RESEARCH ARTICLE

The level of community behaviour towards hearing loss in
Indonesia [version 1; peer review: awaiting peer review]

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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 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
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 beliefs.

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 countries.

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 (DALY’s)). Noise exposure can lead to auditory and non-auditory effects.

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 of Indonesia within three months (January-March 2021). Respondent’s research data comes from Rs. Zainul Abidin Aceh, RS. H Adam Malik 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 provided.

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;).

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.

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

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

<table>
<thead>
<tr>
<th>Scale</th>
<th>Knowledge</th>
<th>Attitudes</th>
<th>Action</th>
<th>Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Good</td>
<td>108</td>
<td>4.5</td>
<td>989</td>
<td>41.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>699</td>
<td>29.0</td>
<td>1175</td>
<td>48.8</td>
</tr>
<tr>
<td>Not good</td>
<td>1603</td>
<td>66.5</td>
<td>246</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2410</td>
<td>100.0</td>
<td>2410</td>
<td>100.0</td>
</tr>
</tbody>
</table>

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 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 themself, the influence of others who encourage good or bad behaviour, and environmental conditions that can support behaviour change.

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).

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\textsuperscript{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\textsuperscript{3,4}.

Future research should focus on gender similarities and differences to better indicate differences in attitudes and perceptions of NIHL across various demographic characteristics\textsuperscript{5}.

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%)\textsuperscript{6}. The present study investigated adults’ knowledge, behaviours, and attitudes concerning the factors that contribute to NIHL and the use of hearing protection\textsuperscript{7}. 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 ears\textsuperscript{8}.

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\textsuperscript{9}.

Extended data

Figshare: Questionnaire for ‘The level of community behaviour towards hearing loss in Indonesia’, https://doi.org/10.6084/m9.figshare.19185338\textsuperscript{10}.

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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