



Evaluation of Music-Induced Hearing Loss in Young People Using a Web-Based Survey Technique

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Introduction

Music-induced hearing loss (MIHL) is a significant social and public health problem. Several studies report an increasing trend of hearing loss in children and adolescents, which has been linked to recreational noise and leisure activities. In 1985, for example, Axelsson and Jerson evaluated noisy toys as sources of noise-induced hearing loss in children. They found that squeaky toys could produce sound levels of 78 to 108 dBA at a distance of only 10 cm¹. Loud music from concerts, clubs, and personal audio systems pose a potentially dangerous source of recreational noise. Sound levels at rock concerts have been recorded at 120-140 dB, and those in bars can reach over 95 dB^{2,3}. No safety standards or guidelines exist for nonoccupational noise exposure.

The prevention of hearing loss begins with education with hearing conservation programs ideally targeting children and young adults. Influence for behavior modifications may be achieved perhaps more effectively if we could understand the perceptions about hearing and MIHL. The objectives of this report were to evaluate awareness of MIHL among young adults, to examine perceptions of hearing protection, and to identify factors that might influence behavior in a positive way.

Methods

A 28-question survey was created by the Massachusetts Eye and Ear Infirmary, the Harvard School of Public Health, and Cogent Research, Inc. The survey contained questions about views toward general health issues as well as specific hearing issues such as hearing protection, factors that might increase use of hearing preservation, and personal exposure to recreational music. The survey format included multiple choice, multichotomous, and open ended questions, as well as questions that required an answer on a Likert scale (very big problem, somewhat of a problem, not too much of a problem, or not a problem at all).

The survey was administered anonymously to every 30th visitor on the MTV.com web site for 3 consecutive days. This web site, which is geared toward 15- to 34-year-olds, was chosen due to the large congruence of visitors (>400,000 per day). In 3 days, 49,800 visitors received the pop-up survey and 9,693 were completed (19%). The resulting study population consisted of 35% male and 65% female respondents, with an average age of 19.2 years.

Results

Hearing loss was defined as “a very big problem” by 8% of respondents compared with the following: sexually transmitted diseases, 50%; alcohol/drug use, 47%; depression, 44%; smoking, 45%; nutrition and weight issues, 31%; and acne, 18%. A respondent was more likely to consider hearing loss a “very big problem” or “somewhat of a problem” when they had previous education on hearing loss (41% vs 29%, $p < 0.05$).

The majority of respondents had attended a concert, club, or party with loud music in the last 6 months, and 61% and 43% reported experiencing tinnitus or temporary hearing impairment, respectively. Only 14% reported wearing ear protection when exposed to loud music, even though 39% admitted that suggestions had been made to wear earplugs. Parents (55%) were the most likely group to have recommended earplug use, while physicians had counselled ear protection to 22% of respondents.

Before this survey, only 16% of respondents had heard, read, or seen anything publicly related to the issue of hearing loss. The proportion of respondents that reported a personal intention to use earplugs at a future event with loud music (20%) increased when made aware of the potential for permanent hearing loss (66%), when encouraged by a medical professional (59%), and once knowing that they protect hearing without decreasing enjoyment (57%).

Discussion

The results indicate the low priority of hearing loss relative to other health issues. Ironically, a majority of respondents have experienced hearing loss and tinnitus at loud music events. This leads to the conclusion that the study population is unable to appreciate fully the significant impact that hearing loss may have on future quality of life.

Experts advocate that to modify behavior, educational programs must begin early in life and have suggested well-child physician visits as possible opportunities. The substantial positive behavioral response (59%) to a “doctor or nurse telling you that you should wear ear plugs” indicates that we in the medical community have failed to communicate an effective message but that we still do have a significant opportunity to have an impact on hearing behaviors. Even though parents were the group most likely to recommend the use of hearing protection, our respondents reported that social influences such as peers, public role models, and television, could also influence behavior.

This study attests to the accessibility and feasibility of a web-based survey. The *GenerationRx* survey reported that 75% of teens and young adults who have used the Internet most often have searched for health information compared with other uses such as playing games or downloading music. The survey also found that 39% of respondents have changed their personal behavior because of the health information obtained on-line⁴.

This study published in 2005 achieved global media attention for the issue of hearing loss. Recently, we completed a follow-up study where we hypothesized that a repeat survey could compare awareness and behavior trends. Although more respondents are now informed about hearing issues, mainly via the media,

still only a minority indicates awareness. Once again, this follow-up study found that the main missing ingredient still is widespread education from the healthcare community.

Conclusion

This study shows that MIHL has a low level of awareness priority among adolescents and young adults. Fortunately, many would be persuaded to wear hearing protection with adequate education and counseling. Hearing conservation education must be implemented on many fronts in society. The World Wide Web is a powerful medium to collect health data from this group.

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