

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 ear phones, 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,¹ 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.³ Hearing loss secondary to music gadgets with headphones is rapidly becoming a social menace. Hearing loss related to job conditions is slowly decreasing, where as hearing loss related to exposure to personal gadgets has increased three times.⁴ 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.⁵ 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 for 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

¹PG Resident, ²PG Resident, ³Professor, ⁴Professor and HOD, Department of ENT, Konaseema Institute of Medical Sciences and Research Foundation, Amalapuram, A.P., India

Corresponding author: Dr. Zahir Feroz, KIMS, Amalapuram, A.P., India

How to cite this article: Zahir Feroz, Anusha Kondeti, M. Ravi Kumar Raju, M. A. N. Murty. Effect of cell phones and music systems in medical students. International Journal of Contemporary Medical Research 2016;3(11):3374-3375.

Age(in yrs)	Male	Female	Total No of students	Percentage (%)
18	7	13	20	13
19	16	11	27	17.7
20	22	63	85	55.6
21	8	13	21	13.7
Total	53	100	153	100

Table-1: Demography of Subjects

Symptoms	No of students	Percentage(%)
Heat in ear	7	4.6
Tinnitus	22	14.4
Defective hearing	22	14.4
Loss of Concentration	60	39.2
Irritability	42	27.4
Tics	0	0
Total	153	100

Table-2: Symptomatology

(NIHL). No significant difference in the hearing loss was seen between music players users and those who do not use any music players⁶ or between subjects with low, medium and high usage of PMPs⁷, 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 overshadowed by the popularity of PMPs. Meyer-Bisch (1996) found a significant reduction in hearing thresholds in subjects attending concerts atleast 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 GJ et al⁹ 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 al¹² 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

1. Scientific Committee on Emerging and Newly Identified Health Risks. Potential Health Risks of Exposure to Noise from Personal Music Players and Mobile Phones including a music playing function. Available at http://ec.europa.eu/health/ph_risk/committees/04_scenihhr/docs/scenihhr_o_018.pdf. Accessed: 17 October 2008.
2. Vogel I, Verschuure H, Van der Ploeg CPB et al. Estimating adolescent risk of hearing loss based on data from a large school-based survey. *Am J Public Health*. 2010;100:1095-100.
3. American College of Occupational and Environmental Medicine, Position Statement; Noise Induced Hearing Loss, Michigan, USA; American College of Occupational and Environmental Medicine. 2002;5:1-4.
4. Smith PA, Davis A, Ferguson M, Lutman ME. The prevalence and type of social noise exposure in young adults in England. *Noise Health*. 2000;2:41-56.
5. Keppler H, Dhooge I, Maes L, D'haenens w, Bockstael A, Philips B, et al. Short-term auditory effects of listening to an MP3 player. *Arch Otolaryngol Head Neck Surg*. 2010; 136:538-48.
6. Wong TW, Van Hasselt CA, Tang LS, Yiu PC. The use of personal cassette players among youths and its effects on hearing. *Public Health*. 1990;104:327-30.
7. Mostafapour SP, Lahargoue K, Gates GA. Noise induced hearing loss in young adults: The role of personal listening devices and other sources of leisure noise. *Laryngoscope*. 1998;108:1832-9.
8. Beach E, Williams W, Gilliver M, Estimating young Australian adults' risk of hearing damage from selected leisure activities. *Ear Hear*. 2013; 34:75-82.
9. Lee GJ, Lim MY, Kaun AY, Teo JH, Tan HG, Low WK. *Int J Audiol*. 2014;53:462-8.
10. Henderson E, Testa MA, Hartnick C. Prevalence of noise induced hearing threshold shifts and hearing loss among US youths. *Pediatrics*. 2011;127:e39-46.
11. Holmes AE, Niskar AS, Kieszak SM, Rubin C, Brody DJ. Mean and Median hearing thresholds among children 6 to 19yrs of age: The Third National Health And Nutritional Examination Survey 1988 to 1994, United States. *Ear Hear*. 2004;25:397-402.
12. Keppler H, Dhooge I, Maes L, D'haenens W, Bockstael A, Philips B, et al. Transient evoked and distortion product otoacoustic emissions: A short term test retest reliability study. *Int J Audiol*. 2010;49:99-109.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 18-10-2016; **Published online:** 03-12-2016