Effect of Cell Phones and Music Systems in Medical Students

Zahir Feroz¹, Anusha Kondeti², M. Ravi Kumar Raju³, M. A. N. Murty⁴

ABSTRACT

Introduction: Noise-induced hearing loss is evolving into a significant Social and Public health problem. Great concern arises from recreational noise exposure, which might lead to noise-induced hearing loss in young adults. The objective of the current study was to evaluate the effects of recreational noise exposure like cell phones and music systems in medical students.

Material and Methods: A questionnaire concerning recreational noise exposure and audiological tests (pure tone audiogram, impedance audiogram and Otoacoustic emissions) were done in 153 students (age between 19 to 25 years). The questionnaire included number of hours of exposure to sounds per day, use of Right ear-Left ear, use of earphones, talking on cell phones while walking, sitting or driving, history of accidents while talking on vehicle, and symptoms like heat in ear, tinnitus, defective hearing, loss of concentration, irritability and tics recently developed.

Results: Most of the students complained of loss of concentration, Irritability and Heat in ear. There were no significant differences in hearing thresholds between duration and high recreational noise exposure.

Conclusion: No significant hearing loss was found in students with usage of cell phones and music players. Nevertheless, a long-term assessment of young adults hearing in relation to recreational noise exposure is needed.

Keywords: Cell Phones, Music Systems

INTRODUCTION

Off late there is an increasing population at risk of permanent, irreversible hearing loss and tinnitus due to use of cell phones and music players (MP3 players and equivalent devices)¹ ² and the possibility to use such devices at high sound levels analogue to cell phone induced hearing loss and music system induced hearing loss is evolving into a significant social and public health problem,³ so this study is designed to evaluate the recreational noise exposure problems. Prolonged, excessive noise-exposure can induce metabolic and mechanical changes in the organ of Corti, which causes hearing loss.⁴ Hearing loss secondary to music gadgets with headphones is rapidly becoming a social menace. Hearing loss related to job conditions is slowly decreasing, whereas hearing loss related to exposure to personal gadgets has increased three times.⁵ Hence plans to counter this menace is of dire requirement to prevent and cure this problem. Continuous sound output levels of personal Music gadgets and cellphones range between 97 dBA and 103 dBA for earphones and supra aural headphones.⁶ The objective of the current study was to evaluate the effects of recreational noise exposure like cell phones and music systems in medical students of Konaseema Institute of Medical Sciences and Research Foundation (KIMS and RF), Amalapuram, E.G.District, A.P. India.

MATERIAL AND METHODS

A prospective study was undertaken in ENT Department of Konaseema Institute of Medical Sciences and Research Foundation (KIMS and RF) over a period of two months after taking ethical clearance. The study population consisted of 153 medical students of Konaseema Institute of Medical Sciences And Research Foundation ranging in age between 18 years and 21 years. The mean ages were 19.5 years. All students voluntarily participated in the study. An informed written consent was taken; both the ears were examined and hearing assessment by pure tone audiogram. Students with normal otoscopic examination only were included in the study. The exclusion criteria of the study were otitis externa, otitis media and those who refused to give consent. A Diagnostic Audio meter 2001 Arphi model was used to perform the audio metric testing.

Questionnaire: The Questionnaire included number of hours of exposure to sounds per day, use of Right ear-Left ear, use of ear plug, Talking on cell phones while walking. Sitting or driving, History of accidents while talking on vehicle, and symptoms like Heat in ear, Tinnitus, Defective hearing, loss of concentration, Irritability and Tics recently developed. Most of the students complained of loss of concentration, irritability and Heat in ear.

STATISTICAL ANALYSIS

Descriptive statistics like mean and percentages were used to interpret the results obtained. MS office 2010 was used for making tables.

RESULTS

Table 1 describe the demographic data of the study subjects. On evaluating the 153 students for symptoms, the percentage of self-reported symptoms is given in table 2. Loss of concentration 60 students (39.2%) and Irritability 42 students (27.4%) were found to be the commonest symptoms, followed by tinnitus 22 students (14.3%) and defective hearing 22 students (14.3%). Very few students complained of heat in ear 7 students (4.5%).

DISCUSSION

Young students expose themselves to loud music in daily activities by listening to music and cell phones. A majority studies have focused on the role of personal music players (PMP) in the development of noise induced hearing loss

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(NIHL). No significant difference in the hearing loss was seen between music players users and those who do not use any music players\(^6\) or between subjects with low, medium and high usage of PMPs\(^7\), however symptoms like heat in ear, tinnitus, defective hearing, loss of concentration and irritability were noticed.

Though it is agreed that popularity of music players is the cause of concern, the other sources of recreational noise exposure, are over shadowed by the popularity of PMPs. Meyer-Bisch (1996) found a significant reduction in hearing thresholds in subjects attending concerts at least once a month compared to the control group.\(^8\) In our study, the audiological reports were noted to be statistically significant between students with self-reported low, intermediate and high noise exposure. Research regarding the prevalence of NIHL due to recreational noise has revealed some inconsistent results. Some studies Lee Gi et al\(^9\) reported an increase in prevalence of high-frequency hearing loss, which was attributed to recreational noise exposure while others have not found such results.\(^{10,11}\)

These differences are because of differences in the method of recording regarding number of students exposed, if these students selected were truly reflective as a proportionate sample of all students and also the exact details of sound exposure. Also noted is the fact that hearing assessment should be uniform to define hearing impairment. However, in some studies Hannah Keppler et al\(^{12}\) no conclusive data regarding recreational noise exposure are provided. Design of any similar study is complicated considering the co morbid factors and other social problems. It is noteworthy that there are inconsistencies even in studies using the same cohort, but applying a different set of exclusion criteria. We suggest that any study in the future should consider these difficulties in the methodology.

To summarize it is not conclusive if there is a relation between recreational noise/sound exposure and loss of hearing, hence the hearing ability and various activities that can produce loud sounds for a variable time period were considered. Second, hearing was assessed using high- frequency pure tone audiometry. Pure tone audiogram was normal in all students except one, whose audiogram revealed a dip in the curve at 4 KHz, which is a classical finding for Noise induced hearing loss (NIHL).

**CONCLUSION**

No significant hearing loss was found in students with usage of cell phones and music players; however symptoms like heat in ear, tinnitus, defective hearing, loss of concentration and irritability were noticed. A long term assessment of the auditory function is needed to evaluate the possible progression in hearing deterioration caused by recreational noise exposures. Programs to counsel and educate regarding noise exposure and by providing necessary information and details of loss of hearing with noise/loud music exposure and focus on self experiences of symptoms such as temporary tinnitus after recreational noise exposure, which was found in 22 students. These factors increase the awareness in people that might lead to attitudinal and behavioral change, thus preserving hearing in young adults.

**REFERENCES**


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**Table-1: Demography of Subjects**

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<th>Symptoms</th>
<th>No of students</th>
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<td>Total</td>
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**Table-2: Symptomatology**