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A STUDY TO ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAM ON KNOWLEDGE REGARDING HEARING IMPAIRMENT DUE TO EXCESSIVE USAGE OF HEADPHONES AT HIGH VOLUME AMONG THE ADOLESCENTS OF PUNE CITY.

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ABSTRACT

Background: Noise induced hearing loss is an impairment in hearing due to exposure to loud sounds. It is general medical condition that can restrict regular day to day activities. The threat of displacement in hearing because of prolonged exposure to noise is present in about 12%of population worldwide. Noise induced hearing loss is one of the most common public health problems occurring due to use of headsets. The usage of earphone/ headphone has been increasingly used in the recent times due to online learning. In the 2015 Global Burden of Disease Study, hearing loss was ranked as the fourth most prevalent chronic disease worldwide. The World Health Organization (WHO) reported that globally 1.1 billion young people were at risk of hearing loss due to prolonged and excessive exposure to loud sounds. As young people, college students have always been a big concern, especially considering the current situation of hearing health-related knowledge, beliefs, and risk behaviors. Headphones are convenient and improve the auditory sound experience but also increase the risk of hearing loss. **Material and Methods:** Quantitative descriptive research approach with quasi-experimental research design with one group pre-test post-test design used to assess the effect of planned teaching program on knowledge regarding hearing impairment due to excessive usage of headphones at high volume among under graduate students of selected city. 60 samples were selected by using non- probability convenient sampling technique. **Result:** A total 60 numbers of samples included in the study. Out of 60 samples 4 (6.66%) are found with poor score. 6 (10%) are found with average score, 13 (21.66%) are found with good score and 37 (61.66) excellent score. The study findings showed that, in the pre-test majority (93.33%) of the undergraduate students had inadequate knowledge on hearing impairment 6.66% had moderate knowledge on hearing

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impairment. In post-test, majority (78.34%) of the students had adequate knowledge on hearing impairment 21.66% had moderate knowledge on hearing impairment in undergraduate students. **Conclusion** A study aimed to assess the effectiveness of planned teaching programme on knowledge regarding hearing impairment due to excessive use of headphones at high volume among undergraduate students in selected city from 60 samples by Non-probability purposive sampling technique. The study findings showed that, in the pre-test majority (93.33%) of the under-graduate students had inadequate knowledge on hearing impairment 6.66% had moderate knowledge on hearing impairment. In post-test, majority (78.34%) of the students had adequate knowledge on hearing impairment 21.66% had moderate knowledge on hearing impairment in undergraduate students. In pre-test mean score was 12 and standard deviation 3.35 and post-test mean value was 28.31 and standard deviation 2.23, the association between the pretest.

Keywords: Audiometry**,** Audio devices**,** Hearing impairment**,** Headphones**,** NIHL

INTRODUCTION

Noise-induced hearing loss (NIHL) is an impairment in hearing due to perpetuated exposure to loud sounds. This is classified as sensorineural hearing loss, which usually presents with bilateral, irreversible, and progresses with continual exposure to higher decibels. It is a general medical condition that can restrict regular day-to-day activities. The threat of disablement in hearing because of prolonged exposure to noise is present in about 12% of the population worldwide, which is also among the most preventable causes. NIHL was originally identified as an occupation-based disease, and the World Health Organization assessed that 33% of all instances of hearing misfortune could be credited to clamor openness. The Global Burden of Disease Study found that hearing loss is the fourth leading cause of disability globally. The primary effect of hearing loss is impaired communication, which adversely affects relationships with family and friends and creates difficulties in the workplace. Untreated hearing loss in adults also has indirect health, psychosocial, and economic effects leading to social isolation and reduced quality of life. Additionally, hearing disablement has financial repercussions, including higher healthcare expenditures, costs associated with the special schooling requirements of children who have deafness, and lower job performance that results in individual income losses. The occurrence of NIHL has likewise been expanding in kids and adolescents. About 40% of understudies between the ages of 16 and 25 years and 1% of youngsters attending class were accounted for to have side effects of NIHL in 1996. All the more, as of late, 12.5% of understudies between the ages of six to 19 years were detected by doctors to have

noise-induced threshold shifts. NIHL in youngsters and adolescents is connected with commotions created during sporting and relaxation exercises.

NEED OF THE STUDY

Due to the incremental scope of using earphones, in today's world youngsters are susceptible to loud sounds or prolong sounds that may cause negative consequences to them in the later run. Noise-induced hearing loss is the second most common Trusted Source type of sensorineural hearing loss after age-related hearing loss. A 2017 study Trusted Source indicated that approximately 80% of individuals between 13 and 18 years of age use headphones for listening to music for 1–3 hours a day. Listening to loud noise for long periods causes hearing loss. This causes damage to the auditory nerve and hair cells of the cochlea, or inner ear.

According to the 2021 study Trusted Source, approximately 1.7% of people worldwide experience noise-induced hearing loss. The study reported individuals who use headphones in an already noisy environment are at a 4.5-fold higher risk of hearing loss.

In this modern era of technology, it is common to see adolescents and young adults exposing themselves to loud noise or music through the use of earphones for a long period of time However the risky patterns of exposure if are not being monitored by themselves to the proper extent may lead to noised induced hearing loss in the latter part of their life. Noise-induced hearing loss is caused by long term exposure to sounds that are either too loud or last too long.

AIM OF THE STUDY

To assess the effectiveness of planned teaching program on knowledge regarding hearing impairment due to excessive usage of headphones at high volume among undergraduate students in selected city.

RESEARCH METHODOLOGY

Objectives:

1. To assess the knowledge regarding hearing impairment due to excessive usage of headphones at high volume among undergraduate student.
2. To assess the effectiveness of planned teaching program on knowledge regarding hearing impairment due to excessive usage of headphones at high volume among undergraduate student.
3. To find out association between knowledge regarding hearing impairment due to excessive usage of headphones at high volume with selected demographic variables.

Research type: Quasi experimental study

Sample and size: Samples was undergraduate students of pune city and sample size was 60

Research design: The research design used in this study is quasi-experimental research design study.

Sampling technique: A random sampling technique was used for selecting 60 undergraduate studends from selected college who met the designed set of criteria during the period of data collection

Toll description: With the help of self-structured questionnaire data was collected to assess effectiveness of planned teaching programme on knowledge regarding hearing impairment due to excessive usage of headphones among undergraduate students.

Reliability: The reliability was tested by using test-retest method and Pearson's method. In the test retest method reliability was 0.73 , hence the tool was found to be reliable.

Pilot study: The pilot study done on the 6 sample and found that samples are available for final study.

RESULTS

The data was analyzed and presented in the following sections:

Section 1: This section deals with analysis of frequency and percentage of demographic data of the samples.

Section 2: This section deals with effectiveness of plan teaching program on knowledge regarding hearing impairment due to the excessive usages of headphone at high volume among undergraduate student in selected city.

Section 3: This section Deals with the Hypotheses testing. Effectiveness of plan teaching program on knowledge regarding hearing impairment due to the excessive usages of headphone at high volume among undergraduate student in selected city. Hypothesis testing was done by using Paired 't' test and chi-square test.

Table no. 1: Description of Demographic data (n=60)

Table No: I

SR NO	**Demographic Variable**	**Frequency**	**Percentage (%)**
1	**Age**		
a	18-19 Years	16	27%
b	20-21 Years	29	48%
c	22-23 Years	15	25%

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d	24-25 Year	0	0%
2	**Gender**		
a	Male	21	35%
b	Female	39	65%
3	**Religion**		
a	Hindu	57	35%
b	Buddhist	03	65%
c	Christian	0	0%
d	Other	0	0%
4	**Level of parent Educational**		
a	Under graduate	12	21%
b	Diploma	0	0%
c	Post Graduate	44	73%
d	illiteracy	04	6
5	**DO you use headphone regularly**		
a	Yes	44	73
b	NO	16	27
6	**If yes how often?**		
a	30min or less/day	24	40
b	40min to 1hr/day	21	35
c	90min to 2hr/day	06	10
d	more than 2hr	09	15
7	**Headphone used day per week**		
	1-2day/week	23	38
	3-5day/week	37	62
	6-7day/week	0	0
8	**volume of headphones**		
	Low volume	10	17

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	Medium volume	43	72
	High volume	07	11
9	**Taking break during use of headphone**		
	Yes	43	72
	NO	7	12
	Sometimes	10	16
10	**Increase headphones volume level when noisy background**		
	Yes	25	42
	No	16	27
	Sometimes	19	31

The above table indicates that percentage of the demographic variables of the undergraduate students. It includes frequency and percentage of demographic variables such as age, gender, religion, level of parent education, regularity of usage of headphones.

SECTION 2:-

Effectiveness of plan teaching program on knowledge regarding hearing impairment due to excessive usages of headphones at high volume among undergraduate student.(n=60)

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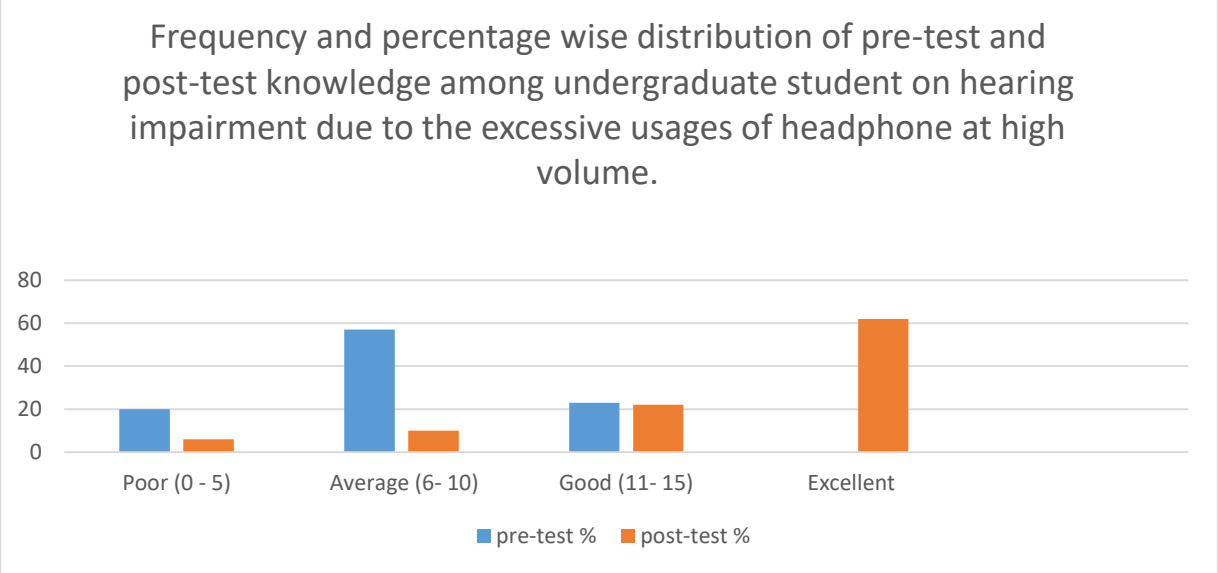

Fig no:1 Frequency and percentage wise distribution of pre-test and post-test knowledge among undergraduate student on hearing impairment due to the excessive usages of headphone at high volume

Bar diagram showing Frequency and percentage wise distribution of pre-test and post-test knowledge among undergraduate student on hearing impairment due to the excessive usages of headphone at high volume.

Depicts that highest percentage in pretest (20%) of respondents had poor knowledge, (57%) of them had average knowledge,(23%) of them had good knowledge and in post-test (62%) of the respondents had Excellent knowledge , (22%) of the respondents had good knowledge,(10%)of them had average knowledge and (6%) of them had poor knowledge. Hence it can be interpreted that effect of plan teaching program on knowledge regarding hearing impairment due to excessive use of headphone at volume was effective in improving knowledge of undergraduate student.

Paired 't' value of pre and post-test knowledge regarding hearing impairment due to excessive usage of headphones (n =60)

SN	Group	Mean	SD	't' value	P Value	Level of significance
1	Pre-test	8	3.917	**15.53**	**<0.0001**	**Significant**

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2	Post-test	14.12	4.188			

table value = 2.132 at p = ≤0.05

t value was calculated to analyze the difference in pre-test and post-test knowledge regarding hearing impairment. Highly significant difference was found between pre and post-test knowledge score of undergraduate students**(15.53).**

Hence the stated null hypothesis is rejected as it is interpreted that there was significant difference between pre-test and post-test knowledge score of undergraduate students regarding hearing impairment due to excessive usage of headphones at high volume.

SECTION 3:

The calculated value of chi square **(7.306**) is less than table value (**12.59**) shows there is no significant association between age and level of knowledge

DISSCUSSION

A study aimed to assess the effectiveness of planned teaching program on knowledge regarding hearing impairment due to excessive usage of headphones at high volume among undergraduate students in selected city. Data was collected from 60 samples. Data was collected by Non-probability purposive sampling technique. The findings was discussed in relation to the objectives of the study. On the basis of objectives the collected data was analyzed. These results align with prior research emphasizing the importance of health education on hearing impairment due to excessive usage of headphones at high volume among adolescents. Reliability of the tool was established using test-retest and Pearson's correlation methods, with a reliability coefficient of 0.73, confirming the tool's adequacy for measuring knowledge levels.

The study findings showed that, in the pre-test majority (20%) of the students had inadequate knowledge on hearing impairment 57% had moderate knowledge on hearing impairment. In post-test, majority (23%) of the students had adequate knowledge on hearing impairment 62% had moderate knowledge on hearing impairment in undergraduate students, the mean post-test knowledge scores (28.31%) of students on hearing impairment was higher than that of the mean pre-test knowledge

scores (12%). The calculated 't' value (t=54.38) was much greater than the tabulated value (ts-2.00) at (0.05) level of significance. This shows that the intervention i.e. planned teaching programme on knowledge regarding hearing impairment due to excessive use of headphones at high volume among undergraduate students was found to be effective in increasing knowledge. Hence the research hypothesis H is accepted i.e. there is a significant difference between pre-test and post-test knowledge scores there is no significance association between pretest knowledge score and selected demographic variables such as age in years, gender, educational qualification, experience (in years), types of school, previous knowledge and source of information. Hence the null hypothesis is accepted.

CONCLUSION

A study aimed to assess the effectiveness of planned teaching program on knowledge regarding hearing impairment due to excessive use of headphones at high volume among undergraduate students in selected city from 60 samples by Non-probability purposive sampling technique. The study findings showed the highest percentage in pretest (20%) of respondents had poor knowledge, (57%) of them had average knowledge, (23%) of them had good knowledge and in post-test (62%) of the respondents had Excellent knowledge, (22%) of the respondents had good knowledge, (10%) of them had average knowledge and (6%) of them had poor knowledge. In pre-test mean score was 8 and standard deviation 3.91 and post-test mean value was 14.12 and standard deviation 4.188, the association between the pretest, it concludes that there was a gradual increase in the mean and standard deviation of all the observation the presence study the finding reveled that there is an increase in the knowledge of the study participants after being exposed to the planned teaching programme the results shows that there was a significant improvement in the post-test knowledge of undergraduate students this showing that the planned teaching programme was effective regarding hearing impairment due to excessive usage if headphones at high volume.

RECOMMENDATIONS

The following recommendations are suggested:

1. A similar study can be repeated by increasing the size of the sample.
2. A longitudinal study can be done using post-test after 1 month, 6 month and 1 year to see the retention of knowledge and practice.
3. A similar study can be conducted to determine the effectiveness of a plan teaching program regarding hearing impairment among undergraduate students.

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CONFLICT OF INTEREST

The authors certify that they have no involvement in any organization or entry with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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REFERENCES

1. https://www.semanticscholar.org/paper/Assessment-of-knowledge-regarding-the-consequences-Das/f6ddf3d59ea65d435410ce4a27f19222d879ee3a
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7914527/
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5501022/
4. https://www.ncbi.nlm.nih.gov >pmc Impact on Hearing Due to Prolonged Use of Audio Devices: A Literature Review- PMC
5. https://www.ncbi.nlm.nih.gov > pmc Associations between adolescents' earphone usage in noisy environments.
6. https://www.medicalnewstoday.com >… Headphones and hearing loss: Possible risks and more
7. https://www.medicalnewstoday.com > Headphones and hearing loss: Possible risks and more – Medical News Today
8. Malchaire J, Piette A. A comprehensive strategy for the assessment of noise exposure and risk of hearing impairment. Ann Occup Hyg. 1997 Aug;41(4):467-84. Doi: 10.1016/S0003-4878(97)00007-0. PMID: 9284648
9. Patel JA, Broughton K. Assessment of the noise exposure of call centre operators. Ann Occup Hyg. 2002 Nov;46(8):653-61. Doi: 10.1093/annhyg/mef091. PMID: 12406859.
10. Sadhra S, Jackson CA, Ryder T, Brown MJ. Noise exposure and hearing loss among student employees working in university entertainment venues. Ann Occup Hyg. 2002 Jul;46(5):455-63. PMID: 12176760
11. Pawlaczyk-Luszczyńska M, Dudarewicz A, Bak M, Fiszer M, Kotyło P, Sliwińska-Kowalska M. Temporary changes in hearing after exposure to shooting noise. Int J Occup Med Environ Health. 2004;17(2):285-93. PMID: 15387085
12. Neitzel R, Seixas N. The effectiveness of hearing protection among construction workers. J Occup Environ Hyg. 2005 Apr;2(4):227-38. Doi: 10.1080/15459620590932154. PMID: 15788384.

13. Daniel E. Noise and hearing loss: a review. J Sch Health. 2007 May;77(5):225-31. Doi: 10.1111/j.1746-1561.2007.00197.x. PMID: 17430434.
14. Rawool VW, Colligon-Wayne LA. Auditory lifestyles and beliefs related to hearing loss among college students in the USA. Noise Health. 2008 Jan-Mar;10(38):1-10. Doi: 10.4103/1463-1741.39002. PMID: 18270402.
15. McNeill K, Keith SE, Feder K, Konkle AT, Michaud DS. MP3 player listening habits of 17 to 23 year old university students. J Acoust Soc Am. 2010 Aug;128(2):646-53. Doi: 10.1121/1.3458853. PMID: 20707434
16. Vogel I, Brug J, Van der Ploeg CP, Raat H. Adolescents risky MP3-player listening and its psychosocial correlates. Health Educ Res. 2011 Apr;26(2):254-64. Doi: 10.1093/her/cyq091. Epub 2011 Feb 14. PMID: 21321009
17. Punch JL, Elfenbein JL, James RR. Targeting hearing health messages for users of personal listening devices. Am J Audiol. 2011 Jun;20(1):69-82. Doi: 10.1044/1059-0889(2011/10-0039). Epub 2011 Apr 7. PMID: 21474557
18. https://pubmed.ncbi.nlm.nih.gov/1608632/
19. https://pubmed.ncbi.nlm.nih.gov/21173482/
20. Kotowski MR, Smith SW, Johnstone PM, Pritt E. Using the Extended Parallel Process Model to create and evaluate the effectiveness of brochures to reduce the risk for noise-induced hearing loss in college students. Noise Health. 2011 Jul-Aug;13(53):261-71. Doi: 10.4103/1463-1741.82958. PMID: 21768729.
21. Levey S, Levey T, Fligor BJ. Noise exposure estimates of urban MP3 player users. J Speech Lang Hear Res. 2011 Feb;54(1):263-77. Doi: 10.1044/1092-4388(2010/09-0283). Epub 2010 Aug 5. PMID: 20689033.
22. https://pubs.asha.org/doi/pdf/10.1044/cicsd_39_F_76
23. Verbeek JH, Kateman E, Morata TC, Dreschler WA, Mischke C. Interventions to prevent occupational noise-induced hearing loss. Cochrane Database Syst Rev. 2012 Oct 17;10:CD006396. Doi: 10.1002/14651858.CD006396.pub3. Update in: Cochrane Database Syst Rev. 2017 Jul 07;7:CD006396. PMID: 23076923
24. Sliwinska-Kowalska M, Davis A. Noise-induced hearing loss. Noise Health. 2012 Nov-Dec;14(61):274-80. Doi: 10.4103/1463-1741.104893. PMID: 23257577

25. https://indianjotol.org/article.asp?issn=0971-7749;year=2014;volume=20;issue=1;spage=29;epage=32;aulast=Naik;type=3
26. Hutchinson Marron K, Marchiondo K, Stephenson S, Wagner S, Cramer I, Wharton T, Hughes M, Sproat B, Alessio H. College students' personal listening device usage and knowledge. Int J Audiol. 2015 Jun;54(6):384-90. Doi: 10.3109/14992027.2014.986691. Epub 2014 Dec 30. PMID: 25547010.
27. Jiang W, Zhao F, Guderley N, Manchaiah V. Daily music exposure dose and hearing problems using personal listening devices in adolescents and young adults: A systematic review. Int J Audiol. 2016;55(4):197-205. Doi: 10.3109/14992027.2015.1122237. Epub 2016 Jan 15. PMID: 2676
28. https://www.tinnitusjournal.com/abstract/amplified-music-with-headphones-and-its-implications-on-hearing-health-in-teens-5954.html
29. You S, Kwak C, Han W. Use of Personal Listening Devices and Knowledge/Attitude for Greater Hearing Conservation in College Students: Data Analysis and Regression Model Based on 1009 Respondents. Int J Environ Res Public Health. 2020 Apr 23;17(8):2934. Doi: 10.3390/ijerph17082934. PMID: 32340352; PMCID: PMC7216199.
30. https://pubmed.ncbi.nlm.nih.gov/33562129/
31. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7837842/
32. https://www.cureus.com/users/366235-satvinder-s-bakshi