposure to high level sounds[10].

Finally, almost half of the children have some degree of difficulty to learn and only 65% of them manage to keep their attention, and they usually ask for information to be repeated[10] in different learning situations.

Another study, a literature review, investigating the low adherence of schools to hearing conservation programs, shows that 97% of 273 young people had already been exposed to some kind of noise at dangerous intensity. Similar researches also indicate the exposure of students to highly noisy environments in different life contexts[11]

Scholars understand that these students may suffer from the so-called accelerated thinking syndrome, which prompts them to seek new stimuli due to a need to alleviate the anxiety generated by the syndrome[12]. The most common characteristic are restless, parallel conversations and lack of concentration. They warn on the importance of informing them about the potential consequences of noise exposure, as well as instructing them on how to protect the auditory pathways. These attitudes can prevent hearing loss and other communication disorders arising from the loss[13].

Different studies indicate the inefficacy of programs that are restricted to the distribution of protective equipment, since the primary objective is not achieved in this case[3,15].

For this reason, prevention programs should be developed from an early age up to the highest levels of education for students, teachers and parents to familiarize them with potentially dangerous noise sources in the environment[16].

Inclusion of the following items is recommended in the children's hearing conservation program: 1. The normal mechanisms of hearing; 2. The types of hearing loss and its causes; 3. Noise and its effects on hearing; 4. Signs of Noise-Induced

Hearing Loss (NIHL), which is completely preventable, since it is sufficient to know that exposure to loud sounds is one of the most common causes of permanent sensorineural hearing loss and damage to the inner ear; and 5. Specific Prevention Recommendations of NIHL[6]. Anderson[17] also adds two more aspects to the list: education on hearing loss consequences and how this can affect quality of life, and also education on the type of noise and/or noisy activities that are most dangerous to hearing.

The National Hearing Conservation Association (NHCA) offers a prevention program for children called "Crank It Down." Its website warns the community and schools of early childhood and adolescents on the potential risks that noise brings to hearing and that may cause NIHL, even at an early age. The website features activities and materials for young children, as well as ways to protect children's hearing, and graphic material with studies on the subject[17]. The program has a colorful brochure providing tips for parents and teachers, encouraging the following actions:

- To monitor the noise level;
- To use personal stereo with limited volume levels;
- To identify the noise level produced by toy, before purchasing it
- To request volume reduction in places where the child attends frequently;
- To limit time for children in noisy places;
- To provide ear protectors suitable for the child's ear size when the noise cannot be reduced;
- To be a role model: wear hearing protectors when exposed to loud noise;
- To ensure that there is a noise control program in place at the child's school;
- To perform an audiometric test annually if the child is too exposed to noise or if there is a suspected hearing loss;
- To be aware for signs of hearing loss, such as: tinnitus, muffled speech, difficulty in understanding or in hearing after noisy activity, etc.

Dangerous Decibels[1] is another program that aims to reduce the incidence of NIHL and tinnitus by changing the knowledge, attitudes and behaviors of children in school age. As in all such programs, it aims to inform on the dangerous sources of noise, its harmful effects and efficient prevention possibilities[19].

The program's website features interactive plays in scenarios that show that the use of personal stereos, dryers, lawnmowers, car sounds, and urban noise can be harmful[19]. The website also provides information on the anatomy of the ears, the dynamics of hearing, the structure of sound and its effects.

On the other hand, the American Academy of Audiology (AAA) suggests a program called "Turn it to the left" in which the main feature is a rap song composed by Benjamin Jackson. Similarly, the main focus is the NIHL prevention, which has already become a major public health concern[20].

The hearing conservation project for adults called "Hear the world" is widely publicized[2] by famous people around the world on its website and has the same purpose of educating the public on the importance of hearing and the impacts of hearing loss, as well as the benefits of the available solutions[21].

The "*Passe Adiante*" ("Pass On") Program created by the Audibel group in Brazil aims to talk to children about hearing process, problems and solutions in a playful way with a set of puppets. This material is intended to provide support to the health care professional to promote a hearing health educational campaign in school environment[22].

The most immediate consequence of all these programs is the awareness of adults, parents, teachers and also children on the importance of taking good care of hearing health, in addition to provide a more favorable environment for physical and intellectual development. In this respect, similar studies are justified.

This study aims to implement an Environmental Education Program in order to prevent and control noise pollution in an elementary school in the city of São Paulo and to describe its immediate effects.

Method

This is an exploratory descriptive study developed by means of an intervention research. This study was approved by the Research Ethics Committee of the Pontifical Catholic University of São Paulo (PUC-SP) under no. 205/2006, with a FPIC signed by participants and Term of Consent of the place where it was conducted.

1 The program was developed at the University of Oregon, USA.

2 http://www.hear-the-world.com

1 - Casuistic

Selection for convenience of 11 classes of 25 students each, consisting of 200 students, from the 4th grade of a public school in São Paulo. The age group of this segment ranges from 9-10 years of age in the traditional classes and adolescents with up to 15 years of age in the class called as 4th grade *PIC* (Intensive cycle project). There was no previous screening in order to analyze possible learning problems.

2 - Place of research

Prof. Marina Cintra State School at São Paulo

3 - Period of data collection

Data was collected during a single visit to the school.

4 - Procedures:

a) Casuistic selection;
b) Parental consent for students;
c) Consent of the school;
d) Design of a set of interactive play activities, based on templates extracted from the literature review.

The instruments used in the mediation between children and researchers in these activities were:

For recreational activities:

- Story to explain the hearing process using the stuffed toy and graphic material of the Pass On Program to elucidate the joke.
- Children's music with "noise" as a theme, addressing the discomfort caused by noise and the well-being that silence can promote.
- A toy called "*Noise Meter*" to explain the noise variation in terms of volume and to associate it with situations of minor and greater danger to hearing health.
- Lecture for general clarifications and information on hearing recovery, noise pollution, problems and solutions;

e) Development of each interactive activity with students, in sequence, over a period of time. The story starts the procedure and the interview ends it, with the purpose of verifying the possible effects of the activities in children, through the answers and reports obtained
f) analysis: description of each activity as shown in specific tables

Results

This chart shows the data of the lecture directed to children on hearing loss and its consequences; it also presents reasoning about the issues that permeate the hearing loss.

Chart 1. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Lecture	1. To explain what is a hearing loss, the problems caused by it and what causes it. 2. To make children think on issues that permeates deafness.	1. Exhibition as a class 2. Shirt with the slogan "How much noise!" 3. Stuffed toys of the "Pass On" program 4. Audiovisual Resource	1. Story: "If we have problems with any of these friends, we will have a hearing loss. We can be deaf". 2. Story: "And what is the problem caused by deafness? The child, who has difficulty hearing, finds it difficult to speak as well. And how do you express yourself when you have difficulty speaking? When we have difficulty hearing, how can we learn new things, like the rules of a game? Because we do not learn only the things at school, we also learn other things in life. When hearing is compromised, there is a difficulty in understanding other people. How a colleague can ask for the ball in the football game if we do not listen right? And how do we get across the street? How do we do if we do not hear the horn of a car? And then, thinking on these things, people who are not able to communicate with the world can isolate themselves and be sad!" 3. Role playing of what happens to the ear with an injury in the cochlea. The child who was holding the figure of Ms. Cochlea lowered the figure, showing that if the sound does not reach the brain, the child does not hear the sound. 4. Story: "There are four different ways of being deaf: firstly, by genetics, when there is a deaf parent, and it goes from father to son. The second way is when the mother is pregnant and there is some problem in the formation of the baby, impairing the hearing. The third possibility is when there is an accident or event during the life that affects hearing ability, such as when a subject falls and hits the head, shooting or explosion noise near the ear or some disease that kills Ms. Cochlea's hair. And what about the noise? Do you know what noise is?" 5. Story: "So, this noise, may also cause deafness. And the noise-induced hearing loss has increased greatly in recent years, since noise is present in our daily life, at parties, at school, even at home, playing with friends and then our little friends in our ear will getting tired of staying so much with the noise."	1. There was a discussion on the hearing loss topic and what children think about what it represents. At that moment, it was possible to hear comments, such as: "Oh, my grandfather is deaf!", "I have an aunt who watches TV loudly", and "There is a boy in the school who is deaf". 2. There have been comments like: "Well, when we go to a party and later it seems like our ear does not work right" and "Then we're deaf." Showing the understanding of children on the topic being exposed. The children answered some of the questions by saying: "If we do not listen to a car, we may die!", "I know a boy who is deaf and he does not say anything!", and "Then we must make gestures to learn a game". Showing that even when they understand the complexity of the subject, it is still possible to communicate with the world through other mechanisms. One of the children who attended the lecture had a hearing impairment and when the researchers talked about the impact of the hearing loss on the child so they may feel isolated and sad, the boy confirmed as well. 3. Children engaged in the role playing. At the time that Ms. Cochlea got down, they commented that the sound would not reach the brain this way. 4. The children associated the content with the people of their coexistence, such as relatives and friends. 5. When researchers called children's attention to focus on the noise, they began to realize how much noise is present in their lives, telling everyday situations.

This chart shows the data of the lecture directed to children on noise and noise-related harm to health.

Chart 2. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Lecture	1. Raise awareness on what is noise and noise-related harm to health.	1. Exhibition as a class 2. Shirt with the slogan "How much noise!" 3. Stuffed toys of the "Pass On" program 4. Audiovisual Resource	1. Story: "Noise bothers us, even when it is not so loud. It also affects our communication, as when we are at a mall and everyone is talking at the same time, do you know it? It is bad, right? Do you know when you have to shout to someone so they will list to you? When there is too much noise at school or when are doing our homework, isn't more difficult to concentrate and do our homework? And what if we spend the day in a noisy place, isn't more difficult to sleep later? Don't we get restless? It stays on our mind, we cannot sleep! He gets stressed and we may have a headache."	1. Comments like: "Hey, teacher, when I go to the mall I cannot hear anything that my mother says", and "I need to scream when there's a lot of people talking", show to us that the child is beginning to have contact with the sound world and noticing situations that are harmful to them. On the other hands, comments like: "I can do my homework with the TV on", and "Oh, no! It is more difficult to do my homework when the TV is on" show that children are already dealing with situations that permeate the hearing.

This chart shows the data of the lecture directed to children on finding ways to protect themselves from noise

Chart 3. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Lecture	1. Show ways to protect themselves from noise	1. Exhibition as a class 2. Shirt with the slogan "How much noise!" 3. Stuffed toys of the "Pass On" program 4. Audiovisual Resource 5. Hearing protection (earplug)	1. Story: "So, my friends, to avoid problems with our little friends we need to avoid noisy places or, if we have to, we need to stay as little as possible. If we go to a noisy place, then we must give a rest do Ms. Cochlea for at least 16 hours. The hearing protection is one way to protect our ear health. Does it remove the sound? No! It just decreases the sound to avoid damages in our ear. So, listening to the iPod/mp3 and these gadgets out loud is not good to our little friends. " 2. Role playing between researchers showing how to place the hearing protection.	1. When they saw the researchers at the school, some students asked where to get the hearing aid and asked for new explanations on how to place it correctly. Showing the engagement of students.

This chart shows the data of the lecture directed to children on what to do when there is a hearing problem.

Chart 4. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Lecture	1. Show to the children what to do when they have a hearing problem	1. Exhibition as a class 2. Shirt with the slogan "How much noise!" 3. Stuffed toys of the "Pass On" program 4. Audiovisual Resource	1. Story: "And what happens when a person is deaf? What can we do to help? This person needs to go visit an otolaryngologist and a speech-language pathologist. What does the speech-language pathologist can do to help this child? That professional will show another little friend to the deaf child, which is the Audibelinho. What does he do? Since the child is not able to listen as normal, Audibelinho will amplify the sound and then he will deliver it back to the ear. It is like glasses, but for the ear. 2. Role playing: At this moment, another child is invited to participate in the role play to play the role of Audibelinho. This child will help the child who is playing Ms. Cochlea to get up, showing how the hearing aid improves hearing ability.	

This chart shows the data of the lecture directed to children on the perception of noise.

Chart 5. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Lecture	1. Increase the noise perception	1. Exhibition as a class 2. Shirt with the slogan "How much noise!" 3. Stuffed toys of the "Pass On" program 4. Audiovisual Resource 5. Noise meter	1. Delivery of Noise meter and instructions to use Story: "Well, now I'm going to give you a present that will stay in the classroom and you (children) will be responsible to interact with it, the teacher cannot use it, just you. This toy is called Noise Meter and it measures the noise is in the classroom, can you see this display here? The noise level is shown in here. It is like the traffic laws, when it is green, the sound is good, and that's OK! When it is yellow, you better pay attention, the sound is getting high and starts to disturb. When it is red, it is time to stop everything, then cover the ear and protect the ear. For example, green is when the teacher is explaining at class, and you are doing exercises in the classroom with everyone quiet. The yellow is when some noise is already disturbing your attention in class. And the red is when there is a loud noise outside the classroom or when the noise does not allow to understand what the teacher is saying, when she speaks louder and the boys are discussing"	1. The kids enjoyed the toy and all insisted on handling it. Therefore, it was stipulated that one student should be responsible for handling the noise meter per day.

This chart shows the data of the lecture directed to children in order to get the content learned.

Chart 6. Results of the lecture for children.

	Purpose	Material	Activity	Results observed
Music	1. Support the contents learned during the lecture	1. Shirt with the slogan "How much noise!" 2. Guitar 3. Graphical material of the "Pass On" Program	1. Teaching music and melody proposing the participation of the children at the beginning of the music with a noise and singing with the researchers.	1. The children participated energetically during this activity. They easily learned the melody and the rhythm of the music, singing along with the researchers. At the end of the lecture, while some children continued to sing the song, others asked for the lyrics of the song in writing. During the other days when the researchers went to school, children who had participated in the activities approached them to talk about the content presented and singing the music.

Discussion

This study aimed to implement an Environmental Education Program for prevention and protection of the hearing health of school children. To this end, firstly, there was a presentation to the children of the 4th grade of a public school with a clarification on the importance of a healthy hearing that is supposed to control the noise, which can be harmful if excessive and constant[15]. The charts allow seeing how the program was developed and how the activities are conducted.

The WHO[23] highlights that noise pollution is the third largest cause of pollution, with the aggravating circumstance that it is invisible, odorless and insipid, and thus its detection may be difficult and late, often only when the damage is established.

Therefore, it is important to raise awareness on the problems caused by hearing loss since the childhood environment, especially those harms caused by environmental noise (as shown in Chart 1).

Studies indicate adverse effects that noise pollution may cause in early childhood, promoting inattentiveness or attentiveness, or even hearing losses that will result in problems in the general development of the child[24].

Researches warn on the effects of noise pollution on learning processes and propose educational programs in order to prevent or mitigate such effects, and thus removing an important variable in school failure[25] (as shown in Chart 2).

Chart 3 shows a direction for these children's reasoning in how to find noisy environments and what actions can be taken to control such factors, raising awareness on the importance of self-care.

Chart 4 shows who should be contacted if the child perceives difficulty in understanding what others are saying and/or there is a suspected hearing loss.

The activities developed and presented in Chart 5 were designed to educate students and professionals on the consequences of a noisy school environment and to question the possibility of an improvement in the quality of the understanding of students with respect to the information provided by teachers.

Several researches described the consequences of noise in the child and, among them, they mentioned attention and learning deficit, disadvantage and interference in communication, social interaction and school performance[14]. According to the results, children report the difficulty of communicating in a noisy environment, such as in the food court of the mall or when there is a group of people talking. Children also report the difficulty of concentration in the classroom, when they are doing homework with the television on and even during the period of the lecture, at times when there was noise, many children complained about the difficulty of understanding what was being said .

In addition to the students noting the difficulty of understanding, it was also more difficult to provide information to the groups with more students, due to a higher level of background noise. Of all the groups that participated in the research, the 4th grade PIC ((Intensive cycle project) had fewer students, but produced a greater amount of noise resulting in a greater difficulty in understanding what was being said.

The lecture with children also addressed tips and ways of preventing hearing problems, such as: "Turn the volume down", "wear hearing protection", and "do not spend too much time in noisy places." Understanding that noise is harmful, children questioned how to acquire the hearing protection earplug[18] (Chart 3).

The websites of prevention programs are a way of disseminating information to the public and aim to promote changes in aggressive behaviors in relation to hearing health. The "Dangerous Decibels" website, proposed by the University of Oregon, USA, uses interactive activities to answer to three questions: What are the sources of dangerous sounds? What are the effects of listening to dangerous sounds? How do I protect myself from dangerous sounds?[19]

The Program developed in this research, aimed to promote four main concepts through music:

1. To identify noise ("*Wow, how much noise! I'll protect myself from this noise, my ear was not made for this*")

2. To know the noise effects ("*A noise that bothers me makes me sick and is not good to me, a noise that disrupts my baby's dream*")

3. To think on how to protect yourself from this kind of pollution ("*A nice silence is what I'm going to do, this way I'll always protect my ear from this noise*")

4. To disseminate healthy habits, promoting hearing health ("*I want to hear the sound of birds, I want to hear the sound of the voice, and I want*

to hear your music and the sound of the guitar. So, do it with me - the silence - to save your ear").

The proposal of visual representation of the sound intensity in colors is presented in several websites visited - green for the sounds that are in the range of low risk, yellow for the sounds with moderate risk, to which it is necessary to be attentive and often to protect against them, and red for sounds to be avoided. The "noise meter" was an instrument designed to be used by children to monitor and control the noise in the school environment.

The noise meter and music were used in order to maintain and fix control noise in the school as a compulsory condition, as markers of this condition, they were aimed at:

Informing through play activity, the importance of every child in the control of noise pollution in the school environment: it provided greater acceptance of children due to its nature;

Introducing the noise issue (that is, the children were still singing the song even after the presentation of the lecture and had the noise meter in their classrooms).

There was a difficulty in scheduling the activity in the school environment during class time, since the program is not part of the curriculum. It began as a simple detail of scheduling but, in fact, it already indicated the necessity to have a fixed program at school.

This program would be more effective if it was part of the school curriculum, and also as a form of speech-language pathology, providing a follow-up of classes and employees, promoting a control of pollution sources, and providing a healthy environment for learning. Initiatives such as the "Guardians of Sound" would be important as they would allow a systematic control of the noise level at school and would provide preventive and ongoing activities.

Conclusion

Noise issues are constant and insistent in the lives of students and education professionals. This research is part of a long journey to raise the awareness of the population on the consequences of noise in health in general and, more specifically, in hearing health.

To ensure a successful journey, the study suggests that other programs should be conducted in order to establish a routine, providing broader and lasting results.

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