



AWARENESS AND ATTITUDES TOWARDS MUSIC INDUCED HEARING LOSS: A SURVEY AMONG YOUNG ADULTS OF INDIA.

Pathology

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ABSTRACT

Background: The usage of smart mobile phones for streaming music has increased over the years among teenagers and young adults. Some of the music listening habits may lead to increased noise exposure resulting in music induced hearing loss. This study aimed to explore the awareness and attitude of young adults towards music induced hearing loss and to determine what proportion of young adults are probably at risk for music induced hearing loss.

Methods: A survey was carried out by circulating a questionnaire through electronic media. Responses were obtained from 500 young adults, in the age range of 18 to 35 years across different states in India. The questionnaire included questions related to music listening habits and knowledge towards hearing loss caused due to music exposure.

Results: A majority of young adult's listened music through mobile phones in conjunction with headphones at medium level but a small group of young adults are probably at risk for hearing loss. Chi Square analysis revealed a significant association with age. Younger group of individuals (18-26 years) were more aware about music induced hearing loss than the older group individuals (27-35 years).

Conclusions: A small group of young adults are probably at risk for music induced hearing loss with their music listening habits and attitudes. Hence, we need to educate young adults about the safe and healthy listening behaviors.

KEYWORDS

Noise Induced Hearing Loss, Recreational Noise, Music Listening Habits

INTRODUCTION

Noise induced hearing loss is a concern among people with occupational noise exposure. However, other sources of noise exposure such as recreational activities can also affect the hearing. Hearing loss occurring from listening to music at high intensity for a prolonged duration is referred to as music induced hearing loss (MIHL). Listening to music for long duration through personal listening devices (PLDs) or mobile phones, especially by teenagers and young adults, has significantly increased in the recent years. There are no evidence-based standards for hazardous sound levels of music but based on the regulations available for exposure to occupational noise, it can be inferred that equivalent sound pressure levels of more than 70 dB(A) over 24 hours can lead to hearing loss (Berglund et al., 2000).

Various studies have explored the knowledge and attitude of young adults towards loud music exposure. An internet-based survey on adolescents and young adults in the United states of America revealed that hearing health was the least concerned factor when compared with various general health matters (Chung et al., 2005). A study exploring attitude of adolescents towards loud music associated with self-perceived difficulties in hearing and a number of psychological variables revealed that self-perceived difficulties in hearing were related to less tolerant attitudes toward loud music (Widén et al., 2013). In a survey of recreational noise exposure on Nigerian adults 50 % of the participants were listening to music at the level of loudness, which was self-assessed to be high volume (Ameye et al., 2016). It can be inferred from these studies that many young adults may be at risk for hearing loss due to their listening habits and attitudes towards MIHL.

There is a lot of concern regarding the maximum intensity levels that are delivered by these music systems, as it may have any damaging effect, if used at very high levels. Attitudes and knowledge among young adults about hearing loss caused due to over exposure to recreational noise have an influence on their listening habits. There is a need to explore the music listening habits and attitudes towards MIHL among young adults so that appropriate resource material is developed for educating young adults regarding safe listening. The present study aimed to explore the music listening habits and awareness as well as attitude of young adults across India towards MIHL.

MATERIALS AND METHODS

The research study was approved by Ethics committee of Bharati Medical College and the ethical rules of Bharati Medical College were followed. This study was conducted using a survey questionnaire on 500 young adults in the age range of 18 to 35 years, across different

states in India. The participants included students and working professionals from any stream of educational background.

A questionnaire consisting of two parts was developed based on a review of literature. Content validation was carried out by five audiologists and five lay persons. Based on the suggestions, questions were modified and relevant questions were selected. A pilot study was carried out on 20 young adults in the age range of 18 to 35 years. The questionnaire was further modified based on the results of the pilot study. The final questionnaire consisted of a total of 42 questions. Part A included questions related to music listening habits including the level and duration of listening. Part B consisted of questions related to awareness and the beliefs towards hearing loss caused due to music exposure.

The survey was carried out using Google forms (Google Inc., Mountain view, CA, USA). A google link was created and distributed among young individuals through electronic media. The link included questionnaire developed for the study along with the participant information sheet and informed consent to participate in the study. The responses were received from October 2020 to April 2021 were considered for the study. The data of only those participants who met the inclusion criteria of the study were considered for analyses.

The data were analyzed using IBM SPSS version 20.0. All the data gathered were expressed as frequency and percentages. Chi-square analysis was carried out to investigate if the age of the participants had any association with the listening habits and the self-perceived auditory symptoms. For this purpose, the participants were subdivided into two groups, Group 1 included participants in the age range of 18 to 26 years; Group 2 included participants in the age range of 27 to 35 years.

RESULTS

A majority of young adults (90.8%) reported that they listen to music through mobile phone in conjunction with headphone. Other devices used for listening to music included personal computer, MP3 player and I pod. A total of 270 (56.1%) young adults preferred 'In the ear earphones' for listening to music. Ear buds were used by 153 (31.8%) individuals, and 86 (17.9%) individuals used over the ear earphones.

Two hundred and eighty-four (59.8%) young adults reported that they have been using PLD for more than 4 years, 111 (23.4%) since 2 to 4 years, and 80 (16.8%) since 1 to 2 years. A majority of young adults (61.8%) listened to music on their PLDs for less than 1 hour in a typical day. Only 40 respondents (8.2%) reported that they listened to music

for more than 3 hours. One hundred and seventy-seven (37%) individuals used PLD on a daily basis in a week while 107 (22.4%) young adults listened to music on alternate days in a week. Most of the young adults 381 (76.2%) reported that they prefer to listen to music at medium volume. Only 76 participants (15.2%) preferred high volumes. In noisy situations, 38.4% of young adults opted high volume while 47.4% listened at medium volume.. Two hundred and ninety-five young adults (61.6%) reported that they did not experience any kind of headache after listening to music for a long period while 69 individuals (14.4%) experienced headache after prolonged music listening.

A majority of respondents (74.1%) reported that they never used earplugs during concerts or wedding where loud music was being played. Only 54.2% of the individuals were aware how to procure earplugs. A majority of respondents (67.1%) considered hearing loss as a big problem. They reported that they have learnt about the hazardous effect of sound on hearing during school/college and were aware that there is a risk associated with listening to music at high volume. Around 46.6% of the individuals were aware that young people can have hearing loss. Only 33.1% of the participants considered hearing loss as a big problem.

Chi-square analysis was carried out to check if age was associated with young adult's awareness towards music induced hearing loss. Chi-square analysis for the questions related to beliefs about the risk of hearing loss from listening through PLDs, opinion about having hearing loss due to listening music at high volume, ear plug usage and how they treat hearing loss were probed. Results revealed that age of the participants showed a significant association with risk of hearing loss from listening through PLDs (χ^2 (3, N=500) =26.88, $p<0.05$); opinion about having hearing loss due to listening music at high volume and age (χ^2 (3, N=500) =38.2, $p<0.05$). More number of younger adults believed that there is more risk of acquiring hearing loss when listened at high volumes than older adults. Young adults considered hearing loss as a very big problem when compared to older participants (χ^2 (4, N=500) =10, $p<0.05$). There was no significant relationship between participants age and usage of ear protection devices, χ^2 (2, N=500) =4.73, $p>0.05$.

DISCUSSION

A majority of the respondents of the present study used mobile phones as their personal listening devices. These findings are similar to the reports of earlier studies. It was reported that 97.1 % of middle school and high school students used smart phone as their personal devices (Lee et al., 2021). Contrary to these results, Ahmed et al. (2006) had observed that 29.3 % of university students preferred mobile phones as their listening device.

In this study, 59.8% of young adults reported that they have been using PLD for more than 4 years. Earlier studies have shown that individuals using PLD for more than 5 years had a remarkable worsening of hearing thresholds at 4 kHz (Kim et al., 2009). Similarly, Le prell et al. (2013) reported that individuals who used PLDs for more than 5 years had elevated hearing thresholds. Contrary to these studies, a few studies found no significant association between hearing thresholds and duration of exposure (Le Prell et al., 2013; Zocoliet al., 2004). The difference in results could be due to the other listening habits which may interact with effect of duration of exposure. These include duration for exposure per day, intensity/loudness level at which music is played.

In the present study, a majority of young adults listened to music on their PLDs for less than 1 hour in a typical day. It can be inferred from these data that a majority of the listeners were following safe listening behaviors by limiting music exposure. A small group of respondents reported listening music for more than 3 hours per day. However, the level at which the music is heard to is also a factor to be considered. The ISO standard proposed that there is a tradeoff between the exposure time and the sound level, which is explained by a '3 dB exchange rule'. This implies that a period of 8-hour exposure to 85 dBA have an equal amount of risk for hearing loss as a period of 4 hr of exposure to 88 dBA. In the present study, most of the young adults reported that they prefer to listen to music at medium volume. So it can be inferred that a majority are probably listening to music at safe audible levels. Another factor that can influence the effect of music listening is the type of headphone used. In the present study, 56.1% preferred in-the-ear headphone for listening to music on their PLDs.

The output sound levels produced by intraconcha headphones are reported to be greater in intensity when compared to supra aural headphones. These results indicate that a majority of the participants are putting themselves at risk for MIHL.

There is a need to create awareness among young adults regarding the possible ill effect of listening to music using in the ear earphones for long duration.

A majority (63%) in the present study reported that they never experienced tinnitus after attending live music performance while 19.4% of individuals reported they experienced tinnitus after attending live performances. These findings are comparable to the reports of Landalv et al (2013) and Zocoli et al (2009).

A majority of respondents (74.1%) in the present study reported that they never used earplugs during concerts or wedding where loud music was being played. Widen et al (2009) studied the use of ear protective devices and beliefs towards noise among 258 young adults of America aged between 17 and 21 years and found that only 3% of the participants used earplugs at rock concerts. Thus, the results of the present study indicate a need to focus on educating the young individuals on use of earplugs. The most key element to successfully educating on hearing protection devices with respect to music exposure is through attitude change.

A majority of respondents in the present study had learned about the hazardous effects of sound on hearing during school/college but around 40% seemed to be unaware of hazardous effect of loud music. A very few respondents believe that listening to music at high volume does not lead hearing loss which negatively impacts their listening habits. Hence there is a need to educate young adults about the safe and healthy listening behaviors.

Results of Chi square analysis suggests that older group individuals are more likely to be at risk for MIHL. Protective measures towards limiting music exposure from the PLDs were more likely followed by younger individuals in comparison to older ones which suggest that young individuals are following safe listening behaviors and thus protect their hearing. The younger adults were more aware about the risk associated with listening to music at high volume and follow protective measures to limit the exposure than the older group individuals. Thus, the results indicate a greater need to educate older age group regarding safe listening habits.

What is already known on this subject?

It is known that some of the recreational noise can be loud and can lead to hearing loss if exposed for prolonged duration.

What does this study add?

We need to educate young adults about the safe and healthy listening behaviors. (e.g. keeping their listening volume as low as possible, limit the time engaged in noisy activities, monitoring safe listening levels over their listening devices). This can be achieved by preparing public education material that helps to create awareness among young adults regarding music induced hearing loss and measures that can be taken to prevent the same.

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