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Research Article

Exploring Factors Associated with a Higher Likelihood of Seeking Audiology services by Individuals with Hearing Impairment in Cape Town, South Africa

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Abstract

To explore factors associated with a higher likelihood of seeking audiology services by adults with hearing impairment in Cape Town, South Africa. A prospective questionnaire-based survey involving participants from predominantly historically disadvantaged communities in Cape Town was conducted. A total 1247 participants took part in this study and were screened for hearing impairment. Those who did not pass hearing screening underwent diagnostic hearing assessment. Hearing impairment was confirmed in 166 of the participants; 106 females and 60 males, median age 31, range 18-92 years old. Thirty-five (21%) of the participants with hearing impairment reported seeking help for their hearing impairment. Self-perceived hearing impairment was found to be strongly associated with a higher likelihood of seeking audiology services. Severity of hearing impairment, age, gender, level of education, family history of hearing impairment and employment status were not associated with a higher likelihood of seeking help for hearing impairment. Out of the 54 (35%) participants with disabling hearing impairment, only two reported ownership (use) of hearing aids. In conclusion this study showed that majority of individuals with hearing impairment in Cape Town did not seek help for their hearing impairment even when they had a disabling hearing loss. However, those who perceived their hearing status to be impaired were more likely to seek help irrespective of whether they had a clinically confirmed hearing impairment or not.

INTRODUCTION

The World Health Organization (WHO) estimated that there are approximately 360 million persons in the world (2015) with hearing impairment that is severe enough to interfere with their communication ability (i.e. disabling hearing impairment) [1]. It is also estimated that about 9% of those people live in Sub-Saharan Africa [1]. Epidemiological studies that estimate the prevalence of hearing impairment are scarce in South Africa. However, two recently completed population surveys of hearing impairment in the Cape Town Metropolitan area and in Elias Motswaledi local municipality reported prevalence estimates of12% and 20% respectively[2,3].

Untreated hearing impairment in adults has been linked to depression, anxiety and other psychological disorders [4] as well as increased risk of dementia [5]. Furthermore, when left untreated, moderate to severe hearing impairment can have a negative impact on an individual's health-related quality of life [6].In spite of these known negative consequences of untreated hearing impairment, adults with hearing impairment tend to delay seeking help for hearing impairment and underutilize available rehabilitation services [7-9]. For instance, one study conducted in Australia reported thatindividuals≥50 years old who have hearing impairment do not seek professional help about their hearing difficulties [7]. Even more worrying is the

fact that fewer individuals with disabling hearing impairment use hearing aids [10]. For instance, in the United States, Kochkin [8] reported that approximately 40% of people with moderate to severe hearing impairment, and 10% of people with mild hearing impairment own hearing aids. There are also some reports that hearing aid adoption rates are significantly lower in developing countries than western countries [11].

Several researchers have investigated factors that influence the decision to seek or not seek help for hearing impairment [9,12 -14].The bulk of evidence from these studies seems to suggest that hearing help-seeking behaviors and hearing aid uptake can be attributed to a variety of factors [11]. Social pressure, self-reported hearing difficulties [12], suggestions or recommendations from health professionals or family members [13], acknowledgement of hearing impairment [9] and greater hearing related activity limitations and participation restrictions [14], have all been reported as some of the factors that influence individuals with hearing impairment to seek help. However, negative attitudes and perceived stigma from family members, acceptance of hearing loss as part of the aging process were cited as some of the main reasons why individuals with disabling hearing impairment delay seeking help for their hearing impairment [15]. Most recently, Zhao and colleagues conducted a review to explore the influence of culture on hearing help-seeking and hearing aid uptake. They concluded that different cultural value systems hold different views towards ageing, disability, hearing loss and hearing aid use and this has implications for help-seeking for hearing impairment and hearing aid adoption rates [11].

For any health condition, the decision process to seek help or notis complex and is instigated by a problem that challenges personal abilities [16]. This decision process generally involves three elements: the help seeker, the problem for which help is sought and an individual from who help is sought [17]. Saunders and colleagues [18] are of the view that the decision to seek help is strongly influenced by factors that are independent of a specific health condition and symptoms. Therefore, help-seeking should be examined within the framework of multi factorial models such as health belief model (HBM), trans-theoretical stages model [18] or the WHO's International Classification of Functioning, Disability and Health (ICF) [11]. HBM was used by Saunders and colleagues to study hearing health behaviors and it was found to be an appropriate framework for examining hearing health behavior [19]. The ICF framework was also shown to be very valuable in identifying factors that influence help-seeking for hearing impairment and hearing aid adoption in older Australians [20].

Most of the research on help-seeking for hearing impairment has been conducted in developed countries and in most cases they involve specific populations e.g. the elderly. Hearing impairment is also a pervasive health problem in developing countries and contributes significantly to the burden of sensory disabilities. Furthermore, given the emerging research evidence that seems to suggest that cultural value systems may play a role as a determinant for help-seeking help for hearing impairment and hearing aid adoption, there is a need for studies of this nature to be conducted from a diversity of contexts, including developing countries, to find out factors that influence individuals with hearing impairment to seek help (or not) for their hearing difficulties. Identification of such factors could be useful in informing educational campaigns aimed at members of the public about the importance of seeking help for hearing impairment on time as well as the negative consequences that can result from neglecting their hearing difficulties.

This study therefore sought to answer the following research question: Amongst residents of Cape Town Metropolitan area, what factors are associated with a high likelihood of seeking help for hearing impairment? It was hypothesized that severity of hearing impairment is associated with a high likelihood of seeking help. That is, individuals with more severe hearing impairment were more likely to seek help than those with mild hearing impairment.

Study context

The South African health system consists of a public, private and the Non-governmental organization sectors. The public health care sector serves majority (>85%) of the population and it is funded primarily through government funds [21]. Audiology services in the public health care sector are provided free of charge for indigent populations and at highly subsidized prices for individuals with sources of income. Services are mainly located at hospital show ever, for initial consultation, prospective service users are expected to first go to their nearest primary health care clinic where they will be referred to hospitals based on their needs. The current study was conducted in the Cape Town metropolitan area, South Africa. The area has an estimated population of about 3 740 026 people (based on 2011 national population census). There are at least six hospitals that provide audiology services in the Cape Town metropolitan area. It is estimated that about 5% of residents in this area (about 187 000 individuals) have disabling hearing impairment [2]. Individuals diagnosed with hearing impairment are fitted with government-funded hearing aids. Majority of hearing aids issued are behind-the-ear (BTE) hearing aids with custom molds or open fit and patients are usually fitted monaurally. Services are provided by qualified, university-trained Audiologists.

MATERIALS AND METHODS

Participants

Participants in this study were individuals from predominantly historically disadvantaged communities in the Cape Town Metropoloitan area. A cross-sectional population survey design was conducted between February and October 2013 in the Cape Town metropolitan area. Random cluster sampling was used to select four health districts (cluster) from a total of eight health districts in the area. Each cluster was further stratified according to the dwelling type (i.e. free standing house, block of flats and shacks) and an effort was made to ensure that households surveyed represented a wide variety of dwelling types in each of the four health districts surveyed. For each dwelling type strata, a total of 8 streets were randomly selected. Fifteen dwellings were identified in each street using the area map, starting from the first house to the right of the street corner and then including every second house from this point until 15 households were visited for each of the 8 selected streets.

All individuals in the selected households who gave consent to participate in the study were screened for hearing impairment. Individuals who refused to give consent, were not at home during data collection times, unable to understand either written or verbal instructions, had cognitive impairment or communication difficulties were excluded from the study.

Data Collection procedure

Ethical approval to conduct this study was sought and obtained from the University Of Cape Town Faculty of Health Sciences Human Research Ethics Committee (HREC REF 603/2012). Thereafter, a pilot study was conducted in one of the 4 health districts selected to assess feasibility and suitability of study materials and protocols. The outcome of the pilot study revealed that the materials and testing protocol proposed for this study were suitable and feasible in the communities selected to be surveyed.

The rest of data collection followed after the pilot study was completed. On the days of data collection, the research team approached selected households, explained the purpose of the study to the household members and invited them to participate. If they agreed to participate; the research team entered the household and followed the following protocol;

• Ask for consent from each member of the household ≥18 years old. For participants <18 years old, consent from the parent or legal guardian as well as assent from the child (where appropriate) were obtained before being enrolled as partipants in this study. Participants were also asked to sign a consent form (or make an 'X" mark on the consent form for individuals who could not read or write) as an indication of their willingness to participate in the study. Thereafter, testing protocol proceeded as follow;

O Measure ambient noise levels in the room

O Conduct a case history interview

O Assess the participant's hearing status; otoscopy, screening tympanometry and pure tone screening audiometry.

Measurements of ambient noise level in the room was done using Bruel & Kjær 2239 Type II Integrating Sound Level meter (Bruel & Kjær , Denmark)prior to start of hearing assessment. If noise levels were deemed suitable for pure tone testing (i.e. ≤ 50 dBA) the participant (or their parent/legal guardian) was interviewed to get background information about their hearing status and hearing help-seeking patterns. Thereafter otoscopic examination (Heinne S700 mini) and tympanometry screening (Grason-Stadler Inc [GSI]-39 screening tympanometer, Gradson-Stadler Inc) were conducted. Finally, participant's hearing thresholds were screened in the following frequencies; 0.5, 1, 2 & 4 kHz using the GSI-18 screening audiometer. If hearing loss was detected during screening, a diagnostic hearing assessment was done using a Kuduwave audiometer (GeoAxon, South Africa) to confirm the degree and type of hearing impairment. All information (including audiometric thresholds) was recorded in the WHO/PDH Ear and Hearing Disorders Examination Form Version 8.3\

(http://www.who.int/blindness/Ear_hearingsurveyformup-dtaed.pdf?ua=1).

The Hearing Disorders Examination Form was adapted to include a space to record the answers to the following questions specific to help-seeking:1.) Do you have hearing problem or difficulty 2?) Have you ever sought audio logical services for your hearing problem or difficulty, 3) Have you ever had a hearing test before? (For individuals who answered "yes" to the first question).

Participants with abnormal audiometric test results were referred to their nearest health care facility to receive appropriate management for their hearing impairment. All audiometric instruments were calibrated before the study and were used exclusively in this study for the duration of the survey. Furthermore, biological calibration of the instrument was performed every morning before the equipment was used.

Data Analysis

Data was captured in a Microsoft Excel spread sheet (Microsoft, Redmond, Washington, United States of America) for analysis. Both descriptive (means, medians and percentages) and inferential (Chi-square [X^2], alpha = 0.05) statistical methods were used to analyze the data.

RESULTS

Of the 396 households visited, 11 (households) refused to participate or no one was home (26 households). The number of individuals per household ranged from 3 to 7. The non-respondents were distributed evenly across all the health districts surveyed. A total of 1247 individuals were approached and enrolled in this study and subsequently screened for hearing impairment. At least 13% (166/1247) of individuals screened had some degree of hearing impairment (PTA >30 dB HL) as per the outcome of the diagnostic hearing test that was used to confirm the degree and type of the hearing impairment. About two-thirds (106/166) of the participants with hearing impairment were females, median age 31, range18-92, years old, about one third (54/166) of them had a disabling hearing impairment. There were two (2) people out of 166 who reported ever using or were using hearing aids at the time of this study. Finally 21%, 35/166 individuals with hearing impairment reported seeking audiology services for their hearing problems. Refer to table 1 for detailed description of the participants (Table 1). Factors associated with high likelihood of seeking help for hearing impairment. Further analysis of the results was done using chi-square test [X^2] to determine associations between help-seeking patterns and different participants' factors. Self-perceived hearing impairment was associated with a high likelihood of seeking audiology services for hearing impairment ($p=0.002<0.05$). Other participants' factors such as; age, gender, family history of hearing impairment, severity of hearing impairment, level of education and employment status were not associated with whether or not the individual sought help for their hearing impairment. Refer to Table 1 for associations.

DISCUSSION

This study aimed to explore factors associated with a higher likelihood of seeking audiology services by individuals with

Table 1: Detailed description of the participants.

Variable	*n (%)*	*Sought Help n(%)*	*Did not Seek Help n (%)*	*Chi-square*	*df*	*p-value*
GENDER				0.29	1	0.63
Male	60 (36)	14 (23)	46(77)			
Female	106 (64)	21(80)	85(20)			
AGE (Years)				1.69	3	0.59
<18	24(15)	6(25)	18(75)			
18-34	36(22)	11(18)	49 (82)			
35-59	62(37)	15(24)	47(76)			
60+	43(26)	9(21)	34(79)			
SELF-PERCEIVED HEARING IMPAIRMENT				9.43	1	0.002*
Yes	74(46)	24(32)	50(66)			
No	88(54)	11(13)	77(87)			
FAMILY HISTORY OF HEARING IMPAIRMENT				0.26	1	0.61
Yes	28 (18)	7(25)	21(75)			
No	131(82)	27(21)	104(79)			
PURE TONE AVERAGE*(0.5, 1, 2 & 4 kHz)*				1.92	1	0.37
26-40 dB HL	99(64)	17(17)	82(83)			
>41 dB HL	54(35)	14(24)	40(74)			
LEVEL OF EDUCATION				9.56	3	0.067
None	1(1)	1(100)	0(0)			
Primary	33(28)	28(85)	5(15)			
Secondary	81(69)	67(83)	14(17)			
Tertiary	2(2)	2(100)	0(0)			
EMPLOYMENT STATUS				6.46	5	0.25
Employed	29(19)	4(14)	25(86)			
Unemployed	44(29)	8(18)	36(82)			
Baby/Learner	27(18)	7(26)	20(74)			
Housewife	6(4)	2(33)	4(67)			
Pensioner	41(27)	10(24)	31(76)			
Other	5(3)	3(60)	2(40)			
HEARING AID USE						
Yes	2(1)	-	-	-	-	-
No	144(87)	-	-	-	-	-
No response	20(12)	-	-	-	-	-

hearing impairment in the Cape Town metropolitan area. It was hypothesized that severity of hearing loss is associated with a high likelihood of seeking help for hearing impairment. Key finding of this study revealed that only a small proportion 21% (35/166) of individuals with confirmed hearing impairment reported seeking audiology services to get help for their hearing impairment. The proportion of individuals who reported seeking help for their hearing impairment in this study was much less than expected, especially considering that in South Africa, individuals with hearing impairment can access audiology services at minimal or no cost to them depending on their ability to pay. Similar findings were reported in another publicly funded health care system (the United Kingdom's National Health Service, NHS) where it was also reported that despite readily accessible and cost-free audiology services, majority of individuals with hearing impairment did not benefit from these services as expected [22].

Several reasons have been put forth to explain this observed and or reported reluctance to seek help by individuals with hearing impairment even when services are accessible and free of charge to them. Stephens and Jones [23] are of the view that this has to do with the fact that even though hearing impairment may have a negative impact on an individual's quality of life, it is not perceived as a life-threatening condition. Therefore, individuals with hearing impairment tend to delay seeking treatment until they cannot communicate even in the best of listening situations [24].

Cultural value systems have also been suggested as another factor that should be considered when trying to make sense of individuals' decision to seek care for hearing impairment or not [11]. Different cultural value systems have different ways of perceiving and interpreting issues such as hearing impairment and this has implications for how people go about seeking care for their hearing difficulties [11]. Specific to South Africa, traditional healers still play an important role in the health system [25]. Therefore, while individuals with hearing impairment may not be seeking audiology services via the mainstream health care system, they may consult with the traditional healers and therefore receive recommendations that are in line with traditional ways of addressing their hearing problems [26] and those may not necessarily include a recommendation to seek audiology services. Finally, it has also been shown that South Africans living in Cape Town tend to put more value on health conditions that involve pain and impact negatively on mobility than conditions that affect cognitive or sensory function such as hearing impairment [27]. This can potentially influence decision making process regarding seeking help for hearing impairment.

The current study also investigated the influence of the following factors; age, gender, level of education, employment status, family history of hearing loss, degree of hearing impairment and self-perceived hearing impairment on the likelihood of seeking help for hearing impairment. Self-perception of hearing impairment was found to be strongly associated with the likelihood of seeking help for hearing impairment. This was consistent with the findings of previous studies which also found that self-perception of hearing impairment was the strongest determinant of help-seeking behavior for hearing impairment, especially when such hearing impairment interferes with activities of daily living [12,20,28].

An unexpected finding in this study was the fact that severity of hearing impairment was found not to be associated with a higher likelihood of seeking help for hearing impairment thus rejected the study hypothesis. While the finding of this study was consistent with what was reported in a study by Duijvestijn and colleagues [12], it was quite departure from Meyer and Hickson's study findings [20]. In their study, Meyer and Hicks on found that one of the determinants of help-seeking behavior for hearing impairment wasseverityof hearing impairment [20]. These discrepant findings between the current and Meyer and Hickson [20] study could possibly be due to the differences in the sample characteristics between the two studies. Another plausible explanation for these divergentfindings could be due to the fact that other factors such as social pressure and stigma associated with use of hearing instruments are important considerations to keep in mind when making decision about seeking help for hearing impairment [20].Therefore these individuals have to weigh these factors relative to severity of their hearing impairment before making a decision to seek help. Given that these other factors (i.e. social pressure and stigma) may be context-specific, it makes sense that different studies will come up with different outcomes regarding the influence of severity of hearing impairment and on the likelihood of seeking help.

Other individual's factors such as age, gender, level of education, employment status and family history of hearing loss were not found to be associated with a likelihood of seeking help for hearing impairment in this study. With respect to age, other studies have reported that older people are more likely to seek help for hearing impairment than younger individuals [29], however, that was not found to be the case in this study. It was also found in this study that gender and level of education had no influence on an individual's decision to seek help and this is consistent with what was reported in other studies [12].

CONCLUSION

The findings of this study showed that for the majority of individuals with disabling hearing impairment who took part in this study, degree of hearing impairment was not associated with a higher likelihood of seeking audiology services for hearing difficulties. Instead, participants were more likely to report seeking help for hearing impairment if they perceive their hearing impairment to be severe and impacting negatively on their daily function. Age, gender, level of education, severity of hearing impairment and employment status also did not influence help seeking for hearing impairment for participants in the current study. Therefore more research is needed to identify contextually relevant factors that influence South Africans to seek audiological services for their hearing impairment so that services can be better aligned with the characteristics and the behavior of potential service users.

Limitations and Implications for further research

The findings of this study should be interpreted with caution in light of its methodological limitations; study population for this study represented mainly participants from historically disadvantaged communities in Cape Town and not all resident of the Cape Town metropolitan area. However, these participants make up a significant proportion of individuals who use audiology services in the public sectors. Furthermore, because of the exploratory nature of this study, participants were not asked to give reasons why they did not seek help for hearing impairment, even in cases where it was clear that they could benefit from audiological intervention given their hearing impairment profile. Finally, the study focused more on the influence of personal and hearing impairment factors on help seeking and did not use multi-factorial frameworks such as HBM and ICF which can help to uncover attitudinal and contextual factors that are pertinent to individuals seeking or not seeking help for their hearing impairment. However, in spite of its methodological limitations, this study has revealed important information that could be critical to shaping models of service delivery for hearing impairment in Cape Town and possibly in South Africa. Future research in this area should aim to find out why people with

disabling hearing impairment do not seek help, the influence of cultural beliefs and other attitudinal factors on help-seeking for hearing loss as well as the reasons for low utilization of hearing aids observed in this study.

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