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Attitude towards Hearing Aid usage among Adults in Malaysia

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Abstract

Background and Aims: People with hearing loss often have negative stereotypes and prejudices attributed to them that result in a deleterious effect on how they are perceived by others. This research was conducted to study the attitudes towards hearing aid usage among hearing loss patients.

Materials and Methods: Cross-sectional study performed from June to August 2016 in hearing loss patients at the Otorhinolaryngology clinic, UKMMC. Self-administered questionnaire from the study of Attitude towards Hearing Loss Questionnaire (ALHQ) was used.

Results: Out of 151 patients, 113 (74.83%) were non hearing aid users. The mean age of participants was 56.36 (SD: 17.49) years. Majority of hearing aid users had moderate, severe and profound, bilateral hearing loss. The majority of non-hearing aid users had mild and moderate unilateral hearing loss. As the patients hearing problem worsen, acceptance of hearing aid increased. Denial of hearing loss (p = 0.000), negative coping strategies (p = 0.018), and severity of hearing loss (p = 0.000) showed significant association with attitudes towards hearing aids usage. Otherwise, negative association (p=0.222), manual dexterity and vision (p=0.698), hearing related esteem (p=0.277) and income (p=0.469) showed insignificant association.

Conclusion: Majority of our population were non-hearing aid users, with unilateral hearing loss. People tend to accept hearing aid usage when the hearing loss were severe to profound bilaterally. Psychological, social and income factors showed insignificant association with attitudes towards hearing aid usage in Malaysia.

Keywords: Attitudes; Hearing aids; Hearing loss; ALHQ

Introduction

This study was carried out to determine the factors that contribute to the attitude towards hearing aid usage among patients in Klang Valley, Malaysia. There were not many research published about this in Malaysia. According to studies done by Marketrak, it was reported that 40% of people with hearing loss who did not use hearing aids give stigma as one of the five main reasons for their decision [1,2] Reasons given by adults with hearing loss were not admitting hearing loss in public, noticeable, too embarrassed to wear, makes you look disabled and makes you look old. Besides that, financial factor also played a role in the stigmatization. Based on the Kochikin's 2007 survey, it was found that 64% of respondents reported that they could not afford hearing aids, whereas 45% of respondents said that hearing aids are not worth the expense [2].

The social stigma and stereotype of hearing loss was one of the main problems with hearing aids usage. Stigma had been defined as "the possession of, or belief that one possesses, some attribute or characteristic that conveys a social identity that is devalued in a particular social context" [3]. The stigma, fueled by stereotypes and incorrect assumptions, was one of the biggest factors that kept potential consumers from purchasing a hearing aid [4]. Even the actual hearing aid was stigmatized by society. Many choose not to wear hearing aids because they believed that they did not work or would not help. Further, they believed that the hearing aids are big, unsightly, uncomfortable, and too expensive [5]. Meanwhile in Hong Kong, it was known that the Chinese elderly were not motivated to seek help for their hearing problem until it become severe enough to cause social impairment. People with hearing

loss often had negative stereotypes and prejudices attributed to them that result in a deleterious effect on how they are perceived by others. People with hearing loss are often perceived as senile, uninteresting and undesirable communication partners [6-8].

Nearly 80% of those who could benefit from wearing a hearing aid chose not to use one. Studies on the hearing aid effect had repeatedly shown that people were rated more negatively by others if they were seen wearing a hearing aid [9-12]. Globally, stigma was related to hearing loss however suspiciously there was uncertainty of factors in contributing to the stigma occurring within the Malaysian society. The aim of this research was to study the relationship of four contributing factors, which consisted of psychological, financial, social and cultural factors to perception on hearing aid usage. This research was conducted to improve the finding from previous studies in Journal of the American Academy of Audiology regarding attitude towards hearing loss. The limitation of other studies was that they are focused more on global stigma on hearing aid or hearing loss while the study conducted by us will be more specified to the contributing factors of stigma to hearing aid in Malaysia. Other than that, most of the studies that had been carried out before did not mention the exact process of respective factors contributing to the development of stigma on hearing aid in a society and ways to solve and improve the stigma in hearing aid. Thus, this research was important in improving the quality of life of future generation with hearing loss.

Methods and Materials

The method used in this research was cross sectional. There was 151 respondents participated in this research. Data collection was done at Otorhinolaryngology clinic in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). The study of Attitudes towards Hearing Loss Questionnaire (ALHQ) was used in this research. The original questionnaire was first translated into Malay language according to the published guideline and was validated. This questionnaire consists of 2 parts which are Part A and Part B. Part A is about socio demographic profile of respondent while Part B consists of 22 questions. This questionnaire was evaluated on 5 domains included Denial of Hearing Loss, Negative Association, Negative Coping Strategies, Manual Dexterity and Vision and Hearing related Esteem.

At first, we identified patients who fulfilled our inclusion criteria, above 18 years old with hearing loss and indicated to wear hearing aids in the clinic by checking the patients' case file. We classified the severity of the hearing loss from pure tone audiometry (PTA) results as 25-40dB HL (mild), 45-70dB HL (moderate), 75-90dB HL (severe), above 90dB HL (profound). We also identified the laterality of the hearing loss from PTA results. After that, we approached the patients and let them answered the AHLQ. The patients first filled consent form. We further explained the questionnaire to ensure the patients understand the questionnaire. Subsequently, all the data was tabulated using Microsoft Office Excel. Data analysis was done by using SPSS version 23.0 software. Scores for all the domain were calculated manually according to the formula stated in ALHQ. Normative data score for attitude towards hearing aid usage were analyzed to determine the cut-off point taken at 80th percentile. Scores higher than the cut-off point are classified as high scores and vice versa. Chi square test was used to determine the significant level of each domain and relationship of each domain with attitude towards hearing aid usage. The same test was used to analyze severity, laterality of hearing loss and income of each respondent. P value was significant at the level less than 0.05.

This study was conducted after the approval from the Research Ethics Committee University Kebangsaan Malaysia (UKM PPI/111/8/JEP-2016-316). All the participations were voluntary and each respondent have signed an informed consents as the proof of self-participation before answering the questions. The respondent's private information was kept confidential and only be used for research purpose.

Result

There was 151 respondents in which 38 (25.17%) were hearing aids users whereas 113 (74.83%) were non-hearing aids users. The mean age was 56.4 years old. 82 respondents were male and 69 respondents who were female. There were 24 (29.3%) male respondents who were hearing aids users and 58 (70.7%) who were non-hearing aids users. There were 14 (20.3%) female respondents who were hearing aids users and 55 (79.7%) who were non-hearing aids users. Among the Malay population, 21 (26.9%) were hearing aids users whereas 57 (73.1%) were non-hearing aids users. The Chinese population showed 13 (22.8%) were hearing aid users and 44 (77.4%) were non hearing aids users. There were 4 (26.7%) hearing aids users and 11 (73.3%) non-hearing aids users in Indian population (Table 1).

For educational level, majority of our respondents with 70 pursued their studies up to high school level followed by tertiary education level with 45 respondents. There were 23 respondents who finished their studies up to primary school level and only 7 people were illiterate. Six out of 151 respondents had the highest level of education, which were either a masters or PhD degree (Table 1).

There were 8 (30.8%) high-income (more than RM3000) hearing aids users and 18 (69.2%) high income non-hearing aids users. For the low income (less than RM3000) group, 30 (24%) of them were hearing aids users whereas 95 (76%) were non-hearing aids users. However, since the P-value (0.469) was more than the significance level (0.05), hence hypothesis was not accepted. Thus, we concluded that there was no relationship between incomes with hearing aid usage. There were 103 patients who had unilateral hearing loss. Among them, 19 (18.4%) of those patients were hearing aid users, while 84 (81.6%) were non hearing aid users. On the other hand, there were 48 patients who

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had bilateral hearing loss, where 19 (39.6%) wore hearing aids and 29 (60.4%) were non-hearing aid users. Since the P-value (0.005) was less than 0.05, there was a significant relationship between laterality and attitude towards hearing aid usage.

Table 1: Socio-demographic data.

Socio-Demographic Factors N		Hearing Aid Users		Non-Hearing Aid Users		Total
		Percentage	N	Percentage		
Gender	Male	24	29.3	58	70.7	82
	Female	14	20.3	55	79.7	69
Total		38		83		151
Race	Malay	21	26.9	57	73.1	78
	Chinese	13	22.8	44	77.4	57
	Indian	4	26.7	11	73.3	15
	Others	0	0	1	100	1
Total		38		113		151
Income	High income	8	30.8	18	69.2	26
	Low income	30	24	95	76	125
Total		38		113		151
Educational level	Illiterate	0	0	7	100	7
	Primary education	6	26.1	17	73.9	23
	Secondary education	15	21.4	55	78.6	70
	Tertiary education	15	33.3	30	66.7	45
	Master or higher level	2	33.3	4	66.7	6
Total		38		113		151
Laterality	Unilateral	19	18.4	84	81.6	103
	Bilateral	19	39.6	29	60.4	48
Total		38		113		151
Severity	Mild	1	2.3	42	97.7	43
	Moderate	12	22.6	41	77.4	53
	Severe	13	46.4	15	53.6	28
	Profound	12	44.4	15	55.6	27
Total		38		113		151

Majority of hearing aid users had moderate (N=12), severe (N=13) and profound hearing loss (N=12) among 38 respondents. Meanwhile the majority of non-hearing-aid users had mild (42) and moderate hearing loss (N=41) among 113 respondents. Since the P-value (0.000) was less than the significance level (0.05), hence hypothesis was accepted. Thus, we concluded that there was a relationship between severity of hearing loss and hearing aid usage.

Attitudes towards hearing loss questionnaire (ALHQ)

Normative data score was calculated for each domain to determine the cut-off point for the scoring. The cut-off point (80th percentile) for denial of hearing loss was 3.8333, negative association 3.000, negative coping strategies 3.5000, manual dexterity and vision 3.000 and hearing related esteem 4.500 (Table 2). From this score, the cut-off point was used to determine the high score and low score for each domain.

Denial of hearing loss

There were 31 participants with a high score (100%) who were non-hearing-aid users. There were no hearing aid users with a high score. All 38 hearing aid users (31.7%) and 82 non-hearing-aid users (68.3%) showed results of a low score (Table 3). Since the P-value (0.000) was less than the significance, level (0.05), hence hypothesis was accepted (Table 3). Thus, we concluded that there was significant relationship between denial of hearing loss and hearing aid usage.

Negative association

The result showed that 125 participants had a low score with 96 of them being non-hearing aid users (76.8%). There were 26 participants who had a high score where 17 were non-hearing aid users (65.4%) and nine were hearing aid users (Table 3). However, since the P-value (0.222) was more than the significance

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level (0.05), hence hypothesis was not accepted (Table 3). Thus, we concluded that there was no relationship between negative association and hearing aid usage.

Negative coping strategies

There were 126 participants who had a low score where 99 were non-hearing aid users (78.6%) and among 25 participants who had a high score, 14 were non-hearing aid users (56%) and 11 hearing aid users (44%). Since the P-value (0.018) was less than the significance, level (0.05), hence hypothesis was accepted (Table 3). Thus, we concluded that there was a significant relationship between negative coping strategies and hearing aid usage.

Table 2: Normative data score for attitude towards hearing aid usage.

ALHQ Scale	Mean	Standard Deviation	Cut Point (80th Percentile)
Denial of Hearing Loss	3.0783	0.92131	3.8333
Negative Associations	2.1921	0.99768	3
Negative Coping Strategies	2.6043	0.91486	3.5
Manual Dexterity and Vision	2.0442	0.94726	3
Hearing-Related Esteem	3.4172	1.0479	4.5

Table 3: Chi square test for associations between high and low scores between hearing aid and non-hearing aid users.

ALHQ Variable	High / Low score	Hearing Aid Users		Non-Hearing Aid Users		Pearson Chi-Square P VALUE*
		N	Percentage	N	percentage	
Denial of hearing loss	High score	0	0	31	100	0
	Low score	38	31.7	82	68.3	
Negative hearing association	High score	9	34.6	17	65.4	0.222
	Low score	29	23.2	96	76.8	
Negative coping strategies	High score	11	44	14	56	0.018
	Low score	27	21.4	99	78.6	
Manual dexterity and vision	High score	6	28.6	15	71.4	0.698
	Low score	32	24.6	98	75.4	
Hearing related esteem	High score	7	35	13	65	0.277
	Low score	31	23.7	100	76.3	

*p value is significant at level of <0.05

Manual dexterity and vision

The result showed that 130 participants had a low score where 98 were non-hearing-aid users (75.4%) and 32 were hearing aid users (24.6%). Amongst the 21 participants who had a high score, 15 were non-hearing-aid users (71.4%) (Table 3). However, the P-value (0.698) was more than the significance level (0.05), hence hypothesis was not accepted (Table 3). Thus, we concluded that there was no relationship between manual dexterity and vision with hearing aid usage.

Hearing related esteem

There were 131 participants who had a low score with 100 non-hearing-aid users (76.3%) and 31 hearing aid users (23.7%). Meanwhile, among 20 participants who had a high score, 13 were non-hearing aid users (65%) and 7 were hearing aid users (35%) (Table 3). However, the P-value (0.277) was more than the significance level (0.05), hence hypothesis was not accepted (Table 3). Thus, there was no relationship between hearing-related esteem with hearing aid usage.

Multiple linear regression

Statistical analysis showed that the P values of severity (0.000) and user status (0.000) were less than significant level (0.05). Hence, there were associations between these 2 variables and denial of hearing loss. Beta value of severity is negative (-0.332) which showed negative correlation with denial of hearing loss whereas user status (0.418) showed positive correlation with denial of hearing loss (Table 4). The P values of 3 variables which were age (0.273), user status (0.416) and gender (0.970) was more than the significant level (0.05). This showed that these 3 variables had no relation with negative association (Table 3). Severity and gender showed the P values of 0.001 and 0.004 which were less than the significant level (0.005) whereas age showed P

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value of 0.694 which was more than the significant level (0.005) (Table 4). Hence, severity and gender have correlation with negative coping strategies whereas age has no correlation with it. Beta value of severity (0.268) showed positive correlation with negative coping strategies while gender (-0.233) showed negative correlation with negative coping strategies (Table 4). There were no variables being analyzed to determine the association between those variables and manual dexterity and vision. The P value of severity showed 0.376, which was more than the significant level 0.05. Hence, the result was not significant which means there was no correlation with hearing related esteem.

Table 4: Multiple linear regression analysis.

Variable	Adjusted r2 change	P-value in Final Equation	B Value
Denial of hearing Loss			
Severity	0.146	0	-0.332
Age	0.006	0.353	-0.004
User status	0.175	0	0.884
Negative association			
Age	0.001	0.273	0.09
Gender	0.001	0.289	0.087
User status	-0.007	0.97	-0.003
Negative coping strategies			
Severity	0.066	0.001	0.268
Age	-0.006	0.694	0.032
Gender	-0.004	0.513	0.054
Negative coping strategies			
Severity	0.066	0.001	0.268
Age	-0.006	0.694	0.032
Gender	-0.004	0.513	0.054
Manual dexterity and vision			
No variable enter	na	na	Na
Hearing related esteem			
Severity	-0.001	0.376	0.073
Manual dexterity and vision			
No variable enter	na	na	Na
Hearing related esteem			
Severity	-0.001	0.376	0.073

Discussion

Denial of hearing loss

High score of denial of hearing loss indicated that the individual did not acknowledge his/her hearing loss and did not accept the hearing aid [13]. According to a study, adults who develop hearing loss were reluctant to acknowledge hearing difficulties because of fear of stigmatization and embarrassment [7]. However, our study showed that individuals with less severity tend not to acknowledge their hearing loss and refused hearing aid usage compared to individuals with high severity. In our population, all hearing aid users showed low score which means that they accept their hearing problems and the use of hearing aids. Meanwhile, majority of our respondents showed low score but chose not to wear the hearing aids. Similarly, individuals who minimize their hearing loss use their hearing aids less than individuals who are acknowledging of their hearing loss [14]. This showed that although they did not deny their hearing loss but they had poor acceptance of hearing aids.

Negative coping strategies

A high negative coping strategies score reflected the individual using undesirable behavioural techniques such as withdrawal and pretending to understand others similarly to disengaged coping, or avoiding addressing one's hearing loss [13,15]. However, in our study, it showed that individuals were taking action to manage

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one's hearing loss with good and positive coping skills instead. Our population coped by making the best of social situations or by asking people to repeat themselves. Learning and practicing good strategies to prevent and reduce communication problems were empowering and helped decrease negative emotions and depression, increase self-esteem, and improve relationships. Therefore, based on this study, it showed that negative coping strategies affect the attitudes towards hearing aid usage.

Severity and laterality

Statistical analysis revealed that majority of hearing aid users had moderate, severe or profound hearing loss. Meanwhile the majority of non-hearing-aid users had only mild and moderate hearing loss. In addition, majority of hearing aid users had bilateral hearing loss. Severity and laterality of hearing loss affected the attitudes towards hearing aid usage as it significantly affected their communication and coping with daily life. As shown in previous study, individuals with mild hearing loss have higher Denial of Hearing Loss scores than individuals with greater hearing loss. It means that those individuals who do not perceive the need for hearing assistance will not sought assistance [13]. Thus, it was shown in our population that as the hearing problem worsened with bilateral involvement, they started to seek for hearing assistance and accept hearing aid usage.

Negative association

High score on negative association means that the individual thought that the use of hearing aid was related to ageing and embarrassment. In a previous study, this factor showed non-significant effects of hearing loss, gender and hearing aid user status and non-significant two- and three-way interactions [13]. Similarly, in our populations, most of the respondents had low scores which meant that they did not think that this factor was a problem. Therefore, in this study, negative association did not affect the attitude towards hearing aid usage. However, a previous study supported the pervasiveness of perceived stigma associated with hearing loss and use of hearing aids and their close association with ageism and perceptions of disability [16].

Hearing related esteem

High score of hearing related esteem indicated that the confidence towards his/her hearing ability of the individual had lost. A high confidence level to learn the necessary skills of using and maintaining hearing aids was the first step taken by the individual. Self-esteem is what we use to value ourselves and it is associated with self-confidence. Tesch-Romer showed that the hearing aids users tend to have higher self-confidence compared to non-hearing aids users [17]. In our population, many of the respondents showed low scores in hearing related esteem and it indicated they did not lose confidence towards their hearing ability. However, this factor did not improve the hearing aids outcome in our population.

Income

High income in our population meant that the monthly income is more than RM 3000. The cost of a hearing aid is quite expensive. The cheapest hearing aid costs around RM 1000. It might become a burden to those low-income individuals. In Malaysia, patients can get some funding from the government. However, the number of non-hearing aids users among high-income and low-income individuals were more than the hearing aids users. This showed that the use of hearing aids was not influenced by financial status of the individual.

Linear regression

Multiple linear regressions had been used to determine whether the ALHQ scores were independent of the severity, age, gender and the hearing aid experience. A positive Beta value meant a positive correlation among the variables and vice versa. Individuals with less severe hearing loss and hearing aids users were associated with high denial of hearing loss. Female gender and more severe hearing loss individuals tend to use negative coping strategies towards their hearing loss. Negative association, manual dexterity, vision, and hearing related esteem were not related to any of the independent variables.

Limitations

Although this research has achieved its aims, there were some unavoidable limitations. Firstly, due to short time frame, this research was conducted only on a smaller size of population compared to previous studies, therefore might not represent the majority of hearing loss patients in Malaysia. Secondly, the questionnaire ALHQ was provided only in English form and been translated only to Malay language and had been validated. However, due to multiracial and involvement of illiterate population, some respondents may have difficulty in understanding the questionnaire's format. Thereby limiting the range of responses as these respondents struggle with time constraint and feel overworked, unlike an interview, where respondents can ask clarifying questions. Thirdly, this research relied on a single source of reference and existing research, using a single theory to interpret and analyze collected data to reach a conclusion.

Impact of the study to the society

This study showed that majority of our population did not have attitude problems towards hearing aid usage. They tend to accept hearing aid usage as their severity of hearing loss increased and involved bilaterally. Thus, this study would help the audiologist and Otorhinolaryngology's advice and also counsel hearing loss patients. The findings also help the clinician understand the factors contributing to the reluctance of hearing aid usage. Moreover, this study would help medical practitioners increase awareness and reduce anxiety about hearing aid usage among

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hearing loss patients by informing them that actually majority of Malaysians do not stigmatize hearing aid users.

Suggestion for improvement and future research direction

Future studies are necessary to determine the accuracy of the results of this study by having a larger sample size within a longer time frame of study. To improve accuracy of data collection, the questionnaire should be translated to multiple languages for better understanding among a multiracial population. To enhance the specificity of attitudes towards hearing aid usage, further research should widen the scope of each domain of the questionnaire.

Conclusion

This study showed majority of our population were non-hearing aid users, with unilateral hearing loss. Our research found that two out of five domains showed significant results towards hearing aid usage, which were denial of hearing loss and negative coping strategies. For denial of hearing loss, although they did not deny their hearing loss but they had poor acceptance of hearing aids. Meanwhile for negative coping strategies our population showed they accepted their hearing loss without pretending to hear. Thus, it is concluded that people tend to accept hearing aid usage when the hearing loss was severe to profound and bilateral. Meanwhile, our population reflected that income showed insignificant association with attitudes towards hearing aid usage in Malaysia.

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