

ORIGINAL ARTICLE

Perception towards Hearing Handicap amongst Hearing Impaired Individuals and its associated Factors

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ABSTRACT

Introduction: Individuals with hearing impairment may not inevitably have hearing handicaps. They might not be psychologically or socially bothered by the deficit in daily life. **Objective:** This study aims to examine the perception of hearing handicaps among individuals with hearing impairment. **Methods:** A cross-sectional study comprised 109 individuals with hearing impairment at the ENT clinic in Hospital Serdang. Data on sociodemographic characteristics, hearing level and Hearing Handicap Inventory for Adults (HHIA) questionnaire score were accumulated. Hearing handicaps were measured using the HHIA score. **Results:** Out of 109 participants, 28.4% experienced a significant hearing handicap while 44% reported no handicap. Our analysis revealed that there is no discernible link between socio-demographic factors such as age group, gender, race, educational level, and overall HHIA score, which exemplify the perception of hearing handicap. However, we did find a statistically significant connection between the degree of hearing loss and the total HHIA score ($p=0.003$) as well as the usage of a hearing aid and the HHIA score ($p=0.042$). **Conclusion:** Our findings indicate that the level of hearing loss and the use of hearing aids have a significant impact on how individuals perceive their hearing handicap. In contrast, socio-demographic factors do not appear to influence individuals' perception towards hearing handicaps. We recommend a regular hearing check-up in the community to enable early detection and interventions when necessary.

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INTRODUCTION

Hearing impairment is characterized by constraints or a diminished capability to accept and comprehend sound (1). This condition is a common disability among the elderly, primarily as a result of age-related degenerative processes. Approximately one-third of the elderly population is estimated to endure a moderate to profound hearing impairment.

In this decade, the incidence of hearing loss among young adults is increasing in trend due to chronic exposure to loud noise. However, not all who are suffering from hearing impairment are aware of their problems. Many of them failed to recognize the gradual decline in their hearing. They often gradually adjust to their reduced hearing, perceiving it as a normal part of ageing. It is only when their hearing loss reaches a

severe level and begins to disrupt various aspects of daily life, that they become cognizant of the issue and seek medical consultations.

Having a physiological hearing deficit doesn't necessarily equate to experiencing a hearing handicap. Hearing handicap encompasses the emotional and social consequences of hearing impairment, which goes beyond the physical aspect of hearing loss. Indeed it can significantly limit a person's engagement in daily activity and affect family relationships and social interactions.

It is crucial to assess the social and emotional ramifications of hearing loss on the lives of these individuals to comprehend the underlying causes and address their special needs (2). An individual with a hearing handicap often experiences a diminished quality of life, which can indirectly contribute to economic burdens. These unreported hearing losses have been linked to an annual cost of US\$750 billion in associated issues (3).

Although the level of hearing loss can be quantitatively

assessed, the actual disability experienced by the affected person is a subjective measure. Audiometric test results may not always provide an accurate prediction of this subjective experience. A self-perceived hearing handicap may or may not be declared by a person with hearing impairment (4).

Hearing Handicap Inventory, a self-assessment scale, designed to measure perceived hearing handicap, has become a widely recognized tool for documenting the efficacy of intervention efforts. The Hearing Handicap Inventory for Adults (HHIA), a modified version of the Hearing Handicap Inventory for the Elderly (HHIE) is employed for younger individuals with hearing impairments who are under the age of 65 (5). On socio-demographic data, it's evident that the prevalence of hearing handicaps tends to rise with age, with the highest percentage of hearing loss observed in the sexagenarian age group⁶. Additionally, hearing loss is nearly twice as prevalent in men compared to women (6).

Patients who share identical audiometric profiles can indeed have varying perceptions when responding to the Hearing Handicap Inventory for Adults (HHIA) questionnaire. The goal of this research is to investigate and better understand these differences in perception regarding hearing handicaps among individuals with hearing impairment. We hope to investigate the correlation between socio-demographic factors and hearing levels in determining the level of hearing handicaps. This would lead to determining factors which related to the social and emotional needs of hearing-impaired individuals and determining factors for hearing rehabilitation. Identifying the factors contributing to self-perceived hearing handicaps is crucial for providing patients with appropriate treatment and rehabilitation. This understanding is essential to enhance the quality of life for hearing-impaired patients.

MATERIALS AND METHODS

The study was carried out at the Otolaryngology Clinic in Hospital Serdang, a tertiary centre in the state of Selangor, Malaysia. This study is a cross sectional research project that employs a convenience sampling method. All consented patients in the Otolaryngology Clinic, age 18 years old and above with hearing impairment as evidenced by pure tone audiometry during the data collection period were recruited in the study.

Ethical Clearance

This study received approval from the Malaysia Medical Research and Ethics Committee (MREC) with the reference number NMRR-18-985-41478.

Study Instruments and data collection

In this study, a set of validated questionnaires was utilized, containing the Hearing Handicap Inventory for

Adults (HHIA) questionnaire in its English form, as well as a translated version in Malay obtained from a previous study. The questionnaire consists of socio-demographic data and HHIA questionnaires were self-administered and filled by the consented research participants, and the hearing history data with hearing level based on pure tone audiometry results were recorded by the researchers. Patients using hearing aid were advised to answer the questionnaire with the perception they have when they are not using the hearing aid.

The study participants were categorized into different age groups; young adults (18 to 39 years old), middle age (40 to 64 years old) and the elderly (65 years and above).

The study participants' ethnicity were classified into four categories; Malay, Chinese, Indian, and Others. Furthermore, their education levels were divided into several groups, including

1. No formal education: individuals who have never attended school or any formal educational institutions.
2. Primary: Those whose highest level of education attained is equivalent to Standard 1 to 6.
3. Secondary: Individuals with education up to Form 1 to 5 including remove class, General Certificate of Education (GCE) O Level or equivalent, and basic skill programs in specific trades and technical skills.
4. Tertiary: Participants with education beyond Form 5.

The level of hearing loss in this study was categorized according to the WHO grading of hearing loss. The classification divided hearing loss into mild hearing loss, hearing loss in the range of 26 to 40 decibels (dB); moderate hearing loss, hearing loss falling within the range of 41 to 60 decibels (dB); severe hearing loss, hearing loss ranging from 61 to 80 decibels (dB); and profound hearing loss, hearing loss exceeding 81decibels (dB).

The study's assessment of perception towards hearing handicaps utilized the Hearing Handicap Inventory for Adults (HHIA) questionnaire. This questionnaire consists of 25 questions, which are further divided into two subscales; the Social Subscale contains 12 questions that assess the impact of hearing loss in various social situations; and the emotional subscale comprises 13 questions that gauge the behaviour and emotional responses of the individual to his hearing loss.

For each question, respondents were provided with three possible options; "yes" (equivalent to 4 points); "sometimes" (worth 2 points); and "no" (equivalent to 0 points).

Scoring was conducted manually, and the total score was calculated by summing the points for all the questions. The HHIA questionnaire provides three different scores; The total HHIA, ranging from 0 to 100;

the Social Subscale Score, ranging from 0 to 48; and the Emotional Subscale Score, ranging from 0 to 52.

Higher values on these scales indicate a stronger perception of hearing handicap, reflecting a greater impact of hearing loss on an individual's life.

RESULTS

The study involved 109 participants with hearing loss. The distribution of participants across the age group was as follows, middle age group, 51 participants (46.8%); elderly group, 32 participants (29.4%); and young adults, 26 participants (23.9%). About 65 (59.6%) were male. The majority of the respondents were Malay 55 (50.5%) followed by Chinese 33 (30.3%), Indian 17 (15.6%) and others 4 (3.7%). Based on the education level, Most of the respondents had an education level secondary school 52 (47.7%), followed by tertiary education 31 (28.4%), primary education 15 (13.8%) and finally no formal education 11 (10.1%). About 6 (5.5%) of respondents were using hearing aids, while 103 (94.5%) of patients were not using hearing aids.

About 40 (36.7%) of respondents have mild hearing loss while 15(13.8%) and 11 (10.1%) of respondents have severe and profound hearing loss, respectively. The remaining 43 (39.4%) respondents have moderate hearing loss.

Table 1 displays the distribution of answers to the Hearing Handicap Inventory for Adults (HHIA) among the participants. The questionnaire used a scoring system in which each respondent received 4 points for answering "Yes", 2 points for "Sometimes", and 0 points for "No" for each question. It appears that each question was labelled with either the letter "S" or "E" in front of the question number, indicating the question represents the Social or Emotional part of the Hearing Handicap Inventory for Adults (HHIA). Question S-16 has the highest "No" answer with 81.7% of respondents while question S-7 has the highest points collected from "Yes" and "Sometimes" answers with 66.1% of respondents.

The total score Hearing Handicap Inventory for Adults (HHIA) is categorized as follows; a total score range from 0 to 16 was considered as no handicap; a total score range from 18 to 42 was considered as mild to moderate handicap; and a total score of 44 and above was considered as significant handicap.

Based on data from Figure 1, about 48 (44%) of respondents were categorized under no handicap, 30 (27.5%) of respondents were categorised under mild to moderate handicap and 31 (28.4%) of respondents were categorised under significant handicap.

The study found that there was a significant association between the level of hearing loss ($p < 0.003$) and the

Table 1: Frequency distribution of answers (Yes, Sometimes, No) regarding Hearing Handicap Inventory for Adults (HHIA) among hearing impaired subjects

Questions	Yes (%)	Some-times (%)	No (%)
Does a hearing problem cause you to use the phone less often than you would like?	27 (24.8)	23 (21.1)	59 (54.1)
Does a hearing problem cause you to feel embarrassed when meeting new people?	24 (22.0)	13 (11.9)	72 (66.1)
Does a hearing problem cause you to avoid groups of people?	17 (15.6)	11 (10.1)	81 (74.3)
Does a hearing problem make you irritable?	24 (22.0)	21 (19.3)	64 (58.7)
Does a hearing problem cause you to feel frustrated when talking to members of your family?	21 (19.3)	30 (27.5)	58 (53.2)
Does a hearing problem cause you difficulty when attending a party?	31 (28.4)	19 (17.4)	59 (54.1)
Does a hearing problem cause you difficulty hearing/understanding co workers, clients, or customers?	42 (38.5)	30 (27.5)	37 (33.9)
Do you feel handicapped by a hearing problem?	21 (19.3)	26 (23.9)	62 (56.9)
Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?	20 (18.3)	19 (17.4)	70 (64.2)
Does a hearing problem cause you to feel frustrated when talking to coworkers, clients or customers?	26 (23.9)	25 (22.9)	58 (53.2)
Does a hearing problem cause you difficulty in the movies or theater?	32 (29.4)	23 (21.1)	54 (49.5)
Does a hearing problem cause you to be nervous?	18 (16.5)	14 (12.8)	77 (70.6)
Does a hearing problem cause you to visit friends, relatives, or neighbors less often than you would like?	12 (11.0)	10 (9.2)	87 (79.8)
Does a hearing problem cause you to have arguments with family members?	12 (11.0)	20 (18.3)	77 (70.6)
Does a hearing problem cause you difficulty when listening to TV or radio?	31 (28.4)	32 (29.4)	46 (42.2)
Does a hearing problem cause you to go shopping less often than you would like?	13 (11.9)	7 (6.4)	89 (81.7)
Does any problem or difficulty with your hearing upset you at all?	18 (16.5)	22 (20.2)	69 (63.3)
Does a hearing problem cause you to want to be by yourself?	13 (11.9)	17 (15.6)	79 (72.5)
Does a hearing problem cause you to talk to family members less often than you would like?	17 (15.6)	15 (13.8)	77 (70.6)
Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	21 (19.3)	26 (23.9)	62 (56.9)
Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?	25 (22.9)	27 (24.8)	57 (52.3)
Does a hearing problem cause you to feel depressed?	20 (18.3)	28 (25.7)	61 (56.0)
Does a hearing problem cause you to listen to TV or the radio less often than you would like?	21 (19.3)	19 (17.4)	69 (63.3)
Does a hearing problem cause you to feel uncomfortable when talking to friends?	22 (20.2)	30 (27.5)	57 (52.3)
Does a hearing problem cause you to feel left out when you are with a group of people?	17 (15.6)	19 (17.4)	73 (67.0)

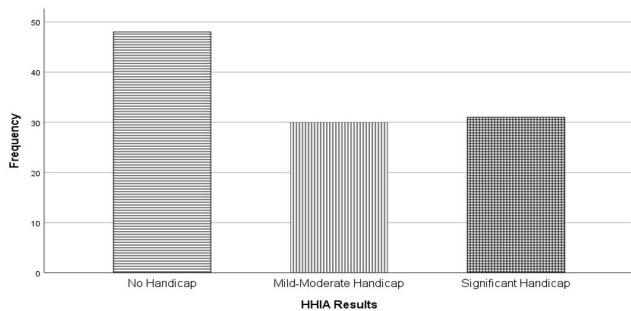


Figure 1: Perception towards hearing handicap among hearing impaired subjects

use of a hearing aid ($p < 0.042$) with the perception towards hearing handicap amongst hearing impaired individuals (Table II). In contrast, the study did not find any significant association between perception towards hearing handicap amongst hearing impaired subjects with other socio-demographic characteristics (age group, gender, race and educational level)

According to the post hoc test results, it was observed that patients with profound hearing loss tend to have a higher perception of hearing handicap compared to patients with moderate, severe and mild hearing loss (Table III).

DISCUSSION

Hearing loss is indeed a significant global health concern. According to the World Health Organization (WHO), over 5% of the total global population, which amounts

Table II: Association of Sociodemographic Factors and level of hearing loss with perception towards hearing handicap

Variables	number of respondents (%)	Mean HHIA Score	P-Value
Age (n=109)			0.727
Young Adults (18-39 years old)	26 (23.9)	50.83	
Middle age (40-64 years old)	51 (46.8)	56.87	
Elderly (65 years old and above)	32 (29.4)	55.41	
Gender (n=109)			0.872
Male	65 (59.6)	55.40	
Female	44 (40.4)	54.41	
Race (n=109)			0.589
Malay	55 (50.5)	52.83	
Chinese	33 (30.3)	61.23	
Indian	17 (15.6)	50.41	
Others	4 (3.7)	53.00	
Educational Level (n=109)			0.316
No Formal Education	11 (10.1)	56.73	
Primary	15 (13.8)	63.33	
Secondary	52 (47.7)	57.24	
Tertiary	31 (28.4)	46.60	
Hearing Aids (n=109)			0.042
Yes	6 (5.5)	78.75	
No	103 (94.5)	53.62	
Level of Hearing Loss			0.003
Mild	40 (36.7)	48.20	
Moderate	43 (39.4)	53.94	
Severe	15 (13.8)	52.37	
Profound	11 (10.1)	87.45	

Table III: Post hoc test for level of hearing loss and perception towards hearing handicap

Level of Hearing Loss 1	Level of Hearing Loss 2	P-value
Mild	Moderate	1.000
Mild	Severe	1.000
Mild	Profound	<0.001
Moderate	Severe	1.000
Severe	Profound	0.004
Profound	Moderate	0.002

to approximately 466 million people, is affected by some degree of hearing disability (3). These disabilities can vary in severity and are typically classified as mild, moderate, severe or profound hearing loss, depending on the extent of impairment (3).

Based on the data obtained through Pure Tone Audiometry (PTA) in our study, it was found that 36.7% of respondents have mild hearing loss while 13.8% and 10.1% of respondents have severe and profound hearing loss, respectively. About 39.4% of respondents have moderate hearing loss. Hearing impairment may affect quality of life and hearing impaired individuals may find it hard to communicate with other people. Hearing loss does not occur in the elderly alone, but it may also develop in a younger age group. Thus, younger individuals may be prone to perceive hearing handicaps regardless of their audiometric profile. This could be due to the social and emotional impact of hearing impairment even with mild hearing loss.

Therefore, patients with hearing impairment must receive educational and social support as hearing loss can affect patients' lives socially and emotionally. Interventions and efforts on screening hearing loss for early identification as well as treating the hearing disability with assistive devices are essential to improve the quality of life as well as to prevent further complications.

The chronic condition of ageing causing hearing impairment among the elderly is highly prevalent with hearing handicaps increasing with age (5). Since many elderly have the perception it is a norm to have hearing loss in their age group, most of them will only seek medical advice if the condition bothers them. In this study, the middle age group with hearing loss who attended the ENT clinic during data collection time consists of almost half of the participants (46.8%) followed by the elderly (29.4%) and young adults (23.9%).

The Hearing Handicap Inventory for Adults (HHIA) questionnaire, answered by respondents, comprises 25 questions that cover both social and emotional scales. In this questionnaire, each answer of "Yes", "Sometimes" and "No" will be given 4 points, 2 points and 0 points respectively. The total points collected will categorise the respondent into No Handicap, Mild to Moderate

Handicap or Significant Handicap.

81.7% of respondents answered “No” for the social question S-16 where they feel that hearing loss does not cause them to go shopping as often as they would like. This may be so as some hearing impaired patients find that shopping does not require much hearing use or effort. Some of the patients might also answer “No” as they rarely went shopping.

On the other hand, 66.1% of respondents managed to score on the total HHIA scores by answering “Yes” or “Sometimes” for the social question S-7 where they agreed that hearing problems cause difficulty in hearing or understanding co-workers, clients, or customers. Hearing problem is certainly an issue or can be considered as an obstacle when it comes to communications. Most of the patients with profound hearing loss require assistance from their family members to aid them in understanding even a simple conversation. These patients also tend to read the gestures and lip movements to interpret the conversation as their hearing problem is causing them difficulty in understanding what others are trying to say.

For the level of hearing handicap, 44% of the respondents are considered as non-handicap. 28.4% considered it as a significant handicap while 27.5% considered it as a mild to moderate handicap. This shows that most patients do not perceive themselves as hearing handicapped. This could be due to hearing impairment is a chronic condition that develops slowly after exposure to the factors. Patients become used to the hearing impairment, sometimes without realising that they are suffering from this condition. Education on the maintenance of the well-being of ears and the importance of regular hearing check-ups should be emphasised to the public. The constitution should also play a major role through legislation to protect workers who are constantly exposed to loud noise from hearing loss. Our study shows hearing level is a significant factor in determining perception towards hearing handicaps with profound hearing loss has a worse score in HHIA.

The older age group is sometimes related to the underestimated group of hearing loss and overestimated hearing handicaps. Hearing impairment is often detected in the elderly as a part of the normal ageing process⁶. It is estimated that individuals in the middle-aged and older adults group, who have worse than estimated speech recognition in sound, are more likely to have a significant hearing handicap compared to those with better hearing ability (7). In this study, the middle age group has a higher HHIA mean score, followed by the elderly and the young adults. However, the association between age group and HHIA score which represents the perception towards hearing handicap is not significant.

From the findings of this study, no significant association was observed between gender and perceived hearing

handicap. This aligns with the results of a previous study, that also reported no significant differences between genders in perceived disability or handicap (8). Instead, previous studies identify that there was a significant gender difference in coping, where the women used “maladaptive behaviour” and “verbal strategies” significantly more often than the men⁸.

CONCLUSION

The severity of hearing loss and the use of hearing aids do have a significant effect on the perception towards hearing handicap, while sociodemographic factors such as age, gender, race and educational level do not influence the perception towards hearing handicap. Hearing aid usage can be considered a confounding factor as patients using hearing aid usually are those with more severe hearing loss. Expanding the scope of research to include participants from multiple hospitals across Malaysia can indeed lead to more accurate and comprehensive results, potentially capturing a broader range of experience and factors that might influence hearing handicaps. Regular hearing check-ups should be done among people from all walks of life so that early detection and interventions can be done. With this action, hopefully, the number of populations with hearing impairment can be decreased effectively.

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