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Reasons for non-use of hearing aids among adults with hearing loss from different age groups

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Abstract

Adult hearing loss is highly prevalent and negatively impacts quality of life. Though regular hearing aid use is known to have several benefits in these adults, their uptake and use of hearing aids is significantly low. The present study aims to find out and compare the reasons for hearing aid non-use among young, middle-aged and older adult non-users and past users with hearing loss. 105 adults with post-lingual moderate to profound hearing loss, distributed across three age groups, comprising 60 non-users and 45 past users responded to a researcher-developed tool listing out audiological and non-audiological reasons for hearing aid non-use.

Among non-users, reasons differed significantly for the young and middle-aged and the young and older adults. Among past users, significant difference was found between the middle-aged and older and the young and older adults. The reasons listed by non-users and past users were also found to differ significantly. The reasons for hearing aid non-use that are considered important by adults from different age groups are influenced by their life stages and expectations from hearing aids.

Keywords: Hearing aids, non-use, past users, hearing loss, adults

Introduction

Deafness and hearing loss are widespread and found in every region and country. Currently more than 1.5 billion people (Nearly 20% of the global population) live with hearing loss; 430 million of them have disabling hearing loss. Globally, approximately 30% of people over 60 years of age have hearing loss. It is expected that by 2050, there could be over 700 million people with disabling hearing loss. Disabling hearing loss refers to hearing loss greater than 35 decibels (dB) in the better hearing ear. Nearly 80% of people with disabling hearing loss live in low- and middle-income countries ^[1].

Hearing loss is a condition that is frequently ignored and denied by people who have it. A person's life can suffer greatly because of hearing loss. It has been demonstrated to have a negative impact on overall quality of life as well as physical, cognitive, behavioural, and social functions ^[2]. Communication issues ^[3], poor emotional health ^[4-6], decreased cognitive function ^[7], and a lower quality of life ^[8] are just a few of the components of daily living that might be impacted. The most fundamental of all human abilities, interpersonal communication, is hampered by hearing loss, which reduces communication effectiveness, which in turn has an impact on contacts with healthcare providers, family relationships, leisure and recreational activities, and job performance. Safety risks can arise from the inability to hear environmental sounds such as car horns or smoke alarms ^[8].

The primary clinical intervention for people with hearing loss is hearing aids. Hearing aids can improve access to sound for those with hearing loss, through acoustic amplification of the sound signal. Utilizing hearing aids has been shown to enhance several aspects of quality of life, including interpersonal communication, warmth and intimacy in family connections, emotional stability, sense of control over life's events, perception of mental functioning, and physical health ^[9].

The use of hearing aids in people with hearing loss who need them has historically been very low and continues to be so ^[9-13]. Only 5.8 million or 23% of persons with reported hearing difficulty own a hearing instrument, representing a gap of almost 20 million people ^[9]. Without listening device intervention, hearing loss can result in several detrimental outcomes, including psychological problems (Such as detrimental effects on quality of life

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and well-being)^[13] and rapid cognitive decline^[14]. The negative ramifications coupled with reluctance for hearing aid usage is concerning to hearing healthcare providers, considering that hearing aid acceptance and use can mitigate these negative consequences. Although the effectiveness of hearing aids is beyond dispute^[12, 15-17], people with hearing loss rarely use listening technology to treat their condition^[2-4]. Despite the considerable advancements in hearing aid technology, uptake and use of hearing aids among adults is still low and remains a serious concern.

Several studies have investigated the reasons for non-use of hearing aids among adults with hearing loss. The belief that the hearing loss is not severe enough is one of the three main deterrents for not wearing a hearing aid, the other two reasons being the cost, and perceived negative images associated with hearing aid use^[9]. Ritter *et al.*^[18] reported internally and externally motivated reasons of hearing aid non-use. A total of nine themes emerged within these supra-themes: four reasons for non-use that were internally motivated and five reasons that are externally motivated. Internally motivated reasons of non-use include: (a) non-necessity, (b) stigmatization, (c) lack of integration into daily living, and (d) unreadiness due to lack of education. Externally motivated reasons of non-use include: (e) discomfort, (f) financial setback, (g) burden, (h) professional distrust, and (i) priority setting.

McCormack & Fortnum^[12] revealed factors relating to hearing aid value and/or fit and comfort of the hearing aid to be the most reported reasons. More specifically these reasons include the hearing aid not being effective in noisy situations, providing poor benefit or poor sound quality, aid not suitable for the type of hearing loss, needing help putting the hearing aid in and taking it out, feeling uncomfortable, or experiencing side effects such as rashes or itching). Cost is an important factor determining non-use of hearing aids in adults^[10, 19, 20] while positive attitude towards hearing aids^[21-23] contributes to hearing aid use. Kochkin *et al.*^[15] reported that people had problems with medical professionals because they felt they had had subpar treatment from their dispenser or that the hearing aid had been oversold. Some studies report no recommendations of hearing aids by hearing care professionals^[10, 19, 23] as a key reason for non-use.

In addition to non-users, there are many adults with hearing loss who procure hearing aids, use them for a short duration and then stop using them. These are considered as past users. Few studies have included past users and irregular or occasional hearing aid users along with the non-users in their studies^[24, 25]. Franks and Timmer^[26] investigated the reasons for non-use of hearing aids among non-users, past users and their family members. Their results showed that hearing aid non-users generally cited external factors as

reasons for non-use, whereas family members reported non-use due to attitudinal barriers. Past users of hearing aids and family members of past users both identified devices factors as barriers to use.

A considerable volume of research has investigated reasons for non-use in adults with hearing loss, but most of the studies have focused on older adults. Adult population encompasses a large range beginning from 18 years of age upwards, having hearing loss due to varied causes such as ototoxicity, noise, infections, and others. It would be interesting to note if the reasons for non-use of hearing aids among young and old adults are similar or vary to any extent.

The aims of the present study were

1. To find out the various reasons for non-use of hearing aids among adults who have been diagnosed with hearing loss and recommended hearing aids.
2. To find out if there is any significant difference between the reasons for non-use of hearing aids across different adult age groups (Young - 25 to 40 years, middle-aged - 41 to 60 years, and older - over 60 years).
3. To find out if there is a significant difference between the reasons for non-use of hearing aids between past users and non-users.

Methods

A survey design with purposive sampling was used for this study. The study was approved by the Institutional Ethics Committee of Ali Yavar Jung National Institute for Speech and Hearing Disabilities, Mumbai, India and the rules of the Institutional Ethics Committee were followed.

Participants were 105 adults with post-lingual moderate to profound sensori-neural or mixed hearing loss who were recommended hearing aids after audiological evaluation, ENT clearance and hearing aid trial with digital BTEs and were counselled about the need and benefits of hearing aids, but did not use them. Participants were divided into study groups as shown in Table 1. Adults with congenital or pre-lingual hearing loss, associated physical or neurological problems were excluded. Non-users consisted of adults who were advised hearing aids on assessment but never procured them; while past users consisted of adults who had procured hearing aids but used them very rarely or never used them at all. All participants from past users' group had procured digital hearing aids with basic technology at least six months before participating in this study and did not use them at all at the time of the study. Variables such as duration of hearing loss, aetiology of hearing loss, configuration of hearing loss, literacy level, job and income, gender and primary language spoken were not controlled.

Table 1: Participant groups

Age group	Non-users	Mean age (Range) in years	Past users	Mean age (Range) in years
25-40 years - Young adults	20	33 (27-40)	15	31 (25-40)
41-60 years - Middle-aged adults	20	53 (41-60)	15	55 (42-60)
Above 60 years - Older adults	20	72 (61-94)	15	76 (62-94)
	60		45	

The authors developed a survey tool in English guided by the literature review and aims of the study. The tool listed the various reasons for non-use of hearing aids under two

sections - audiological and non-audiological in the form of statements which required the participants to respond in terms of "Yes", "Not sure", and "No". It was ensured that

each statement was simple, easily understood and listed a potential reason for hearing aid non-use. The survey tool was examined by 5 senior audiologists who provided ratings for relevance, clarity and understanding of each statement. Suggestions to change the wording of the statements provided by the validators were incorporated. No additional statements were suggested by any of the validators. In the final validated tool, for the non-users there were 8 statements in the audiological section and 17 statements in the non-audiological section, while for the past users there were 12 statements in the audiological section and 21 statements in the non-audiological section. The tool was translated into Hindi and Marathi languages using the standard procedure of translation, back translation and validation. At the end of each of the two sections, participants were provided space to specify any other reasons for non-use of hearing aids that may have been excluded from the reasons listed in the statements.

Demographic information and informed written consent were obtained from the participants after which the survey tool was administered face-to-face. To enable quantitative analysis of the obtained data for comparison of the various groups, obtained responses were provided scores, where 2 points were given for each "Yes" response, 1 point for each "Not sure" response and 0 point for "No" response. Obtained data was tabulated and mean and SD were obtained for the scores on the audiological section and non-audiological section for the participant groups separately. The average scores were compared with one-way ANOVA, for the audiological and non-audiological reasons

separately, as the scores were found to be normally distributed across the groups. Statistical Package for Social Sciences (SPSS) software version 25 was used for the analysis.

Results

The audiological and non-audiological reasons for non-use of hearing aids reported by the adult non-users from the different age groups are shown in Figure 1, while that for the past users are shown in Figure 2. Table 2 provides the mean scores and SD for the three adult groups of non-users and past users for the audiological and non-audiological reasons.

Non-users

Of the 60 non-users, 70% (42) thought the hearing aid to be too costly, 60% (36) thought that the hearing aids did not help in difficult listening situations such as noisy background, 58% (35) stated that they can manage without the hearing aids, while 58% (35) had a belief that the quality of sound from the hearing aids was unnatural. The most common reason provided by young adult non-users (95% participants) for not using a hearing aid was that "hearing aids are not cosmetically appealing". Non-users from middle-aged (75%) and older groups (65%) gave the most common reason as "hearing aids do not help in difficult listening situations, such as noisy backgrounds". Less than 50% of the middle-aged and older participants stated non-audiological reasons.

Table 2: Mean scores and SD for the audiological and non-audiological factors for the non-users and past users

	Audiological		Non-audiological		Grand total	
	Mean	SD	Mean	SD	Mean	SD
Non-users						
Young	9.95	2.373	15.85	4.234	25.8	7.399
Middle-aged	8.15	3.116	12.4	3.939	20.6	5.5098
Older	6.7	3.494	11.35	3.815	18.05	5.742
Past users						
Young	15.2	4.57	26.7	6.965	41.86	10.218
Middle-aged	14.6	5.026	21.06	6.041	35.67	8.756
Older	11.4	3.795	13.66	5.741	25.06	5.548

One-way ANOVA revealed a statistically significant difference between mean scores of the three adult groups of non-users for both, the audiological reasons ($F = 5.016$, $p = 0.01$), as well as the non-audiological reasons ($F = 6.64$, $p = 0.003$). For audiological reasons, post-hoc analysis using unpaired t test indicated significant difference between young and middle-aged ($t=2.05$, $p=0.047$) and between

young and older adults ($t=3.38$, $p=0.002$), but not between young and middle-aged adults ($t=1.36$, $p=0.18$). For non-audiological reasons, post-hoc analysis using unpaired t test indicated a significant difference between young and middle-aged adults ($t=2.668$, $p=0.01$) and young and older adults ($t=3.531$, $p=0.001$), but not between young and middle-aged adults ($t=0.856$, $p=0.397$).

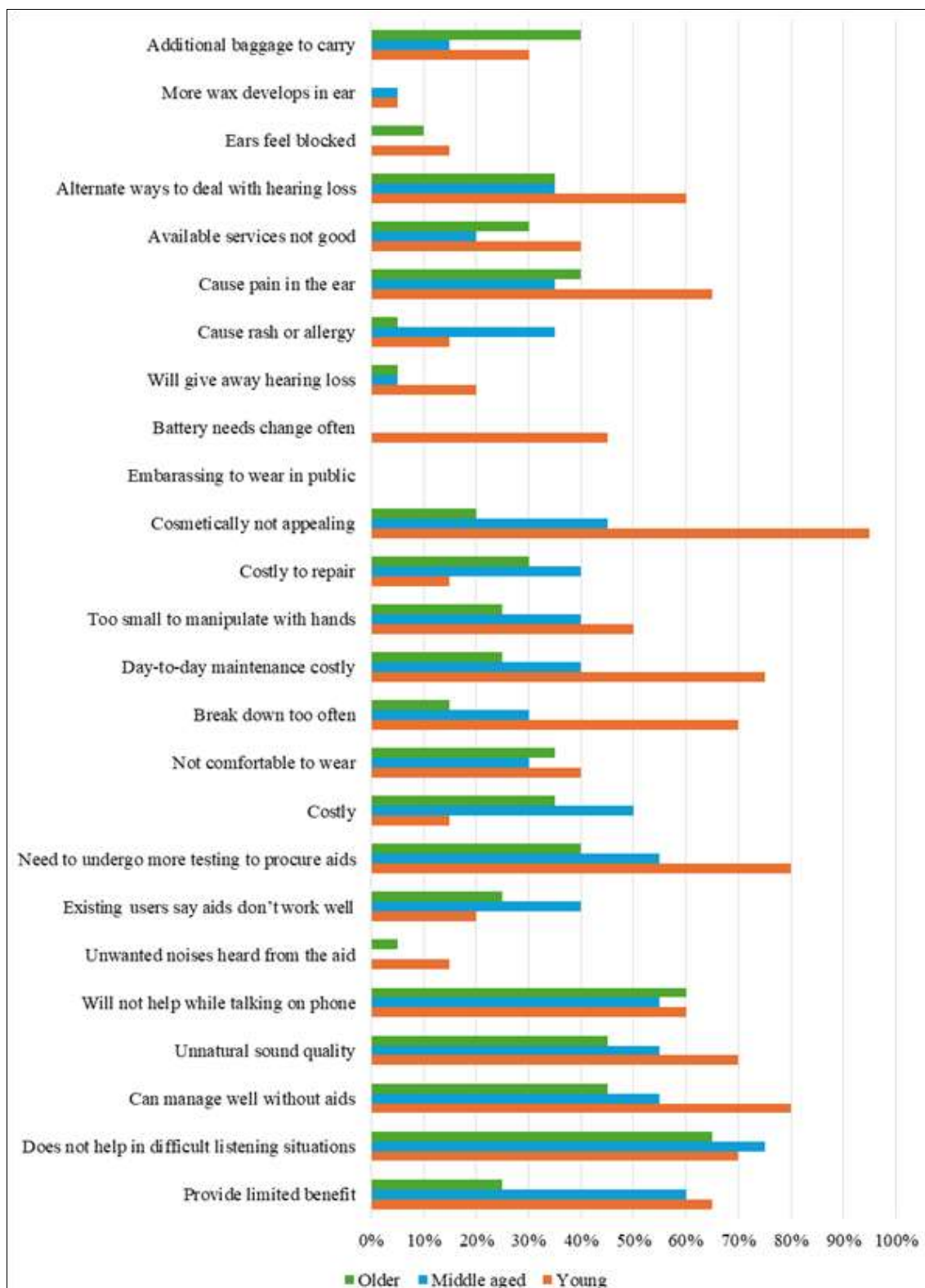


Fig 1: Audiological and non-audiological reasons reported by adult non-users from the different age groups

Past users

Of the 45 past users, 76% (34) stated that the hearing aids did not help while talking on the phone, 73% (33) reported that their hearing aids did not help them in difficult listening situations, 71% (32) reported that they get an unnatural feeling using the hearing aids, 62% (28) reported that the hearing aids were not comfortable to wear, while 58% (26) reported that they had got the hearing aids only due to family pressure. The most common reason provided by young past users for giving up hearing aid use was frequent

breakdown of the aids (86.7%). A high percentage of middle-aged past users (73.33%) reported blocked sensation in the ear as the main reason for non-use, while cost was the most common (93.33%) reason among the older past users. Audiological reasons were cited by more young past users, while the middle-aged and older past users cited non-audiological reasons more commonly.

One-way ANOVA revealed a statistically significant difference between mean scores of the three adult groups of past users for both, the audiological reasons ($F = 3.102$, $p =$

0.05), as well as the non-audiological reasons ($F = 16.219$, $p = 0.000$). For audiological reasons, post-hoc analysis using unpaired t test indicated no significant differences between young and middle-aged adults ($t=0.342$, $p=0.735$), and between middle-aged and older adults ($t=1.968$, $p=0.06$), but there was a significant difference between the young and older adults ($t=2.478$, $p=0.02$). For non-audiological

reasons, post-hoc analysis using unpaired t test indicated a significant difference for all the three comparisons ($p=0.02$). Unpaired t test also revealed a significant difference between the reasons for the non-users and past users, when applied to all the three age groups together and the combined scores of both the audiological and non-audiological reasons ($t=-7.5$, $p=0.000$).

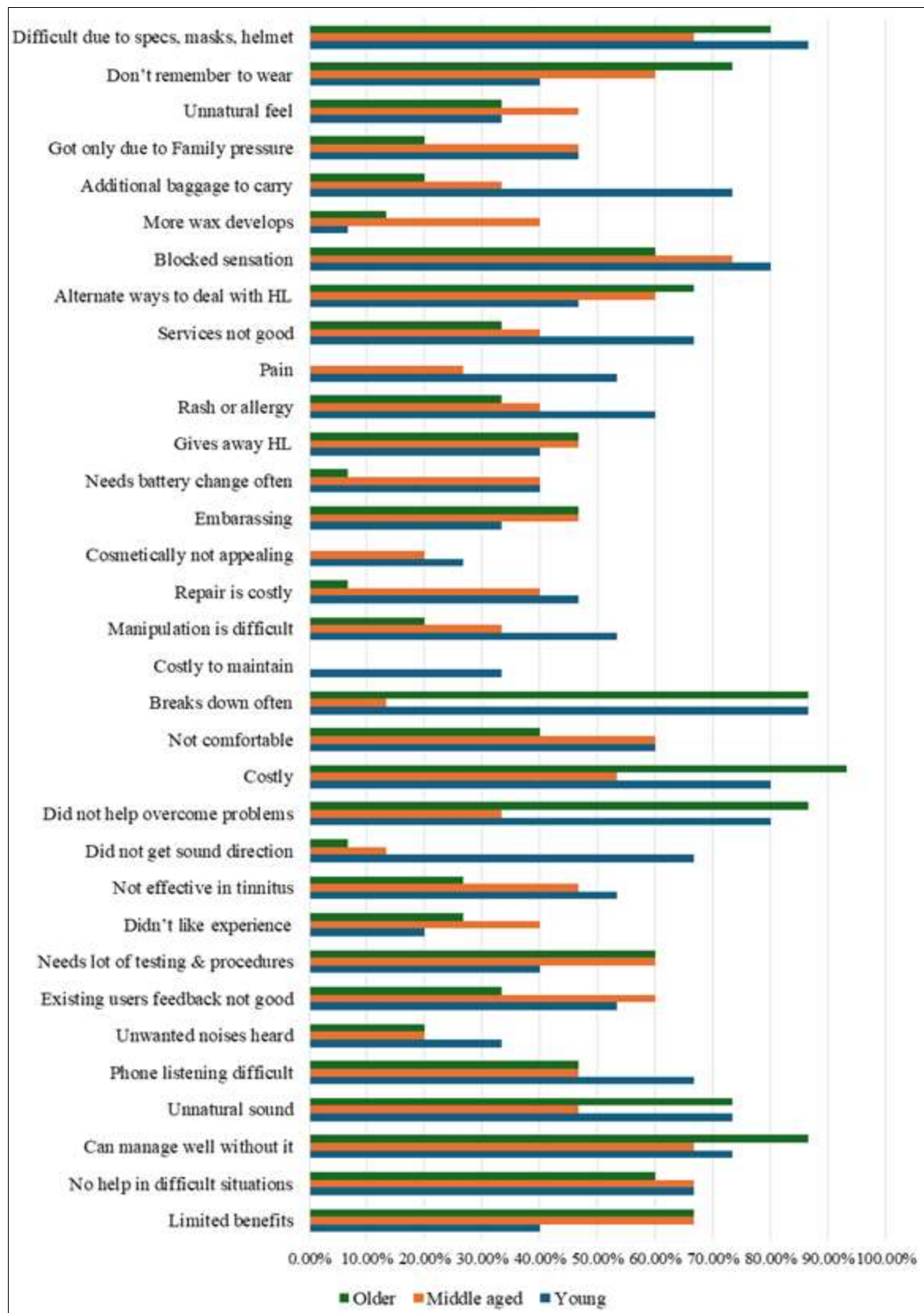


Fig 2: Audiological and non-audiological reasons reported by adult past users from the different age groups

Discussion

The current study examined the reasons for non-use of hearing aids as reported by young, middle-aged and older adult non-users and past users. They were adults with post-lingual moderate to profound sensori-neural or mixed hearing loss and were recommended hearing aids after assessment and hearing aid trial. The study attempts to compare the reasons provided by adults from the three age groups as well as compare the reasons provided by non-users and past users.

The results of this study provide valuable insights into reasons that are considered important by adults from different age groups for non-use of hearing aids. As the young, middle-aged and older adults are at different life stages with different demands on activities and participation, their expectations from hearing aids can be presumed to differ. It is the non-fulfilment of these expectations that drives the reasons for non-use or non-acceptance of hearing aids. All the reasons considered important by the adults in this study have been reported to be commonly cited by participants in earlier studies, though comparisons between adults from different age groups has not been reported earlier.

The top reason provided by adults who had never used a hearing aid was non-audiological i.e. the hearing aids are too costly. This is primarily based on their misconceptions or hearsay from known users or past users. Other commonly chosen reasons by non-users were also non-audiological such as lack of cosmetic appeal, high cost of hearing aid maintenance, need for detailed diagnostic testing to procure a hearing aid and frequent breakdown of the devices. Franks and Timmer^[26] also reported that people with hearing loss who have never used hearing aids cited reasons for non-use primarily associated with external factors. The top audiological reason provided by non-users was the belief that they do not need a hearing aid, and that they can manage without one, primarily stemming from denial of the hearing loss. This has been reported by several studies in the past and seems to be the most important reason for non-use of hearing aids universally^[15, 25, 26].

Among the non-users, several participants from all the age groups were “not sure” about some of the reasons. Young adults were not sure if “unwanted noises heard from the hearing aid” (30%); “hearing aid is too costly” (25%); repair is too costly” (35%); and “hearing aid gives a blocked sensation” (25%). Among the middle-aged adults, the reasons that they were not sure about included “unwanted noises heard from hearing aid” (85%); “hearing aids are not comfortable” (60%); “manipulation of hearing aids is difficult” (55%); “embarrassing to wear aids” (35%); and “hearing aids give a blocked sensation” (60%). Older adults were not sure about “unwanted noises heard” (95%); “hearing aids are not comfortable” (65%); “manipulation of hearing aids is difficult” (60%); and “hearing aids give a blocked sensation” (60%). It is evident from this that as they have no experience of using hearing aids at all, they were not sure of these reasons, which one would experience only after having used the hearing aids for at least some duration. Participants who responded to them as yes or no had done so mainly based on their interactions with other users/past users or information from other sources.

For adults who had an experience of using hearing aids, but did not continue to use them (past users) the main reasons were based on their negative experiences with the hearing aids such as frequent breakdown, blocked sensation and no

benefit in adverse listening situations where they needed it the most. Similar reasons have been reported by Franks and Timmer^[26] i.e. discomfort and lack of benefit in difficult situations. Cost restrictions have been reported as an important reason by adults from all the three age groups and by several earlier studies^[10, 12, 24]. Similar results have been reported in a review by McCormack and Fortnum^[12] wherein the most cited reasons for discontinuing use of hearing aids were hearing aid value, comfort, and fit reasons. Bertoli *et al.*^[24] found that dissatisfaction with the device and management difficulties were significant factors in people no longer using hearing aids. They reported that non-regular use of hearing aids was significantly associated with factors such as age, gender, regional language, total duration of use, type of amplification, hearing aid category, hearing loss, dissatisfaction with and difficulties in managing the aid. They found that older adults were at significantly higher risk of non-regular use compared to middle-aged ones and women were at significantly lower risk for non-regular use. In the present study, analysis was not done according to gender or duration of prior hearing aid use.

Lockey *et al.*^[27] have suggested that successful hearing aid use is not dependent on device related and hearing loss related factors alone but is considerably influenced by an individual's ability to participate in daily life and how much this participation is affected or limited by hearing loss. This is evident in the reasons commonly cited by adults from all three groups such as frequent breakdowns, blocked sensation, no benefit in difficult situation, etc. These factors come in the way of the individuals with hearing loss fulfilling their daily activities, leading to rejection of the hearing aids. Typically, many participants reported procuring a hearing aid only due to pressure from their family members, another indication of poor acceptance or denial of their hearing loss.

Kochkin^[16], in the MarkeTrak V survey, reported that 907,200 hearing aid consumers never use their hearing aids. The top 10 reasons listed in this survey include minimal or non-existent benefit, poor benefit in background noise, discomfort including rash and itching, cost, no need for hearing aids, broken hearing aids, poor sound quality, difficulty manipulating controls and no specific reasons stated. Studies such as those by Cohen-Mansfield^[25] have reported almost 50% of their participants felt they did not need hearing aids.

As compared to the non-user group, lesser number of participants from past user group appeared to be “not sure” of the reasons for non-use from both audiological and non-audiological categories. It is surprising that 60% of the young past users were not sure whether hearing aid fitting required extended tests and procedures, while 40% were not sure if hearing aid usage led to rash or allergy. 53% of the middle-aged past users were not sure if hearing aids fall short in providing good listening on the phone, while 33% older adults were not sure if hearing use leads to blocking of the ears. These responses can be considered to confirm the point that these adults have procured hearing aids but hardly used them and hence have poor experiences about the various benefits and limitations of hearing aids.

Strengths and limitations of the study

A strength of this study is inclusion of adults from various age groups and individuals who were non-users and past users. The reasons identified for the specific age groups will

help during counselling of individuals with hearing loss who are found to need hearing aids upon audiological testing. The study has collected data based on self-administered researcher-developed tool and has the limitations of this study design. Analysis to study the influence of factors such as degree of hearing loss, duration of hearing loss, gender, literacy level, and socio-economic background was not conducted. The sample size is small, and results cannot be generalised to a larger population. Further studies should explore the effects of other demographic and clinical variables on a larger sample of non-users and past users. Results also highlight the need to engage in thorough counselling of individuals with hearing loss and their family members to dispel the misconceptions about hearing aids. Aural rehabilitation and listening training even before fitting of hearing aids may help in bringing about awareness regarding the impact of hearing loss and the difficulties due to it, which may lead to better acceptance of the hearing loss and openness towards hearing aid trial and fitting.

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