Choose Ohio First Perception of Hearing Loss as a Result of Headphone Use Compared to Hearing Threshold of Korean Adolescents Associated with the Use of Personal Music Players

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INTRODUCTION:

Studies have shown that noise-induced hearing loss is the second most common form of sensorineural hearing deficit, after presbycusis (Rabinowitz, 2000). The prevalence of an early-onset of hearing loss has increased as a result of the use of personal listening devices. In this study, we examined the awareness of the potential damage to hearing sensitivity that may be caused by headphone use, among Choose Ohio First students. We used this information to compare with another study that looked at Korean adolescents hearing threshold and their total headphone usage rate.

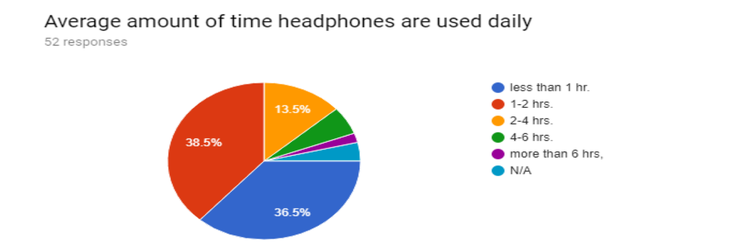
OBJECTIVES:

This study aims to collect information from Choose Ohio First scholars including their daily headphone usage habits and their perception of headphone usage on hearing related problems. Our hope is to use education in the future as a preventative method for noise-induced hearing loss, while preserving and protecting current hearing ability.

METHODS:

Using a Google Survey, we collected data encompassing:

- Age, Major, Headphone Use (including type, duration, and loudness level), current hearing ability, perception of hearing loss, opinions on if preventative methods exist, and if behavior would change if the scholar was aware of the damaging effects headphones could cause to their hearing.



Total use period (yrs)	0	28 (5.7)
	0-1	108 (22.0)
	1-3	237 (48.4)
	3-5	93 (19.0)
	> 5	24 (4.9)
Total		490 (100)

Figure 1. Choose Ohio First students average daily headphone use vs. Korean adolescents overall usage period* Classic iPod ear buds at 100% volume on an iPhone can hit noise levels of 112dB HL for the wearer, leading to hearing damage in minutes. The same earbuds at 60% volume measure approximately 80 dB HL, which makes them safe to listen to for several hours (Audio Recovery, 2018). *

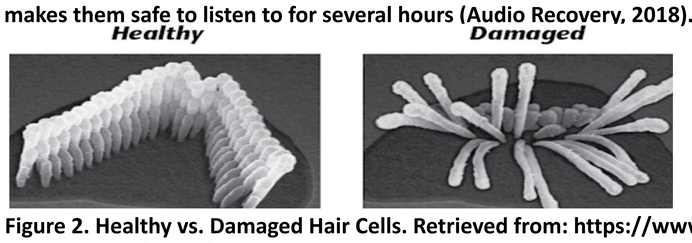


Figure 2. Healthy vs. Damaged Hair Cells. Retrieved from: https://www.oshatrain.org/mods/751m1.html

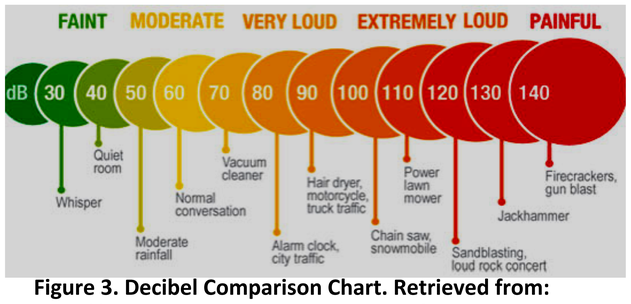


Figure 3. Decibel Comparison Chart. Retrieved from: http://www.ototronixdiagnostics.com/hearingconservation.html

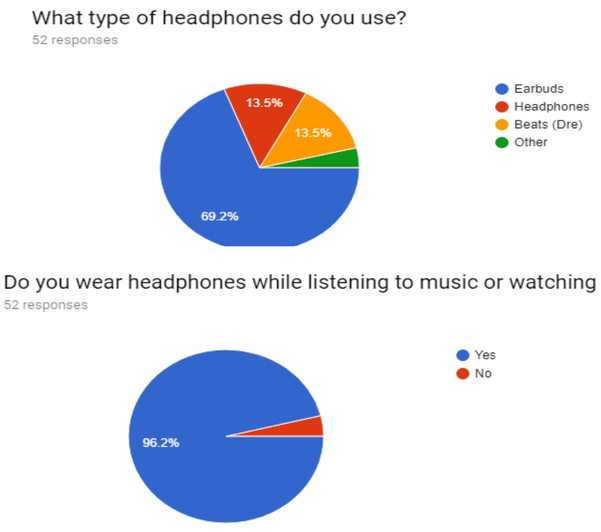


Figure 4. Headphone type: insert, over the ear, noise-cancelling, and other.

RESULTS:

Subjective data captured from Choose Ohio First students shows that students who listen to moderate to kind of loud music for varying periods of time do not have trouble hearing regularly, but they do believe that listening to loud music with headphones on can cause hearing loss. In contrast, the study on Korean adolescents revealed that there was a significant increase in hearing thresholds for Koreans that listened to portable music players for over 5 years compared with Koreans that listened to portable music players for less than 1 year (Kim et al., 2009).

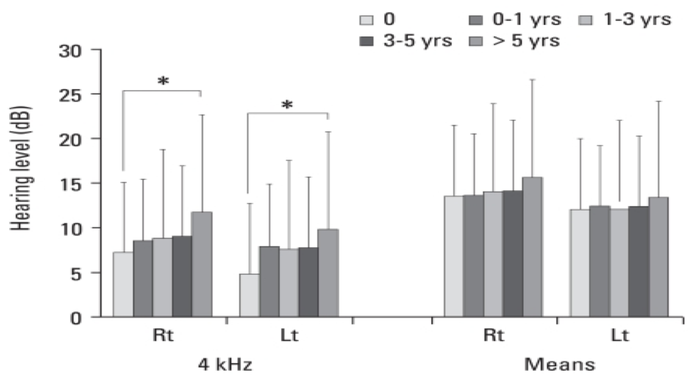


Figure 5. Koreans Hearing Threshold and Means According to Total Use Period

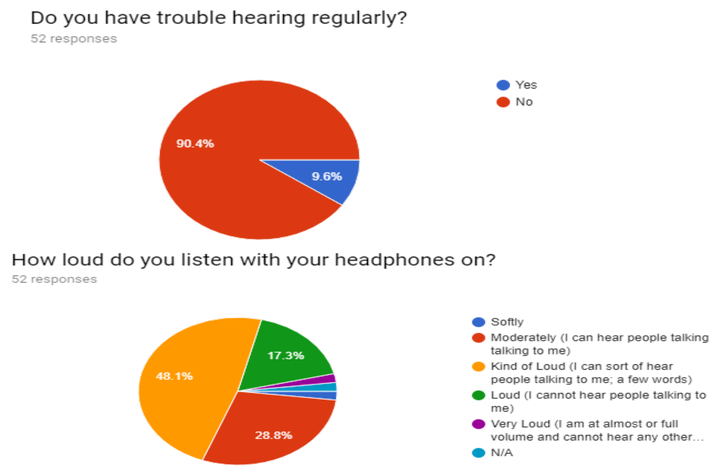


Figure 6. Perception of Hearing Ability and Personal Listening Device Level

CONCLUSIONS:

We can conclude that the Choose Ohio First students who listen to loud music for moderate stretches of time do not report that they have subjectively noticed any difficulty hearing, but the students would be likely to change their headphone usage habits if they knew that listening to loud music could potentially cause hearing loss. In the case of the Korean adolescents, we can conclude that portable music players can have a deleterious effect on hearing threshold in Koreans (Kim et al., 2009).

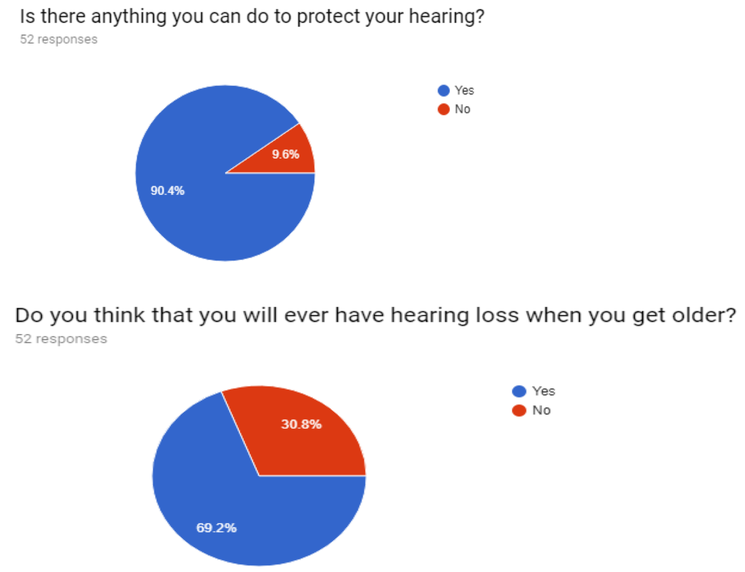


Figure 7. Perception of Presbycusis

FUTURE WORK:

- Do some headphone types place restrictions on the volume level attainable on personal listening devices?
- Do certain music types influence the user to increase or decrease volume levels?
- Do students who perceive that their hearing is normal actually have normal hearing?
- Does gender play a crucial role in assessing hearing ability after establishing greater recreational activity in noisy environments for one gender over another?

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