

Knowledge, Attitude and Practice About Earphone Use and Its Impact on Hearing Among MBBS Students in A Medical College

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I. INTRODUCTION

Personal listening devices such as earphones and headphones have become ubiquitous among young adults because they can listen to music, participate in online classes, and communicate with others. However, there can be long-term adverse auditory effects from listening for long periods at high volumes. Noise-induced hearing loss (NIHL) is a permanent condition caused by prolonged exposure to excessive sound levels, and it is considered to be one of the most preventable causes of hearing loss. Exposure to sound levels greater than 80 decibels over long periods of time can damage the hair cells of the cochlea, causing permanent hearing loss and symptoms of tinnitus, ear pain, and decreased hearing sensitivity.

According to the World Health Organization, more than one billion young people worldwide are at risk of hearing loss due to unsafe listening practices through personal audio devices. Despite increasing awareness about the harmful effects of excessive noise exposure, unsafe listening habits remain common among students. Assessing the level of knowledge, attitude, and practices (KAP) related to earphone use can help identify risky behaviors and gaps in awareness.

Medical students frequently use earphones for educational and recreational purposes; hence we aimed at making them an important group for studying listening habits. Therefore, the present study aims to assess the knowledge, attitude, and practices regarding earphone use and its potential impact on hearing among undergraduate medical students in a private medical college.

OBJECTIVE

1. To identify ill effects of prolonged personal listening device usage.
2. To understand the prevalence of hearing abnormalities among long term users.
3. To know the habits of medical students towards their hearing safety.
4. To create awareness among medical students regarding long term effects.

II. METHODOLOGY

1. STUDY DESIGN:

Questionnaire based cross sectional study conducted at the tertiary care centre in Perambalur district, Tamil Nadu in 2026.

2. STUDY POPULATION: Medical students and CRMI.

PERIOD OF STUDY: 3 MONTHS (February 2026 – April 2026).

STUDY PLACE: Dhanalakshmi Srinivasan Medical College and Hospital, Siruvachur, Perambalur.

SAMPLING: Convenience sample.

SAMPLE SIZE:

According to Adishesh Kaul et al study, considering the prevalence of Awareness of harmful effects of PLD and hygiene listening practice. as 85% with a precision of 5% and 95% confidence interval, the sample size is calculated as $p^* (1-p)/d^2$ $Z_{1-\alpha/2}$ - two tailed probability for 95% confidence interval = 1.96 p (%) - prevalence of Awareness of harmful effects of PLD and hygiene listening practice. d (%) - precision or allowable error for Awareness of harmful effects of

PLD and hygiene

$$N = 1.96^2 \times 0.85 \times (1 - 0.85) / 0.05^2$$

$$N = 195.91$$

Thus, the total sample size required for the study is 196.

SELECTION CRITERIA:

1. Inclusion criteria:

- Medical students willing to provide informed consent.
 - Medical students currently enrolled in MBBS and residency program.
 - Individual who had used or were currently using earphones of either of sex.
- ##### 2. Exclusion criteria:
- Students with a history of significant hearing impairment unrelated to earphone usage.
 - Individuals with a history of ear surgeries chronic ear infections, or genetic hearing disorders.

STUDY TOOL:

- A pretested semi-structured self-administered questionnaire was used for data collection.
- Questionnaire included demographic details, exposure risk assessment, knowledge, practice and attitude regarding ear phone usage.

VARIABLES:

The primary variable includes demographic details (age, gender, year of study), exposure risk assessment, knowledge regarding hearing safety, attitude and practice towards earphone usage.

III. COLLECTION OF DATA

Data were collected via google form containing 35 structured questions. It included demographic details, specifications of earphone usage, knowledge about hearing safety, practices and attitude towards it. Questionnaire were shared with all MBBS batch students (1st year MBBS to CRMIs) Participation was voluntary, consent obtained through google forms. The study was conducted with adherence to ethical principles and respect for the participants.

IV. RESULT

211 participants responded to questionnaire among them 10 participants reported that they have previous

hearing abnormality, hence they were excluded from the study, remaining 201 responses were analysed and evaluated. (Figure1)

Among 201 participants 63% were females, 37% were males. The mean age of the participants was 21.2 years ranging from 18 to 26 years. (Figure2)

Based on the year of study 21.3% were CRMIs, 11.4% were final year, 13.3% were 3rd year, 35.5% were 2nd year, 18.5% were in their 1st year as shown in the table 1, figure 3. All of the 201 participants reported that they use earphones, majority (56.2%) use in-ear earphones and for nearly past 3 years. 84.1% preferred Bluetooth connectivity among which majority reports for long-term usage. Average daily usage duration of earphones among the study group was reported as 1-2 hours. About 75.1% were preferred within limit volumes and majority rarely cleans their earphones, and almost 60.2% share their earphones as shown in table 2.

Among 201 participants more than 76.6 % had adequate knowledge about noise induced hearing loss and harmful effects of earphones. 86.6% were aware that loud sounds can cause permanent hearing loss, 83.6% were aware of the term NIHL, 71.1% knows that NIHL is preventable, 50.7% were aware about 60/60 rule, 71.6% were aware that tinnitus is the earliest sign, 80.1% were aware that earphone usage may lead to ear infection, 51.2% knows about WHO's standard recommendation for personal audio devices, 85.1% were aware about noise cancelling earphones, 40.8% were aware about NIOSH- SLM app, as depicted in table 3.

While assessing the attitude of the participants most of them expressed a positive attitude towards the prevention of hearing loss. 74.3% agreed hearing loss is a serious issue, 88.6% agreed to take breaks often while using earphones, 80.2% agreed the importance of hearing the hearing test in routine health check-up, 74.3% were willing to avoid sharing of earphones, 65% agreed to avoid using earphones in noisy places, 72.8% were willing to avoid earphones due to their ill effects, 81.7% opted for the need of awareness programmes to promote safe hearing, 85.5% reported to reduce their earphone usage. All the highlighted data shows the proactive attitude of the study group in protecting their hearing ability, as depicted in table 4. On assessing the practice followed by participants 76.2% use earphones while travelling, 41.1% use earphones while sleeping, 50.7% of the study group

does not exhibit any of the symptoms. Majority (35.3%) experienced ear pain, only 27.9% of the total reports that they have done hearing test in the past 2 years, as depicted in table 5. This points towards the gap in transforming knowledge into practice.

V. DISCUSSION

With increasing use of personal listening devices and unsafe practices, among young adults made it an important public health concern. This study analysed the Knowledge, attitude, and practice earphone usage and its impact among medical students and the results of the study shows growing dependence on listening devices for entertainment and for academic purposes, etc., Our study involves Female participants more than male participants and mean age is 21.2 yrs. Study shows majority uses Bluetooth connectivity earphones and they are the one who reports longer duration of usage. This is in accordance with Ramya et al study that shows more Bluetooth connectivity causing long term usage. Almost 60% reports that they share earphone in suchdev et al study 49%reported almost the same. Reduced volume limit shows awareness among young minds about their hearing health.

Our study highlights higher level of knowledge (76.6%) regarding listening device safety. Similar to Leelavathi et al study in 2025 showing 80% knowledge accuracy .83.5% of the participants were aware about NIHL, in accordance with Kaul et al study showing 80% but in contrast to Reckh et al study showed only 18 %. About 60/60 rule only 50.7% were aware and regarding NIOSH SLM APP only 40.8% were aware that denotes the need for awareness about recent advances.

Attitude wise results of our study shows positive outcome. Many shows proactive attitude regarding hearing safety ,72.8% willing to avoid earphone usage and 88.6% willing to take breaks in between. This is in accordance with Kaul et al 87.1 %willing to avoid usage still very lesser section of the study group reports not to follow safety measures. This emphasises the need for more awareness programme and strategies.

Nearly 49.3% exhibit self-reported symptoms like ear pain, ear obstruction, discharge, hearing impairment etc., this is similar to Kaul et al showing 55.25% with symptoms but in contrast with Ramya et al showing 83% with symptoms. About 76.2% admits they use

earphone while traveling or driving in contrast Kannan et al study says only 28% uses while travelling. In our study 41.1% admits they use earphone while sleeping .in Ramya et al study 28% says they use earphone while sleeping.

Only 27.9%reports they have undergone hearing assessment in last 2 years, better than 8.5%with kaul et al studies. But among medical students' health assessment must have been improved promoting earlier interventions.

Limitation of the study includes self-reported data, recall bias, data pertaining to single institution not focusing broader study group. The study can be developed among larger student population in future. Our study concludes by emphasising the importance of bridging the knowledge -practice gap.

VI. CONCLUSION

Our study concludes that earphone usage is highly prevalent among MBBS students, with many carrying out unsafe listening practices despite having moderate awareness regarding hearing-related risks. Although participants showed a generally positive attitude toward hearing protection, the persistence of prolonged usage and high-volume listening indicates a gap between awareness and actual behaviour.

The findings highlight the need for increased education regarding safe earphone practices and hearing health. Public health initiatives, awareness campaigns, and preventive strategies should be implemented to encourage safer listening habits and reduce the future burden of hearing impairment among young individuals.

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9. Do you have preexisting hearing abnormality?
211 responses

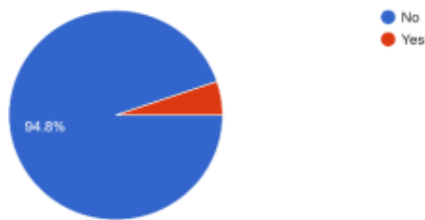


Figure 1

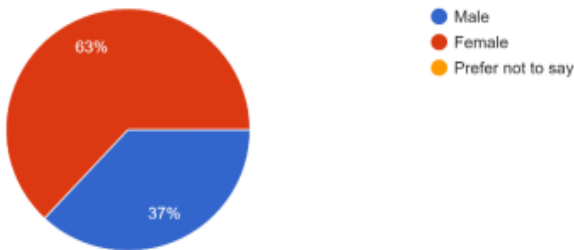


Figure 2

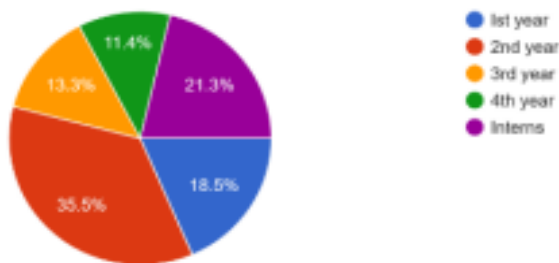


Figure 3

Table 1: Demographic details of participants

Demographic details	Frequency	Percentage
Age in years		
18	30	14.9%
19	33	16.4%
20	21	10.4%
21	20	10.0%
22	35	17.4%

23	20	10.0%
24	16	8.0%
25	17	8.5%
26	9	4.5%
Gender		
Male	74	37%
Female	127	63%
Year of study		
1 st year	39	18.5%
2 nd year	69	35.5%
3 rd year	27	13.3%
4 th year	24	11.4%
CRMIs	42	21.3%

Table 2: Earphone usage

	Frequency	%
Do you use earphones?		
Yes	201	100%
No	0	0%
Type of device		
In-ear phones	113	56.2%
Over earphones	32	15.9%
Both	56	27.9%
How long have you been using it?		
<1 year	19	9.5%
1-3 years	85	42.3%
3-5 years	47	23.4%
>5 years	50	24.9%
Type of connectivity		
Bluetooth	169	84.1%
Wired	32	15.9%
Range of volume		
Within limit	151	75.1%
Above limit	50	24.9%
How often clean your earphones?		
Daily	42	20.9%
Rarely	143	71.1%
Never	16	8%
Do you share your earphones?		
Yes	121	60.2%
No	80	39.8%

Table 3: Knowledge about earphone usage and its effect on hearing

1. Loud sounds cause permanent hearing loss	Frequency	%
Yes	174	86.6%
No	27	13.4%
2. Aware of term NIHL		
Yes	168	83.6%

No	33	16,4%
3.NIHL is preventable		
Yes	143	71.1%
No	58	28.9%
4.Aware of 60/60 rule		
Yes	102	50.7%
No	99	49.3%
5.Tinnitus is early sign		
Yes	144	71.6%
No	57	28.4%
6.Aware of NIOSH-SLM app		
Yes	82	40.8%
No	119	59.2%
7.Prevalance of ear infection		
Yes	161	80.1%
No	40	19.9%
8.WHO standard for PLD		
Correct	103	51.2%
Incorrect	98	48.8%
9.Earphone leads to ear pain		
Yes	152	75.6%
No	49	24.4%
10.Noise cancelling earphones reduce need of volume		
Yes	171	85.1%
No	30	14.9%

Table 4: Attitude towards earphone usage and hearing loss

Hearing loss serious issue	Frequency	%
Agree	149	74.3%
Neutral	42	20.9%
Disagree	10	4.8%
To take break between usage		
Agree	178	88.6%
Neutral	16	8.0%
Disagree	7	3.4%
Importance of hearing test in health checkup		
Agree	161	80.2%
Neutral	35	17.4%
Disagree	81	2.4%
Avoid sharing earphones		
Agree	149	74.3%
Neutral	41	20.4%
Disagree	11	5.3%
Avoid using earphones in noisy places		
Agree	130	65%
Neutral	19	24.4%
Disagree	22	10.6%
Try to avoid earphones &		

prefer other modalities		
Agree	146	72.8%
Neutral	40	19.9%
Disagree	15	7.3%
Awareness programme needed to promote safe hearing		
Agree	164	81.7%
Neutral	28	13.9%
Disagree	9	4.4%
Ready to reduce earphone usage		
Agree	171	85.5%
Neutral	36	17.9%
Disagree	6	3.4%

Table 5: Practice adopted by participants for earphone usage

Have you experienced any of the following	Counts	%
Ear discharge	3	1.5%
Ear obstruction	7	3.5%
Ear pain	71	35.5%
Ear pain, Ear discharge	5	2.5%
Ear pain, Ear discharge, Ear obstruction	1	0.5%
Ear pain, Ear discharge, Ear obstruction, Ringing sensation	1	0.5%
Ear pain, Ear obstruction	2	1.0%
Ear pain, Ear obstruction, Ringing sensation	1	0.5%
Ear pain, Ringing sensation	5	2.5%
Neither of the above	102	51.0%
Ringing sensation	3	1.0%
Sleep with earphones in		
Yes	54	26.9%
No	118	58.7%
Maybe	29	14.4%
Earphones while travelling		
Yes	133	66.2%
No	48	23.9%
Maybe	20	10.0%
Done hearing test in past 2 years		
Yes	56	27.9%
No	145	72.1%