

Brief communication

The use of the Dangerous Decibels® program for refrigeration company workers and their children: an intergenerational pilot study

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ABSTRACT

Objective: to report the use of the Dangerous Decibels® program for workers of a refrigeration company and their children as an intervention strategy for hearing health.

Methods: an intervention study conducted in the city of Chapecó, SC, Brazil. Eight workers from a refrigeration company and their children participated in the study. The strategies adopted were those proposed by the Dangerous Decibels® program.

Results: the Dangerous Decibels® program strategies contributed to the reflection on noise and favored interaction among participants. Workers and their children mutually committed to protecting and preserving hearing by passing on the knowledge gained to other family members, friends, and co-workers. The three basic principles of the Dangerous Decibels® program adopted by the participants were: Move away from noise, turn down the volume and protect the ears.

Conclusion: the Dangerous Decibels® program developed in an intergenerational context was well received and accepted by workers and their children. As an educational intervention strategy for hearing health, it proved to be viable, convenient and with adequate content to be used simultaneously in populations of different age groups.

Keywords: Occupational Health; Hearing Loss; Hearing Loss Caused by Noise; Tinnitus; Awareness; Education

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INTRODUCTION

Health education is a social practice that contributes to the formation of people's critical awareness of their health problems. It is based on real-life and stimulates the search for solutions¹.

The goal of health education is to prevent disease and promote health through properly oriented knowledge. Afterward, people should be able to apply this scientific knowledge to their daily lives. It should stimulate circumstances favorable to reflections on the individual's health, focus on care practices, behavior changes that are potentially harmful to health, acquisition of habits favorable to the common good, and personal health².

The work environment is considered an ideal place for educational health interventions, as it is the organizational space where people spend most of their time. Authors suggest that the work environment should give workers a chance to reflect more broadly on their health, quality of life and working conditions, in addition to favoring the search for solutions aimed at safer and more stimulating working conditions³⁻⁵.

There is no consensus on what would be the best approach for workers' health education, but it is known that effective involvement or participation is fundamental in this process^{5,6}. Thus, educational health interventions are meant to offer conditions for people to develop a sense of responsibility for their health and that of their community, through an educational process carried out in a relational rather than hierarchical manner^{5,6}.

The Dangerous Decibels® (DD) program is a hearing health educational intervention for children, adolescents⁷⁻⁹ or adults¹⁰. Its main objective is to prevent hearing loss and tinnitus caused by exposure to loud sounds⁷.

The program uses playful educational strategies through a behavioral approach to inform the population about the effects of loud sounds on hearing. The purpose is to prevent hearing loss induced by noise induced hearing loss (NIHL) and tinnitus⁸. The program is currently effective in promoting knowledge and change in habits, attitudes, and behaviors related to noise and in promoting the use of hearing protection in different populations⁸⁻¹⁰.

In previous studies⁷⁻¹⁰, the program was implemented in populations with similar age ranges. But authors suggest that intergenerational programs are a new form of social intervention whose key element is intergenerational education. These programs, by promoting intergenerational coexistence and

collaboration, if properly formulated and implemented, can be beneficial to participating people, communities, and ultimately societies¹¹.

This study aimed at presenting the use of the Dangerous Decibels® program in an intergenerational context. The program was applied to workers from a refrigeration company and to their children, as an educational intervention strategy in hearing health.

METHODS

This intervention study was approved by the Ethics and Research Committee of the Tuiuti University of Paraná under number 2.757.871. This study is characterized as an intervention study conducted in a refrigeration company in the state of Santa Catarina, Brazil. The company has all basic health and safety programs, in accordance with the Regulatory Standards: Hearing Conservation Program (HCP), Occupational Health Medical Control Program (OHMCP) Environmental Risk Prevention Program (ERPP), and Personal Protective Equipment Program (PPE).

All participants (or their guardians) signed the Informed Consent Form, thus, consenting to the research and its results.

Eight employees and their children participated in the study. Adults ages ranged between 27-48 years, while their children (16 children), ranged between 8-13 years of age, totaling 24 participants. The activity was part of a campaign developed by the company in honor of Children's Day.

An initial meeting was held with the company's corporate team to present the Dangerous Decibels® program. This meeting was attended by the managers, the responsible audiologist, a nurse, and an engineer.

After authorization from the corporate team, the second step was to present the program to the unit manager, focusing on the relevance of this pilot project.

Subsequently, in partnership with the Specialized Service in Engineering and Occupational Medicine (SSEOM), participants were selected according to their leadership role in their respective work sectors.

The invitation was made personally to each participant from the group selection, and participants were asked to extend the invitation to their children. A summary of the Dangerous Decibels® training objective was delivered in order to make this invitation official.

The event was held according to the following schedule: 1) Reception of children and their parents in the auditorium; 2) Talk about the reason for the

children's presence in the company on this special day, as well as about the work environment, noise and its effects on hearing health; 3) Production tour, accompanied by the SSEOM team; 4) Educational intervention using the principles of the Dangerous Decibels® program to inform about the effects of loud sounds on hearing and promote hearing health; 5) A moment with the manager, where he talks with the participants about the meaning and importance of the activity performed; 6) Celebration snack; 7) Closing.

The educational intervention was developed using the Dangerous Decibels® program strategies distributed in nine modules, with a total duration of 50 minutes. The educational material adopted was the one proposed by the program. The intervention was held in the company's auditorium, with the following content: 1) Introduction to the problem; 2) What are dangerous decibels?; 3) Three ways to protect your hearing; 4) What is sound?; 5) How do we listen?; 6) How do we damage our hearing?; 7) How intense is too intense?; 8) Measuring Decibels with Sound Pressure Meters; 9) How to Use Hearing Protectors; 10) Shake Your World: Time to Act!

RESULTS

In the conversation circle, a lack of knowledge on the children's part about their parents' work environment, was noted. Both parents and children lacked knowledge about NIHL and its occupational and environmental effects, especially leisure noise, such as toy sounds, amplified music, use of headphones etc. Participants also reported a lack of knowledge and insufficient awareness about hearing protection.

The production tour favored the participants to experience the work universe, the noise produced by the machines and the preventive measures implemented.

The educational intervention contributed in a playful way to the interaction of the participants and favored the transmission of information through an educational process carried out in a relational manner and not a hierarchical one. There was a development of a sense of responsibility for their own hearing health and their community.

It was observed that after the educational intervention, during the time spent with the manager, the workers' and their children's perception related to the work environment and the noise intensity and harmfulness of the machines (and other environmental sound sources) increased after the intervention.

Participants reported to the manager that they would broaden the dialogue about their acquired knowledge with other co-workers, friends or family members who did not participate in group activities, highlighting the fact that the resources and strategies used demonstrated critical awareness and learning.

The participating children agreed to send, within two weeks, through their parents, what they were now doing to take care of their hearing. These reports were released on the company's information boards. Parents, on the other hand, were responsible for passing on the knowledge acquired to three colleagues. Thus, the information was multiplied between families and colleagues.

Some reflections of the children at the time of the educational intervention were disclosed in the informative murals of the company, as follow:

- "It is very important to care of and protect our hearing," Child 1– 11 years;
- "I learned that listening well is very good!", Child 2 - 9 years old;
- "To be healthy, we need to know how to prevent problems", Child 3 - 10 years old;
- "I will always tell my dad to wear hearing protectors!", Child 4 - 11 years old;
- "Our hearing is important to hear the sounds we like, to hear the people, the birds etc.", Child 5 - 12 years.

From this intervention study, workers and their children interacted and assumed a mutual commitment to protect and preserve hearing. They advanced the knowledge acquired to other family members, friends, and co-workers, and optimized the educational practice of hearing health. The three basic principles of the Dangerous Decibels® program were adopted by both the occupational and family group. They were: Moving away from the noise, lowering the volume, and protecting the ears.

DISCUSSION

The use of the Dangerous Decibels® program contributed to the reflection on noise and the interaction between the participants. The importance of carrying out activities was observed, where workers and their children generated a positive impact on both of their realities.

Education aimed at promoting hearing health and NIHL prevention, for both children and adults. It included not only the notion of risk so that they could adopt preventive measures, but also expanded the

participants' capacity to understand and interfere with their reality¹², whether occupational or environmental.

The topics covered in the modules, proposed by the Dangerous Decibels® program for the prevention of NIHL, were coherent for both populations, adults, and children. These topics awoke in them the interest in certain aspects of the program, such as the identification of hazardous sound sources, the consequences of exposure to hazardous sounds and protecting themselves from hazardous sounds in different contexts, both occupational and environmental.

The active and collaborative educational intervention strategies and dynamics allowed for collaboration between the workers and their children, which contributed to reflection and resolution of problems. According to authors^{12,13}, in terms of health promotion, the worker acts as an agent of change, possessing knowledge and experiences about his work that are shared collectively, and that can assist in transforming the work environment. In turn, the child can be seen as a multiplier agent of good practices^{7,14,15}.

Further studies are recommended to expand educational actions for all workers and their children, exposed or not to noise above 80 dBA, as well as the use of questionnaires to evaluate the effectiveness of educational action.

CONCLUSION

The Dangerous Decibels® program developed in an intergenerational context was well received and accepted by workers and their children. As an educational intervention strategy for hearing health, it proved to be viable, convenient and with adequate content to be used simultaneously in populations of different age groups.

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