



RESEARCH ARTICLE

The level of community behaviour towards hearing loss in Indonesia [version 1; peer review: 1 approved, 1 approved with reservations]

Nyilo Purnami ¹, Indra Zachreini ², Jenny Bashiruddin³, Susyana Tamin ³, Harim Priyono³, Ika Dewi Mayangsari ³, Sagung Rai Indrasari⁴, Tengku Siti Hajar Haryuna⁵, Tjandra Manukbua⁶, Respati Ranakusuma⁷, Ronny Suwento³, Yanuar Iman Santosa⁸, Eka Savitri⁹

¹Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Hospital, Surabaya, 60286, Indonesia

²Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine Universitas Malikussaleh/Cut Meutia Hospital, Aceh Utara, 24351, Indonesia

³Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine Universitas Indonesia/Dr. Cipto Mangunkusumo Hospital, Jakarta, 10430, Indonesia

⁴Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine Universitas Gajah Mada/Dr. Sardjito Hospital, Jogjakarta, 55281, Indonesia

⁵Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine, Universitas Sumatera Utara/Universitas Sumatera Utara Hospital, Medan, 20155, Indonesia

⁶Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Lakipadada Hospital, Makale,, Tana Toraja, 91811, Indonesia

⁷Clinical Epidemiology and Evidence-Based Medicine Unit, Dr. Cipto Mangunkusumo Hospital Jakarta/ Faculty of Medicine Universitas Indonesia, Jakarta, 10430, Indonesia

⁸Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine Universitas Diponegoro, Semarang, 50275, Indonesia

⁹Department of Otorhinolaryngology, Head and Neck Surgery (ORL-HNS), Faculty of Medicine, Universitas Hasanuddin/ Dr. Wahidin Sudirohusodo Hospital, Makassar, 90245, Indonesia

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Abstract

Background: Hearing loss is the most common disability in the world, with a prevalence of 5% of the world's population of 466 million people. Knowledge about noise exposure and hearing protection equipment is related to hearing loss. Health is associated with a person's healthy lifestyle behaviour. This study aimed to determine the level of community behaviour towards hearing loss.

Methods: This study used a descriptive analytical approach with a cross-sectional study design. The population in this study was Indonesian people who were not healthcare workers aged 17 years and over. The sample inclusion criteria included individuals who were not healthcare workers (such as doctors, nurses and midwives *etc.*), aged 17 years and over, and willing to participate in the study. The

Open Peer Review

Approval Status

	1	2
version 1 24 Jun 2022	 view	 view

1. **Maurizio Barbara**, Sapienza University, Rome, Italy

2. **Herman Jenkins**, University of Colorado, Aurora, USA

Any reports and responses or comments on the

sampling method in this study was consecutive sampling.

Results: Based on the distribution of patients, there were more female participants (1484, 61.6%) than male participants. Diploma-3 (D3) was the most common education type, with as many as 1095 people (45.4%), while the least common education type was not in school (eight, 0.3%). Most participants were in the 'employee' profession, namely 509 people (21.1%), while the lowest number of participants was in the Police profession (20, 0.8%). There were significant relationships between the respondent's knowledge and action about hearing loss, and the respondent's knowledge and attitudes regarding hearing loss ($p=0.000$).

Conclusions: There were significant relationships between the respondent's knowledge and actions about hearing loss and the respondent's knowledge and attitude, while there was no significant relationship between the respondent's attitude and actions regarding hearing loss.

Keywords

Human health, Behaviour, Knowledge, Attitude, Hearing loss, Public health



This article is included in the **Sociology of Health gateway**.

article can be found at the end of the article.

Corresponding author: Nyilo Purnami (nyilo@fk.unair.ac.id)

Author roles: **Purnami N:** Conceptualization, Data Curation, Funding Acquisition, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; **Zachreini I:** Conceptualization, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing; **Bashiruddin J:** Conceptualization, Project Administration, Writing – Review & Editing; **Tamin S:** Conceptualization, Data Curation, Formal Analysis; **Priyono H:** Conceptualization, Methodology, Project Administration; **Mayangsari ID:** Conceptualization, Project Administration, Validation, Writing – Review & Editing; **Indrasari SR:** Conceptualization, Writing – Review & Editing; **Haryuna TSH:** Conceptualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Manukbua T:** Conceptualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Ranakusuma R:** Conceptualization, Writing – Review & Editing; **Suwentoro R:** Writing – Original Draft Preparation; **Santosa YI:** Formal Analysis, Visualization; **Savitri E:** Writing – Review & Editing

Competing interests: No competing interests were disclosed.

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Introduction

The behaviour of a person's life, including health, is influenced by many factors. These factors can come from the individual themselves, the influence of others who encourage good or bad behaviour, or environmental conditions supporting behaviour change. For example, a psychologist, Skinner (1938), formulated that behaviour is a person's response or reaction to a stimulus (external stimulus), because this behaviour occurs through the process of a stimulus to someone, and then that person responds. Behaviour that is carried out continuously will become a person's attitude, namely actions, which are based on convictions and beliefs¹⁻³.

The World Health Organization (WHO) estimates that 1.1 billion young people worldwide could be at risk of hearing loss due to unsafe listening practices, which is nearly half of all teenagers and young adults (12–35 years old). About 40% of people are exposed to potentially hearing-damaging noises from clubs, discotheques and bars. Exposure to unsafe high levels of sound from personal audio devices is common in middle and high-income countries⁴.

Noise-induced hearing loss (NIHL) has been gaining significant attention in recent years and worldwide it contributes to approximately 16% of hearing loss occurring in adults (based on four million disability-adjusted life years (DALYs)). Noise exposure can lead to auditory and non-auditory effects⁵.

Based on the above, behaviour can affect a person's action against hearing loss, which is influenced by their knowledge of hearing loss. For example, their attitude when there is a recommendation or prohibition against hearing loss and ends by action.

WHO states that there are five causes of preventable hearing loss: Impacted cerumen, presbycusis, congenital deafness, noise-induced deafness, and chronic suppurative otitis media. Starting from public knowledge about hearing loss, public attitudes towards recommendations or prohibitions on hearing loss and ending with actions taken against hearing loss, it is hoped that the five hearing disorders can be prevented so that the number of hearing loss cases in Indonesia decreases.

Methods

This study used a descriptive analytical approach by collecting respondent's data and then analysing the respondent's behaviour towards hearing loss. The research design was a cross-sectional study. The research was conducted in all places/locations of residents in the territory of Republic Indonesia within three months (January-March 2021). Respondent's research data comes from Rs. Zainul Abidin Aceh, RS. H AdamMalik Medan, RS Sardjito, Jogjakarta, RSUPN. Cipto Mangunkusumo Jakarta, RS. dr. Wahidin Sudirohusodo Makasar.

The population in this study was Indonesian people who were not healthcare workers aged 17 years and over. The sample inclusion criteria included individuals who were not healthcare

workers (such as doctors, nurses, and midwives *etc.*), aged 17 years and over, and willing to participate in the study. The sampling method in this study was consecutive sampling.

The independent variable was the community's action on hearing loss. The dependent variable in this study was people's knowledge about hearing loss and people's attitudes towards recommendations or prohibitions against hearing loss in respondents. Data collection in this study used the interview method using a questionnaire based on the google form link provided⁶.

The data processing process included checking data (editing), coding (coding) and compiling data (tabulating) and data entry. The analysis for descriptive data with a categorical scale (nominal and ordinal) was carried out by presenting it in the form of a percentage (proportion).

This research received ethical approval from the Health Research Ethics Committee, Faculty of Medicine, University of Indonesia-RSUPN Dr Cipto Mangunkusumo with Ethical Eligibility Number: KET-884/UN2.F1/ETIK/PPM.00.02/2021. Data collection was based on a google form. At the beginning of the questionnaire, it was asked whether the respondent was willing to participate in the study

Data analysis

The collected data was processed and analyzed using IBM SPSS computer statistical program version 22 (IBM SPSS Statistics, RRID:SCR_016479). The data processing process examined data (editing), coding and compiling data (tabulating) and data entry. The analysis for descriptive data with a categorical scale (nominal and ordinal) was carried out by presenting it in the form of percentages (proportions).

Results

A total of 2410 respondents took part in this study following the research inclusion criteria.

Based on the distribution of patients, there were more female participants than male, namely 1484 people (61.6%). The most common type of education was Diploma-3 (D3), with as many as 1095 people (45.4%), while the least common type of education was not in school, which included eight people (0.3%). Most participants were employees, namely 509 people (21.1%), while the lowest number of participants were in the Police profession, namely 20 people (0.8%) (Table 1;⁷).

Findings were based on the frequency distribution of knowledge, attitudes, actions, and behaviour based on a scale of 'good', 'moderate', and 'not good' about hearing loss. For the knowledge variable, the highest distribution was 1603 people (66.5%) on the 'not good' scale, the highest distribution for the attitude variable was 1175 people (48.8%) on the 'moderate' scale, the highest distribution for the action variable was 1449 people (60.1%) on the 'moderate' scale. For the behaviour variable, the highest distribution was 1778 people (73.8%) on the 'moderate' scale (Table 2).

Table 1. Characteristics of respondents.

Characteristics	Frequency	Percent
Sex		
Male	926	38.4
Female	1484	61.6
Total	2410	100.0
Graduation		
No graduation	8	.3
Elementary school	65	2.7
Junior high school	557	23.1
Senior high school	208	8.6
Diploma 3	1095	45.4
Bachelor	416	17.3
Magister	61	2.5
Master	0	0.0
Total	2410	100.0
Profession		
No worker/housewife	477	19.8
Employee	509	21.1
farmer/trader/fisherman	74	3.1
State civil apparatus	196	8.1
Police	20	.8
Student	337	14.0
Teacher/lecture	289	12.0
Etc	508	21.1
Total	2410	100.0

Table 2. Distribution frequency of knowledge, attitudes, action and behaviour.

Scale	Knowledge		Attitudes		Action		Behaviour	
	n	%	n	%	n	%	n	%
Good	108	4.5	989	41.0	685	28.4	224	9.3
Moderate	699	29.0	1175	48.8	1449	60.1	1778	73.8
Not good	1603	66.5	246	10.2	276	11.5	408	16.9
Total	2410	100.0	2410	100.0	2410	100.0	2410	100.0

Based on **Table 3**, there was a significant relationship between the respondent's knowledge and the respondent's action regarding hearing loss ($p=0.000$). Based on **Table 4**, there was no significant relationship between the respondent's attitude and the respondent's action regarding hearing loss ($p=0.224$). Based on **Table 5**, there was a significant relationship between

Table 3. Relationship between knowledge and action about hearing loss.

Variable	Action about hearing loss	
	Value	Asymp. Sig (2 sided)
Knowledge	115.161	.000

Table 4. Relationship between attitude and action about hearing loss.

Variable	Action about hearing loss	
	Value	Asymp. Sig (2 sided)
Attitude	5.688	.224

Table 5. Relationship between knowledge and attitude about hearing loss.

Variable	Action about hearing loss	
	Value	Asymp. Sig (2 sided)
Knowledge	28.949	.000

the respondent's knowledge and respondent's attitudes about hearing loss ($p=0.000$).

Discussion

The lack of healthy living behaviour and protecting the environment invites unhealthy habits in society. These habits tend to ignore the safety of oneself and the environment to facilitate disease transmission. The behaviour of an individual, including health, is influenced by many factors. These factors can come from the person themselves, the influence of others who encourage good or bad behaviour, and environmental conditions that can support behaviour change¹.

Knowledge is the result of knowing, and this occurs after the person senses a particular object. Sensing occurs through the five human senses, namely sight, hearing, smell, taste, and touch - most of the human knowledge is obtained through the eyes and ears. Knowledge of cognition is a fundamental domain in shaping one's actions (overt behaviour)^{1,2,8}.

Attitude is a reaction or response that is closed from a person to a stimulus or object, stimuli can affect behaviour. Attitudes clearly show the connotation of appropriate reactions to certain stimuli, which are emotional reactions to social stimuli in everyday life. For example, Newcomb, one of the experts in social psychology, stated that attitude is a readiness or willingness to act and not an implementation of certain motives. Attitude is not yet an action or activity but is a predisposition to the action of behaviour. That attitude is still a closed reaction, not an open

reaction or open behaviour. Attitude is a readiness to react to objects in a particular environment to appreciate the thing^{1,2}.

Factors that influence the formation and change of a person's attitude can be internal or external. Internal factors come from the individual themselves, while external factors come from outside the individual in a stimulus to change and shape attitudes. Meanwhile, according to other literature, factors that influence the formation of attitudes are personal experience, the influence of other people who are considered important, and culture^{1,4}.

Future research should focus on gender similarities and differences to better indicate differences in attitudes and perceptions of NIHL across various demographic characteristics⁹.

Previous research on hearing loss knowledge conducted in India found that most respondents were aware that hearing loss could be congenital (63%), noise exposure (62%), or discharge from the ear (61%)¹⁰. The present study investigated adults' knowledge, behaviours, and attitudes concerning the factors that contribute to NIHL and the use of hearing protection¹¹. Signs that indicate NIHL include difficulty understanding spoken words in a noisy environment, the individual needs to be near or look at the person speaking to help understand terms;

familiar sounds, complaints that people do not speak clearly and a ringing noise in the ears¹².

Conclusions

There was a significant relationship between the respondent's knowledge and the respondent's actions about hearing loss, and there was also a significant relationship between the respondent's knowledge and the respondent's attitude about hearing loss. At the same time, there was no significant relationship between the respondent's attitude and the respondent's actions regarding hearing loss.

Data availability

Underlying data

Figshare: Underlying data for 'The level of community behaviour towards hearing loss in Indonesia' <https://doi.org/10.6084/m9.figshare.19076255>⁷.

Extended data

Figshare: Questionnaire for 'The level of community behaviour towards hearing loss in Indonesia', <https://doi.org/10.6084/m9.figshare.19185338>⁶.

Data are available under the terms of the [Creative Commons Attribution 4.0 International license \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

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Reviewer Report 26 April 2023

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Herman Jenkins

University of Colorado, Aurora, USA

The manuscript of Dr. Purnami and colleagues addresses a common problem in all developed and developing countries alike. It is investigating psychosocial relationships of understanding of problem, educational levels, gender and patient attitude in obtaining help in communication difficulties. These issues have to be addressed in how we counsel patients with hearing loss. At all ages, the psychosocial aspects must be addressed. In developed countries in Europe, Asia and the USA, the acceptance of hearing aids to remediate a hearing loss leading to communication difficulties remain relatively low. Attitude as feeling it makes one look old have tremendous impact on success. This study has demonstrated a similar attitudinal effect is very strong in relation to hearing loss and its management, This is a universal problem and one that has been difficult to remedy throughout the world. I answered partly to the reviewer question *Are all the source data underlying the results available to ensure full reproducibility?* as I did not see a lot of the source code presented in depth. It is primarily a summary of data, which I think works well in this manuscript.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Partly

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Long career in otology/neurotology and written on hearing loss remediation with various devices, middle and inner ear mechanics and the results of various procedures for remediation on the outcomes on improved hearing.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 04 April 2023

<https://doi.org/10.5256/f1000research.120389.r166643>

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Maurizio Barbara

ENT Clinic, Sapienza University, Rome, Italy

This manuscript is related to behavioral aspects of a local population in regard to an impairment such as hearing loss due to acoustic trauma. The authors have included in their study some variables (gender, age, scholarship) that could be of some interest.

However, since the issue regards the awareness of a healthy problem, one may expect to have some considerations when comparing the attitude of the population towards other diffused health issues, such as blood glucose level and/or hypertension, for instance. A similar comparison would increase the robustness of the conclusions that, if limited to the exposed data, appear weak for being drawn.

Overall, a control group for this report is highly recommended for finalizing its acceptance for indexing.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

I cannot comment. A qualified statistician is required.

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 17 Apr 2023

Nyilo Purnami

Thank you for your response,

Thank you for your comments and suggestions; please allow me to answer the following:
We apologise in advance that our research was not that deep, so we need the data you are referring to.

Thanks for your advice; I will include it in the limitations of my research.

Competing Interests: No competing interests were disclosed.

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