



Overview of Knowledge, Attitudes and Behavior of Jakarta Online Ojek Drivers Regarding Hearing Impairment Due to Use of Earphones

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ABSTRACT

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Hearing loss due to noise or Noise Induced Hearing Loss (NIHL), a disorder that cannot be cured, is permanent, irreversible and preventable. The aim of the research was to determine the knowledge, attitudes and behavior of online motorcycle taxi drivers in Jakarta regarding hearing loss due to the use of earphones. This research took place from March - April 2023. The research design used was descriptive research with a cross sectional study approach. The number of samples for this research was 61 respondents based on the Lemeshow formula. The data collection technique uses a Google form link that has been created, then the data is processed using univariate analysis. The research results showed that 50 respondents (82%) were in the good knowledge category, 60 respondents (98.4%) were in the attitude bad, and 38 respondents (62.3%) were categorized as good behavior.

KEYWORDS:

Hearing Loss Due to Noise, knowledge of using earphones, online motorcycle taxi drivers

INTRODUCTION

Noise-induced hearing loss (NIHL), an incurable disorder, is a common problem in the environment¹. NIHL is permanent, irreversible, and often encountered, but NIHL can be prevented². NIHL refers to hearing loss caused by long-term exposure to high levels of noise in the workplace and is categorized as a substantial occupational disease³. NAB or threshold value according to Minister of Manpower Decree No. per-51/ MEN/ 1999, ACGIH, 2008 is 85 dB for workers who are working, which is the average that workers can still receive without losing hearing power for a continuous period of no more than 8 hours per day or 40 hours per week⁴.

In 2015, the World Health Organization (WHO) estimates that more than one billion young people are at risk of hearing loss due to occupational disease due to habit of listening to music at a loud volume and for long periods of time⁵. One of the causes of occupational disease (NIHL) is excessive noise exposure. Prolonged exposure to high-intensity noise is

associated with damage to the sensory hair cells of the inner ear and its development creates a permanent shift in hearing threshold⁶. In the early stages of hearing loss, permanent threshold shifts may be preceded by recurrent, temporary threshold shifts that disappear once exposure to the noise stops⁷. Furthermore, If temporary threshold shift repeat, this could be a permanent threshold shift⁸.

Along with the development of the era, exposure to noise that is often encountered is the use of personal musical instruments, namely earphones. Research by Widen et al with a sample of 280 teenagers who listened to music using earphones for 3 hours or more on every occasion per day, 14.0% reported having subjectively poor hearing. Furthermore, 7–8% reported frequently or always experiencing hearing problems, such as tinnitus, sound sensitivity or sound fatigue⁹.

The author is interested in conducting research on the description of the knowledge, attitudes and behavior of online motorcycle taxi drivers in Jakarta regarding hearing loss due to noise and the use of earphones in their daily activities.

METHOD

The research design used by researchers is descriptive. This descriptive method describes, reports and describes the current real situation from the results of data collection so that a general conclusion can be drawn. This research was conducted in March – April 2023 in Jakarta. The research

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population is online motorcycle taxi drivers in Jakarta, obtained by calculating the number of samples in this study using the Lemeshow formula. From the calculation results, a minimum sample of 60.93 was obtained, rounded up to 61 drivers. With inclusion criteria, namely all online drivers in Jakarta who agree to be used as a sample and exclusion criteria, namely not online motorcycle taxi drivers and online motorcycle taxi drivers who do not agree to be used as a sample.

The data used in this research is primary data, namely data obtained directly from research subjects by means of observation, interviews and using questionnaires. In this research, primary data was used from the results of a questionnaire filled out by a sample of online motorcycle taxi drivers in Jakarta. The instrument used in this research was a Google Form questionnaire which contained questions about the driver's identity (name, age, gender and education), questions about the use of hearing device usage, questions about the driver's attitude towards noise, questions about knowledge about hearing loss.

The technique used in collecting data is by filling out questionnaires to the population randomly. A questionnaire is a list of questions filled in by respondents to obtain written information from the respondent. The questionnaire in this research will be distributed via Google Form.

Hearing device usage questionnaire that shows the respondent's identity, a description that includes frequency, sound intensity, duration of use, type of hearing device, sound source and the respondent's ability to hear environmental noise when using the hearing device with the condition on. This questionnaire follows the questionnaire in previous research by Herman NWP in 2011¹⁰. The knowledge questionnaire regarding hearing loss comes from research entitled MP3 Players and Hearing Loss: Adolescents' Perceptions of Loud Music and Hearing Conservation¹¹. The questionnaire was modified and several items were selected. The questionnaire regarding attitudes towards noise comes from research entitled Youth Attitude to Noise Scale (YANS) questionnaire adaptation into Brazilian Portuguese¹².

The data that has been collected will be edited and then entered into the SPSS application. After that the data was analyzed using the univariate analysis method with the research implementation stages starting from conducting a literature study then the researcher conducted a survey to determine the population and research sample and asked for the willingness of online motorcycle taxi drivers in Jakarta to take part in the research using a questionnaire then the questionnaire data obtained was processed using SPSS in form of presentation, processing and analysis of data which finally reaches the stage of results, discussion and research conclusions. This research has received ethical approval from the medical faculty of the Universitas Kristen Indonesia.

RESULTS

The knowledge aspect regarding hearing loss consists of four questions, namely regarding the impact of noise on a person, the impact of noise due to loud music, the risk due to noise exposure to drivers, and the volume of noise and the risk due to noise. From the results of the questionnaire, the knowledge aspect regarding the use of earphones with the incidence of hearing loss in the frequency distribution above can be divided into 2 categories, namely respondents who have good knowledge (>80% of the question score) and poor (<80% of the question score). Results obtained:

Table.1 Frequency distribution of knowledge aspects of Jakarta online motorcycle taxi drivers regarding hearing loss due to earphones.

Knowledge		
Category	Frequency (F)	Percentage (%)
Bad	11	18
Good	50	82
Total	61	100

From the data above, there were 50 respondents who had good knowledge with a percentage of 82%, while those who had poor knowledge were 11 people with a percentage of 18%. The attitude aspect consists of 20 statements where there are two main parts, namely the respondent's attitude regarding noise due to earphones and noise due to the environment (such as cars, roads, etc.). From the attitude aspect questionnaire regarding the incidence of hearing problems due to earphones in online motorcycle taxi drivers, they were divided into 2 categories, namely respondents who had good attitudes (>80% of the question score) and bad (<80% of the question score).

Table. 2 Frequency distribution of attitude aspects of online motorcycle taxi drivers in Jakarta regarding hearing loss due to earphones.

Attitude		
Category	Frequency (f)	Percentage (%)
Bad	60	98.4
Good	1	1.6
Total	61	100

From the data above, there was 1 respondent who had a good attitude with a percentage of 1.6%, while there were 60 respondents who had poor knowledge with a percentage of 98.4%.

The behavioral aspect regarding hearing loss due to earphones consists of 8 questions and answers were obtained from 61 respondents divided into 2 categories, namely respondents who had good attitudes (>60% question score) and bad (<60% question score)

Table.3 Frequency distribution of behavioral aspects of online motorcycle taxi drivers in Jakarta regarding hearing loss due to earphones.

Category	Behavior	
	Frequency (F)	Percentage (%)
Bad	23	37.7
Good	38	62.3
Total	61	100

From the data above, there were 38 respondents who had good behavior with a percentage of 62.3%, while those who had poor knowledge were 23 people with a percentage of 37.7%.

DISCUSSION

Aspects of knowledge regarding hearing loss in online motorcycle taxi drivers.

Based on the frequency distribution table of respondents' answers to the knowledge component, it was found that there were 50 people with good knowledge with a percentage of 82%. The results of this research are almost the same as the results of research conducted by Napisatul Marliah in 2016 regarding the level of knowledge of class XI students at SMA Pasundan 8 Bandung City regarding the use of earphones¹³. This can be caused by several factors that can influence a person's level of knowledge, such as age, environment, level of education, and information.

Good knowledge regarding the impact of using earphones, especially hearing loss, can be caused by several factors. To increase knowledge, information from formal and informal education is needed so that it influences knowledge and insight¹⁴. The educational level of research subjects, most of whom are high school graduates, greatly influences their level of knowledge.

Attitude aspects regarding hearing loss in online motorcycle taxi drivers

The proportion of respondents who have a bad attitude is as much as 60 people or as big as 98.4% compared with the good attitude of using earphones by 1 person or as many as 1.6%. The results of this research are in line with research at SMA Negeri 7 Kupang City. This also shows that there are still many respondents who are apathetic about their health and the surrounding environment¹⁵.

According to Zaima research in 2016, 86.9% had a bad attitude and only 13.1% had a good attitude¹⁶. The respondent's bad attitude increases the risk that the incidence of NIHL will increase in individuals who are accustomed to using earphones in their daily lives. This is because earphones can be a medium to bring the sound source received closer to the ear, so that the amount of exposure directly received by the ear is greater. In a journal entitled Headphone listening habits, hearing thresholds and listening levels in Swedish adolescents with severe to profound HL and adolescents with

normal hearing, it is said that adults with hearing loss have the same attitudes as adults without (normal) hearing loss. Adults who need to hear louder noises are at risk of worsening the degree of deafness⁹.

Behavioral aspects regarding hearing loss in online motorcycle taxi drivers.

Behavior is everything that the respondent has done regarding knowledge and attitudes. Routine use every time they use earphones to listen to music < 1 hour is 68.9. Unsafe behavior is using earphones >2 hours/day. Using earphones after 1 hour will cause 60% of users to experience a temporary threshold shift, so there is still a tendency to experience hearing loss among respondents using PLDs¹⁷. Most of the results above regarding routine use are in the safe category.

Based on the frequency distribution table of respondents' answers to the behavioral component, it was found that the volume level they used was the majority of 60-70% with 34.4% of respondents. If respondents listened at a higher volume level, they would wear earphones longer >2 hours/day, increasing the risk of NIHL. Herman (2011) quotes from a study by Airo, Erkkö et al, which states that a safe volume is 80% volume which can only be heard for a maximum of 1.2 hours per day and 70% volume can only be heard for 4.6 hours per day. Moreover, the risk of trauma due to noise is greater, so it is best to use it at a low volume because it will be safer¹⁰.

The type of earphone they use most is the earbud type at 52.2%, then the wireless type at 37.7% and the circumaural type at 9.8%. Supra-aural earphones are relatively safe earphones compared to earbuds or canalphones. The limitation of wearing PLDs using supra-aural earphones is that they are allowed to last longer than earbuds before reaching the maximum noise dose. For example, use of earbuds at a volume level of 70% with high-output music is only permitted for 1.4 hours/day, while use with supra-aural earphones is permitted for up to 22.4 hours/day. Another important thing to pay attention to is background noise when using PLDs and sound isolators on earphones. Increasingly loud background noise will increase the sound volume level selected by the PLDs wearer, while a good sound isolator will reduce background sound entering the ear and reduce the increase in sound volume level¹⁸.

77% of respondents could hear conversations well without having to lower the volume when using earphones, the remaining 23% could not. According to Pandi, to experience hearing loss, an exposure time of 1-4 hours with a sound intensity of 120 dB is required. This exposure time and intensity can cause several levels of damage to hair cells and damage to supporting cells, blood vessels and afferent fibers. Noise exposure that is considered safe is 8 hours a day or 40 hours a week with an intensity not exceeding.

CONCLUSION

Based on the results of questionnaire research regarding the description of the knowledge, attitudes and behavior of online motorcycle taxi drivers regarding noise caused by earphones, it can be concluded that the knowledge aspect of online motorcycle taxi drivers in Jakarta regarding hearing loss due to the use of earphones is as much as 50 respondents (82%) were in the good knowledge category and 11 respondents (18%) were in the poor knowledge category. The description of the attitude aspects of online motorcycle taxi drivers in Jakarta regarding hearing loss due to the use of earphones is as follows 1 respondents (1.6%) were in the good attitude category and 60 respondents (98.4%) were in the good attitude category attitude bad and illusory behavioral aspects of online motorcycle taxi drivers in Jakarta regarding hearing loss due to the use of earphones are as many as 38 respondents (62.3%) were in the good behavior category and 23 respondents (37.7%) were in the category bad behavior.

REFERENCES

1. Mehrparvar AH, Mirmohammadi SJ, Ghoreyshi A, Mollasadeghi A, Loukazadeh Z. High-frequency audiometry: A means for early diagnosis of noise-induced hearing loss. *Noise Heal*. 2011;13(55):402–6.
2. Mirza R, Kirchner DB, Dobie RA, Crawford J, Dreger M. Occupational Noise-Induced Hearing Loss. *J Occup Environ Med*. 2018;60(9):E498–501.
3. Nordmann AS, Bohne BA, Harding GW. Histopathological differences between temporary and permanent threshold shift. *Hear Res*. 2000;139(1–2):13–30.
4. MINISTER OF MANPOWER OF THE REPUBLIC OF INDONESIA. Threshold Values for Physical Factors in the Workplace, Minister of Manpower of the Republic of Indonesia. Kep51/Men/1999. 1999;15–20.
5. World Health Organization. Addressing The Rising Prevalence of Hearing Loss [Internet]. World Health Organization: Geneva, Switzerland. 2018. 655–658 p. Available from: <https://apps.who.int/iris/handle/10665/260336>
6. Kurabi A, Keithley EM, Housley GD, Ryan AF, Wong ACY. Cellular mechanisms of noise-induced hearing loss. *Hear Res* [Internet]. 2017;349:129–37. Available from: <http://dx.doi.org/10.1016/j.heares.2016.11.013>
7. Dudarewicz A, Pawlaczek-Luszczynska M, Zaborowski K, Pontoppidan NH, Wolniakowska A, Bramsløw L, et al. the Adaptation of Noise-Induced Temporary Hearing Threshold Shift Predictive Models for Modeling the Public Health Policy. *Int J Occup Med Environ Health*. 2023;36(1):125–38.
8. Ryan AF, Kujawa SG, Hammill T, Le Prell C, Kil J. Temporary and Permanent Noise-induced Threshold Shifts: A Review of Basic and Clinical Observations. *Otol Neurotol*. 2016;37(8):e271–5.
9. Widén SE, Möller C, Kähäri K. Headphone listening habits, hearing thresholds and listening levels in Swedish adolescents with severe to profound HL and adolescents with normal hearing. *Int J Audiol* [Internet]. 2018;57(10):730–6. Available from: <https://doi.org/10.1080/14992027.2018.1461938>
10. Novita I, Mulyati D, Rahayu S. Relationship between the behavior of using ear hearing devices and hearing loss in students of the medical education study program. *Lantern*. 2015;15(13):23–8.
11. Byeon H. Associations between adolescents' earphone usage in noisy environments, hearing loss, and self-reported hearing problems in a nationally representative sample of South Korean middle and high school students. *Medicine (Baltimore)*. 2021;100(3):e24056.
12. Maria A, Zocoli F, Catalani T, Marques JM. Youth Attitude to Noise. *Braz J Otorhinolaryngol*. 2009;75(4):485–92.
13. Rahmi U, Achmad BF, Marlia N. Knowledge of Class X and XI Students About Using Earphones at Pasundan 8 High School, Bandung City. *J Indonesian Nursing Educator*. 2017;2(2):77.
14. Rifqi M, Suherlan E, Yunus A. First Year College Students Knowledge about The Impact of Using Earphones on Noise Induced Hearing Loss (NIHL) in Faculty of Medicine Islamic Bandung University. *Dr Educator Pros* [Internet]. 2019;0(0):203–9. Available from: <http://karyailmiah.unisba.ac.id/index.php/dokter/article/view/1471315>.
15. Joice A, Yeni R, Berek NC, Romeo P. Relationship between knowledge, attitudes and patterns of earphone use and the incidence of tinnitus in students at SMA Negeri 7 Kupang City. 2022;8(2):43–53.
16. Listiana I, Hasan M, Rosmayati W. Determinants of Knowledge Level About the Risks of Using Headsets and Attitudes to Use Headsets in Students. *Edu Masda J*. 2021;5(1):89.
17. TABUK KSA. Saudi Medical Journal for Students (SMJS). *ResearchgateNet* [Internet]. (did):80–91. Available from: [https://www.researchgate.net/profile/Omnia_El_Sefi/publication/342493529_BARRIERS_TO_HEALTH_CARE_SEEKING_REGARDING_DYSMENORRHEA_AMONG_FEMALE_STUDENTS_UNIVERSITY_OF_TABUK_KSA/links/5ef72a77299bf18816ea8124/BARRIERS-TO-HEALTH-CARE-SEEKING-REGARDING-DYSMENORRHEA_AMONG_FEMALE_STUDENTS_UNIVERSITY_OF_TABUK_KSA](https://www.researchgate.net/profile/Omnia_El_Sefi/publication/342493529_BARRIERS_TO_HEALTH_CARE_SEEKING_REGARDING_DYSMENORRHEA_AMONG_FEMALE_STUDENTS_UNIVERSITY_OF_TABUK_KSA/links/5ef72a77299bf18816ea8124/BARRIERS-TO-HEALTH-CARE-SEEKING-REGARDING-DYSMENORRHEA_AMONG_FEMALE_STUDENTS_UNIVERSITY_OF_TABUK_KSA/links/5ef72a77299bf18816ea8124/BARRIERS-TO-HEALTH-CARE-SEEKING-REGARDING-DYSMENORRHEA_AMONG_FEMALE_STUDENTS_UNIVERSITY_OF_TABUK_KSA)

18. Sulaiman AH, Seluakumaran K, Husain R. Hearing risk associated with the use of personal listening devices among urban high school students in Malaysia. Public Health [Internet]. 2013;127(8):710–5. Available from: <http://dx.doi.org/10.1016/j.puhe.2013.01.007>.