



The Social Behaviour and Perceived Impact of Headphone Use across Selected Tertiary Institutions in Ilorin, Kwara State, Nigeria

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Abstract

Background: Noise is regarded as sound generated as a byproduct of artificial or natural activities introduced directly or indirectly into the environment, usually at levels above 80 dB. Daily exposure to noise in many occupations may impair hearing, reduce efficiency, or both. **Objectives:** This study aimed to evaluate the headphone usage habits among adolescents in selected tertiary institutions in Ilorin and to examine adolescents' perceptions regarding the impact of headphone use on their hearing health. **Methodology:** Data were collected from respondents across three universities in Kwara State using a descriptive survey research approach through a structured questionnaire to gather data from the students. The sample was drawn randomly in three key zones of the institutions – the Administration building area, the university bus park and the University library. Background sound levels in these areas were also recorded. The collected data were analysed using descriptive statistics using SPSS 20, and the results were presented in frequencies and percentages to highlight trends across the study variables. **Result:** The findings reveal that most respondents (43.5%) prefer listening to music at medium volumes, with fun and relaxation (74.5%) being the primary motivations for headphone use. However, a significant portion experiences adverse effects such as ear soreness, ringing in the ears, and distraction (62.0%). Despite these issues, many respondents lack concern about potential hearing loss, highlighting a gap in awareness about the risks of excessive sound exposure. Additionally, the study finds that respondents often use headphones as part of their daily routine, with 43% occasionally removing their headphones to engage in social interactions. **Conclusion and recommendations:** Several factors influence adolescents in these universities. Their behaviour, perceived health implications, and experiences differ based on the duration and volume of exposure and background noise levels. The study recommended developing guidelines to promote mindful headphone use in shared spaces, considering the growing incidence among young persons. Parents, educators, and healthcare professionals should play active roles in raising awareness about safe listening habits.

Keywords: Auditory health, Headphone use, Hearing loss, Listening habits, Safe listening practices, Social interaction, Youth behaviour.

Introduction

Noise-induced hearing impairment (NIHI) is rarely a public health priority in developing countries like Nigeria because noise pollution laws are limited or poorly enforced. In rapidly industrialising areas, many workers exposed to noise are unaware of the associated health risks (Musiba, 2020). The World Health Organization (WHO, 2015) warns that over 1.1 billion young adults are at risk of hearing loss due to exposure

to high sound levels from personal audio systems (PAS) and exposure to high sound levels at noisy venues such as nightclubs, bars and sporting events. Hearing loss can severely impact employees' physical and mental health, education, and productivity. Studies show that nearly 50% of young people (aged 12-35) in middle- and high-income countries are exposed to noise from personal devices, and around 40% face hazardous noise at entertainment venues

(Fink & Mayes, 2021). Exposure to sounds above 85 dB for eight hours or 100 dB for 15 minutes can cause hearing damage (WHO, 2015). Hearing loss from high sound levels, including music and occupational noise, can result in gradual, irreversible and bilateral sensorineural loss in the ear (Jahn, 2022). This problem can escalate into a public health issue as more individuals experience symptoms like tinnitus, dizziness, intolerance to loud sounds, and earache (Fink and Mayes, 2021). Non-auditory effects include sleep disorders, cardiovascular issues, stress, fatigue, and hypertension (Mehrotra et al., 2024).

Personal audio devices, such as earbuds or headphones, are used for listening without disturbing others. They have popularised extended headphone use and posed risks of permanent hearing loss if misused (Fink and Mayes, 2021). Listening to iPods is an everyday activity among college students, but there are concerns about acoustic overexposure (Kornisch et al., 2024). A study shows that earbud-style earphones produce higher sound than over-the-ear models (Fligor & Cox, 2004). Sound levels from personal music systems can range from 80 to 121 dBA (Williams, 2005), with earbud-style earphones often leading to higher listening volumes in noisy environments (Hodgetts et al., 2007). Safe listening depends on the intensity and duration of sound exposure and background noise. Permissible noise exposure has been defined for the general environment: occupational settings, construction and quarry sites, places of worship, entertainment and recreational activities in Nigeria (NESREA, 2009). Recreational noise, such as concerts and personal music devices, can expose ears to dangerously high sound levels, damaging sensory cells in the cochlea that do not regenerate once lost (Harrison, 2008). Certain factors, such as genetics, age, diabetes, hypertension, smoking, and exposure to ototoxic medications, can increase susceptibility to noise-induced hearing loss

(Ding et al., 2019). Since noise-induced hearing loss is irreversible, prevention remains the best strategy. Despite Nigeria's noise pollution regulations, there are none specific to headphone use, which poses significant health risks, making this study assess the headphone habits of adolescents across three tertiary institutions in Ilorin and their perceived impacts on hearing health.

Materials and methods

Study design

A descriptive cross-sectional survey was employed for this study to include three universities in the Ilorin metropolis: one federal, one state, and one private institution (Figure 1). The study was conducted at the University of Ilorin (UNILORIN), Kwara State University (Kwasu), and Al-Hikmah University (AL-HIKMAH). A total of 200 respondents participated: 80 from the University of Ilorin, 70 from Kwara State University, and 50 from Al-Hikmah University, based on the ratio of the population of students in the universities. All participants were ensured they owned a phone and a personal listening device.

Questionnaire development

The questionnaire had three main sections:

1. **Demographic Information:** This section gathered data on age, gender, level of education, and frequency of headphones.
2. **Headphone Usage Habits:** Participants were asked about their preferred type of headphones, duration of use per day, volume levels, and contexts of use (e.g., studying, commuting, and leisure).
3. **Perceived Impact on Hearing Health:** This section assessed participants' awareness of safe listening practices, perceived risks of hearing loss, and any experiences of hearing-related issues attributed to headphone use.

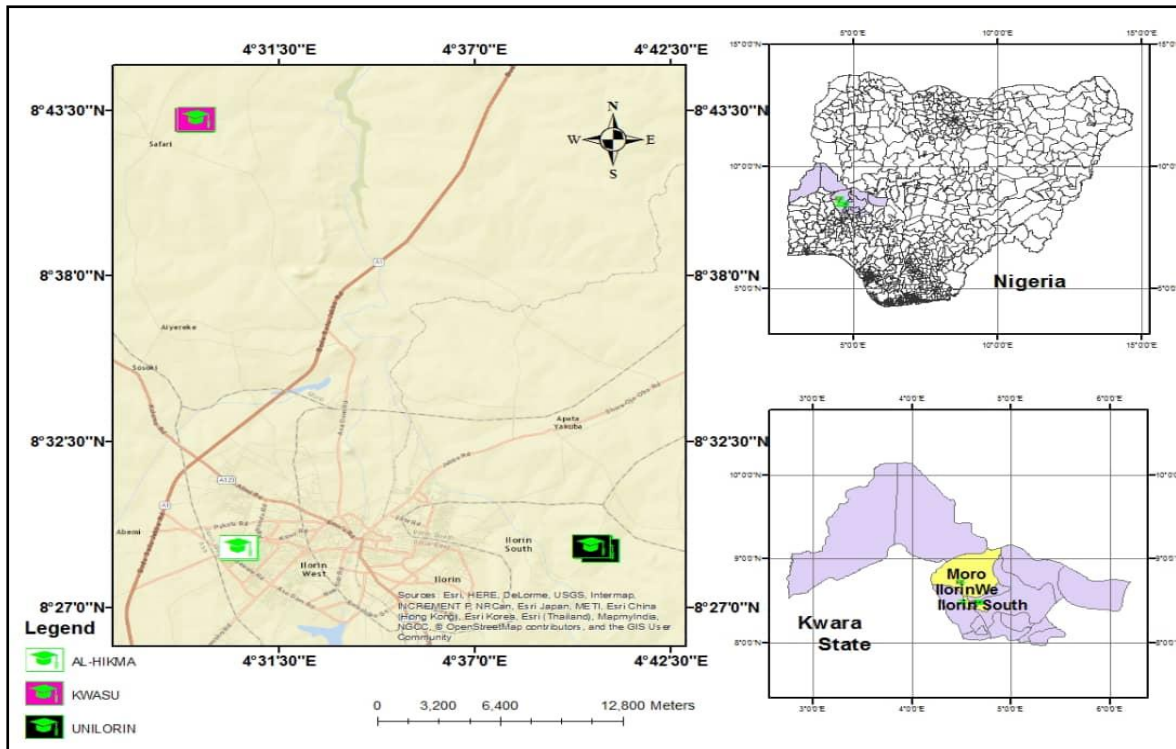


Figure 1: The GIS map shows the locations of the respondents.

Table 1: The coordinates and background sound levels of the study locations

University	Location	Latitude	Longitude	Sound level (dB)
Kwara State University	Admin area	8°72'.00"N	4°48'47.02"E	57.5 ± 0.37
	Bus stop area	8°71'.93"N	4°48'57.04"E	70.0 ± 1.19
	Library area	8°72'.00"N	4°48'61.17"E	42.1 ± 0.83
University of Ilorin	Admin area	8°48'.30"N	4°67'23.94"E	56.0 ± 0.39
	Bus stop area	8°48'.11"N	4°67'56.62"E	62.8 ± 0.54
	Library area	8°48'.35"N	4°67'16.19"E	52.2 ± 0.40
Al-Hikmah University	Admin area	8°48'.30"N	4°50'56.55"E	71.5 ± 0.49
	Bus stop area	8°48'.19"N	4°50'63.64"E	70.9 ± 2.25
	Library area	8°48'.29"N	4°50'54.96"E	62.5 ± 0.63

Data collection and analysis

The questionnaire was administered in person, and data collection was conducted over four weeks to account for temporal variability and capture a broader range of responses to social behaviour from respondents. A sound level meter (Lutron SL-4012) measured background

noise, while GPS recorded the coordinates of the sample area (Table 1). Participants completed the administered copies of the questionnaire, with the interviewer assisting where necessary. Confidentiality was strictly maintained throughout the process, and the copies of the questionnaire were administered individually to

ensure maximum cooperation from participants (Figure 2). Data obtained from the completed copies of the questionnaire were coded and analysed using statistical software (e.g., SPSS

version 20). A chi-square test was conducted to explore relationships between variables, with a significance level set at $p < 0.05$.



Figure 2: Interview process at (a) KWASU, (b) UNILORIN and (c) AL-HIKMAH

Results

Table 2 shows the demographic profile of the 200 respondents with no institutional specifications. The largest age group was 20-25, accounting for 45.5% of the sample size, while respondents aged 30-35, with just 10%, constituted the smallest group. Most of the respondents are single (73%), and a nearly even split exists between religious affiliations, with 52.3% identifying as Muslim and 47.2% as Christian. More respondents were male (60%) compared to female (40%), and a higher proportion of respondents were at higher academic levels (73%) than those at lower academic levels (27%). Figure 3a highlights the music-volume listening habits of the respondents. A little above one-third (43.5%) reported listening at medium volume, followed by 31.5% at low volume. A smaller portion listens to music at high (17.5%) or very high (7.5%) volumes. Figure 3b provides additional insight into music listening frequency, showing that 29% listen to music 2-3 days per week, while another (26.5%) listens 1-2 days per

week. The percentage decreases progressively for higher listening frequencies, with only 2.5% listening to music 5-6 days per week. The usage and experiences of headphone users are displayed in Table 3. The most common reason for using headphones is for fun (41.5%), followed by pleasure (33%). Only 18% use headphones to read, and a smaller group (7.5%) uses them to ease tension. Regarding the duration of daily music listening, 38% listen for 30 minutes, and 32% for 1 hour, with smaller percentages listening for two or more hours. Experiences during headphone use vary, with 23% reporting distraction and 21.5% experiencing ear ringing. However, 29.5% reported no current adverse experiences. A slight majority (59%) had been corrected for using headphones in public, while 41% had not. The reactions to such corrections show varied degrees of annoyance: 42% stated it depends on who gives the advice. In contrast, others felt varying irritation levels, ranging from slight annoyance (20%) to extreme annoyance (5.5%). Figure 4 shows how often respondents remove their headphones to engage in face-to-face conversations.

Table 2: The demographic profile of the respondents (n=200).

Description	Responses	Frequency	Percentage (%)
Age Distribution	15-20	40	20.0
	20-25	91	45.5
	25-30	49	24.5
	30-35	20	10.0
Marital Status	Single	146	73.0
	Married	54	27.0
Religion	Christian	95	47.2
	Muslim	104	52.3
	Traditional	1	0.5
Sex	Male	120	60.0
	Female	80	40.0
Level of Education	100L – 200L	54	27
	300L and above	146	73

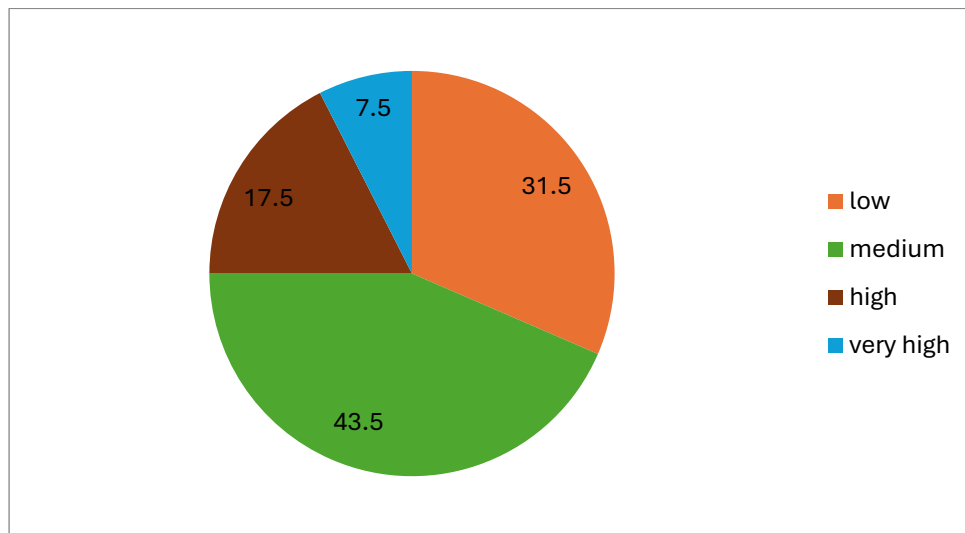


Figure 3a: Listening volume levels for headphone use among participants

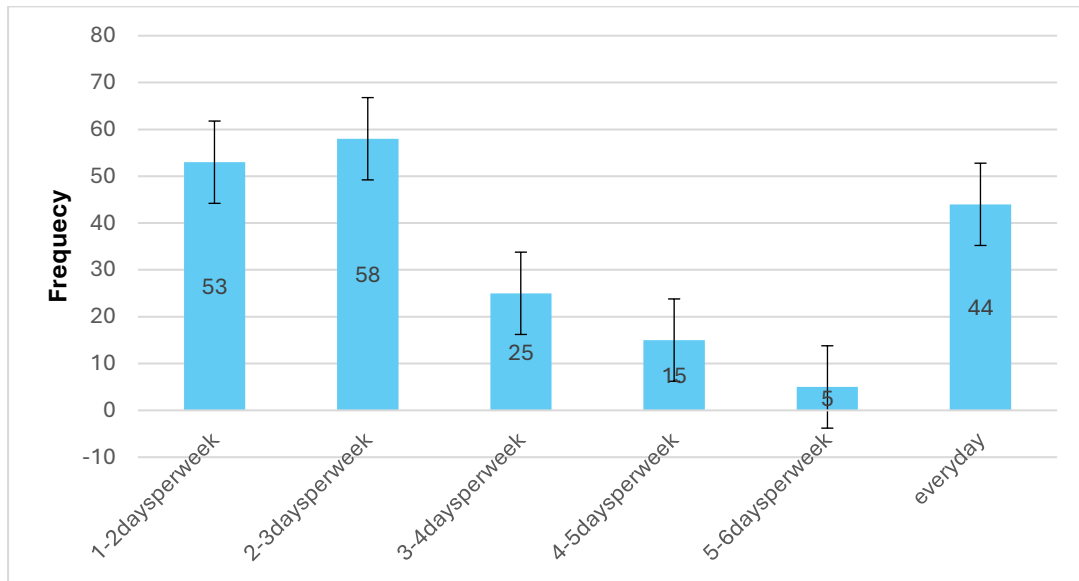


Figure 3b: Headphone music listening habits

Table 3: Responses of respondents on consistent headphone use

Questions	Responses	Frequency	Percentage
Reasons for consistent headphone use	Pleasure	66	33.0
	To ease pressure	15	7.5
	To read	36	18.0
	Fun	83	41.5
Daily music listening duration	30 minutes	76	38.0
	1-hour	64	32.0
	2-hour	23	11.5
	3-hour	12	6.0
	More than 3-hour	25	12.5
Experiences during headphone music sessions	Soreness in the ears	35	17.5
	Distraction	46	23.0
	Ringing in the ears	43	21.5
	Slight hearing loss	13	6.5
	None of the above	59	29.5
	All of the above	4	2.0
Instances of being corrected for using headphones in public	Yes	118	59.0
	No	82	41.0
Responses to cautionary advice on headphone listening	It annoys me	34	17.0
	It annoys me a little	40	20.0
	It annoys me extremely	11	5.5
	I am different	31	15.5
	It depends on who	84	42.0

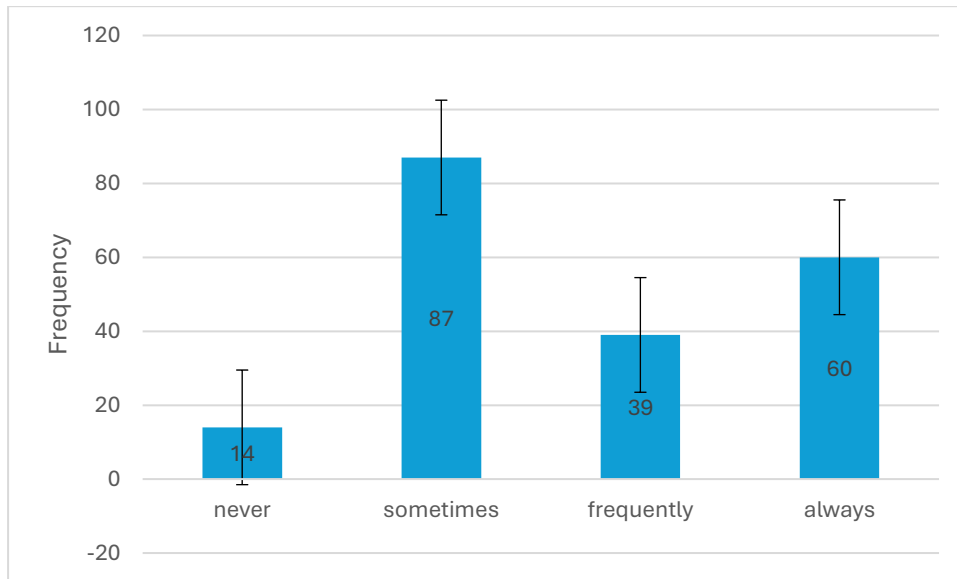


Figure 4: Frequency of removing headphones for conversations

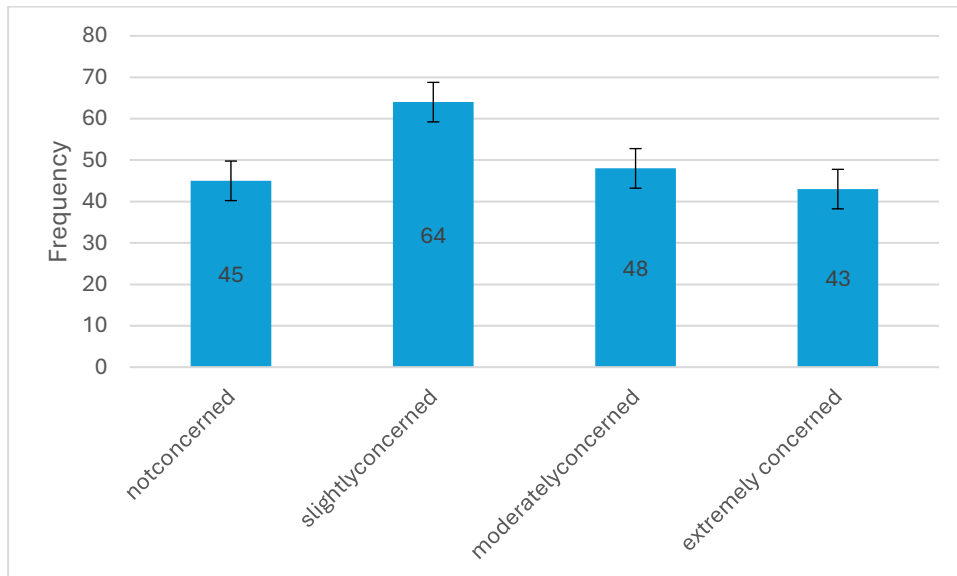


Figure 5: Concerns about hearing loss due to headphone use

The largest group (43%) reported occasionally needing to remove their headphones, while 30% indicated they always do, and only 7% stated they never have to. Figure 5 demonstrates varying levels of concern about hearing loss, with 64 respondents slightly concerned, 48 moderately concerned, and 43 extremely concerned, while 45 expressed no concern. The results from Table 5 reveal that while a significant majority (77.5%) of the respondents know the potential adverse health impacts of headphone use, only 59.4% have detailed

knowledge of these impacts. The insight into how awareness and knowledge are distributed across academic levels is shown in Table 6. Though higher academic levels (300L and above) have more respondents who are aware and knowledgeable of headphone use risks, the Chi-square analysis (p -values of 0.510 and 0.327 for awareness and knowledge, respectively) suggests that academic level is not a statistically significant factor in influencing awareness or knowledge.

Table 5: Level of awareness and knowledge of perceived health impact of headphone use

Variable	Responses	Frequency	Percentage
Awareness of the negative impact (n=200)	Yes	155	77.5
	No	45	22.5
Knowledge of the negative impact (n=155)	Yes	92	59.4
	No	63	40.6

Table 6: Relationship between academic level and perceived health impact of headphone use

Variable	100L – 200L		300L and above		Sig. Level
	Yes	No	Yes	No	
Awareness of the negative impact	33	21	97	49	0.510*
Knowledge of the negative impact	21	17	71	46	0.327*

*p ≤ 0.05

Discussion

The results of this study provide a comprehensive overview of headphone use, as well as the related habits and concerns among respondents across three universities. The varying background sound levels across university locations emphasise the influence of the environment on auditory health and the potential need for noise management strategies in higher education institutions. Bus stops, in particular, showed consistently high sound levels, which could pose long-term risks to individuals frequently exposed to such noise (EEA, 2008). These results highlight the natural dynamics of sound exposure across different environments, which may influence individuals deciding to use headphones to drown external noise. Conversely, the lower sound levels in library areas reinforce the importance of maintaining quiet spaces conducive to concentration and learning (Ojennus & Watts, 2017).

The demographic distribution reflects a youthful, predominantly single population with a nearly equal religious representation; this demographic could engage in social and recreational activities, reflected in using headphones for fun or pleasure.

The finding aligns with Avdeeff's (2014) report, which concluded that young people have developed a habit of listening to music downloaded onto their phones or streamed from the internet. The findings on headphone

use illustrate a prominent trend of listening at medium volume, suggesting that most individuals might be aware of the potential risks of loud music.

However, a significant portion still listens at either high or very high volumes; this raises concerns about the long-term auditory health implications, as reported by Fink & Mayes (2021) in users as young as 9 years old, with the highest risk occurring in those who listen for more than one hour daily at over 50% volume for more than five years. The adverse experiences of ringing in the ears and distraction indicate potential harm associated with prolonged or frequent public headphone use. However, as many respondents reported no negative experiences, there is the possibility of varied physiological or behavioural impacts of headphone use (Besser et al., 2022). The results also reveal a nuanced social aspect of headphone use. A significant number of respondents reported having to remove the headphones to engage in physical conversations and being corrected for wearing headphones in public, with varied reactions based on who was giving the advice; this highlights the complex relationship between individual autonomy in personal entertainment choices and social norms around public behaviour. Schwartz (2000) suggests that when freedom, autonomy, and self-determination are taken to extremes, optimal functioning will shift focus away from individual freedom to

some societal and cultural constraints essential for leading meaningful and fulfilling lives.

Additionally, many respondents' moderate concern about hearing loss contrasts with the number not concerned at all, despite regular headphone use. This dissonance highlights the need for more education on the risks of excessive exposure to loud sounds through personal audio devices. Although there is a high level of general awareness, it does not always translate into in-depth understanding, as Kelly et al. (2015) reported. Other variables, such as personal interest or exposure to health information, might play a more crucial role in understanding the risks. Efforts should focus on deepening knowledge to drive behavioural changes. Additionally, interventions may need to target students across academic levels, as no significant difference was found between 100L-200L and 300L+ students regarding awareness and knowledge.

Conclusion and recommendations

These findings highlight the influence of environmental and personal factors on headphone use. There is a need for more education about the risks of prolonged exposure to high sound levels and the importance of balancing entertainment with auditory health. Developing guidelines or interventions to reduce distractions and health risks, especially in noisy areas like bus stops, is also crucial. As headphone use becomes a daily habit for many, especially young adults, understanding its health and social implications is essential. Parents, healthcare professionals, and educators have roles in promoting safe listening habits and raising awareness of the potential dangers of loud noise exposure. Universities and institutions could implement social guidelines to encourage mindful headphone use in shared spaces. Further research, particularly longitudinal studies, is needed to examine the long-term health effects of frequent headphones on hearing.

Human health implications of the study

The study highlights several potential health implications of student headphone use,

including hearing loss, tinnitus, psychological effects, ear infections, reduced focus, headaches, and lack of awareness of the immediate surroundings.

Limitations of the study

Since the responses are self-reported, participants might underreport or overstate headphone usage habits or health effects. Other environmental or lifestyle factors affecting health outcomes, such as previous exposure to noise or pre-existing ear conditions, might not be fully accounted for.

Informed consent

Informed consent was secured from all participants, and anonymity was maintained throughout the research process. Participants were informed of their right to withdraw from the study at any time without any consequences.

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