



Impact of COVID-19 Pandemic on Older Adults Using Hearing aid/s: Indian Scenario

Manisha Nigam¹ · Anuj Kumar Neupane¹

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Abstract

The present study explored the impact of COVID-19 on hearing health and problems faced by older adults using hearing aid/s. Fifty older adults in the age range of 55–95 years were selected for the study based on the inclusion and exclusion criteria. Therefore, the developed questionnaire was administered to them. Statistical analysis was performed for all the responses achieved. Closure of hearing aid companies and audiological centers was found to have a negative impact on availing audiological services. Likewise, a huge hike in the price of these services made it impossible for people to afford them. Despite the availability of tele-audiology, older adults were not able to make the best use of it due to numerous reasons. We sought to explore patients' perceptions to break down these barriers by enhancing the quality of tele-audiology, home visits, and remote services. Therefore, the present report may facilitate in planning and implementation of policies related to audiological services, especially during times of crisis, which may help strengthen our hearing health care system.

Keywords COVID-19 · Older adults · Hearing aids · Remote services · Tele-audiology · Age-related hearing loss · Audiologists

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or coronavirus disease 2019 (COVID-19) emerged in December 2019 and was declared a global health emergency of international concern by the World Health Organization [1]. The first case of the disease was reported in India in the first quarter of 2020, and the number continued to rise [2]. The disease featured clinical symptoms such as fever, cough, shortness of breath, sore throat, headache, muscle pain, and a change in taste and smell. The situation was of utmost concern due to its rapid transmission to a large number public, leading to high morbidity and mortality, and ultimately social and economic disruption [3–5]. Therefore, to reduce the spread of infection, urgent measures of restriction

in the movement and social interactions were executed [6]. Nearly every country in the world including India implemented full or partial restrictions as part of social distancing to reduce the transmission of disease [7, 8]. Yet, these restrictions had a negative toll on the access to health care services, especially among those with a disability such as hearing impairment [5, 8, 9].

Individuals with hearing impairment need periodic evaluation, intervention, and guidance in order to cope with the effects of hearing loss. Meanwhile, hearing-related problems such as tinnitus, hearing loss, and vertigo were at an all-time high among individuals post-COVID-19 infection [10, 11]. Further, the usage of the mask as a protective mechanism highlighted even the lower degree of hearing loss among them, which was often overshadowed by their lip-reading abilities [12]. Though the strict restrictions imposed initially were relaxed in the later part of the pandemic with the slogan 'new normal', providing audiological services was not without obstacles. Several national and international bodies responded swiftly with the guidelines and positional statements to assist in adapting to the changing clinical scenario [13–17], yet the COVID-19 catastrophe impacted audiological services profoundly in India, requiring modifications

✉ Anuj Kumar Neupane
anujkneupane@gmail.com

Manisha Nigam
manishanigam23@yahoo.com

¹ School of Audiology & Speech-Language Pathology, Bharati Vidyapeeth (Deemed to be University), 411043 Pune, India

to current practices and adaptations to the rapidly changing situations. These, in turn, resulted in a severely compromised service delivery system with a limited number of appointments [5, 18].

India reports a hearing disability of 0.3% of the total population. Around 49.8% of them are reported to have a higher degree of hearing loss [19, 20]. A higher prevalence of hearing impairment has been reported among elderly individuals as compared to the younger group. There is a trend of rise in hearing loss across age groups where till the age of 45–50 years, it is slower and rises sharply beyond it [20]. The higher prevalence of hearing loss in the elderly population has increased the need for the usage of amplification devices such as hearing aids [21, 22]. However, these older adults with hearing impairment have also been of prime victims of COVID-19 restrictions. Higher susceptibility to infections and dexterity issues often led them to be labeled as vulnerable and so, were unable to utilize hearing care services despite the fact that these services were critical to meeting their daily communication needs [5]. The strict implication of preventive measures such as wearing a mask has often led to social exclusion especially among older adults using hearing aid/s [23]. Though Alqudah et al., [24] attempted to understand the effect of the COVID-19 outbreak on hearing aids users, these effects on hearing health of older adults using hearing aid/s have never been explored previously. Also, there is a need to understand the impact of the condition in the Indian scenario which may further help to deal with the situation indigenously. Therefore, the present study aimed at understanding the impact of COVID-19 on hearing health and problems faced by older adults using hearing aid/s. The study also attempted to explore patients' perspectives on alternative approaches to the traditional model of hearing care services.

Materials and Methods

Phase I: Development of the Questionnaire

The present study comprised the development of a questionnaire to inspect the impact of the COVID-19 pandemic and restrictions on accessing audiological services among older adults using hearing aid/s in the Hindi language. The questions were framed under two sections. Section A comprised 9 questions related to the demographic details and information on hearing health, and hearing aids worn by the participants in the study. Section B consisted of 13 questions that focused on the participants' perception of potential factors that may have hindered hearing care services due to the pandemic. This section also demanded input from the patients on eliminating barriers to procuring audiological services

even in difficult restrictive scenarios. Hence, the developed questionnaire was validated by five audiologists fluent in the Hindi language. Each of the questions was rated in terms of its relevance, clarity, simplicity, and ambiguity on a 3-point rating scale (i.e., 3 = most appropriate; 2 = appropriate, and 1 = not appropriate). Those questions which were scored 2 and 3 were retained in the questionnaire for the study (Appendix I).

Phase II: Administration of the Questionnaire

A cross-sectional study design along with purposive sampling was utilized in the study. The developed questionnaire was administered among older adults using hearing aid/s and procuring services from the audiological centre. These participants had post-lingual hearing loss and were using digital/analog hearing aid/s for at least 2 months period. None of them reported any significant neurological, radiological, cognitive/behavioral, vestibular, or other otological problems related to hearing, speech, and language. Also, the infrequent hearing aid users (<11 h/week) were excluded from the study [25, 26]. The questionnaire was administered as per the convenience of the patients either via face-to-face modality or telephonic conversation. A total of 15 min was required to complete the questionnaire for each participant.

Ethical statement

The study was approved by the departmental research advisory committee and the Institutional Ethics Committee (REF: BVDUMC/IEC/43). The participant information sheet was explained to each of the participants. Therefore, informed consent was obtained prior to the administration of the questionnaire. All procedures performed in the study were in accordance with the Declaration of Helsinki (1975) and subsequent amendments.

Results

In the present study, the questionnaire was administered to fifty older adults using hearing aid/s in the age range of 55–95 years. Section A shows the demographic details and information on hearing health, and hearing aid/s worn by the participants in the study (Fig. 1). The majority of the participants i.e., 36% (n = 18) belonged to the age range of 55–65 years, 22% (n = 11) of them were between 66 and 75 years of age, 32% (n = 16) were of 76–85 years, and 10% (n = 5) were above 95 years of age. Most of the participants were males, comprising 80% (n = 40) of the study population, and the rest 20% (n = 10) were females. All the individuals were diagnosed with sensorineural hearing loss but

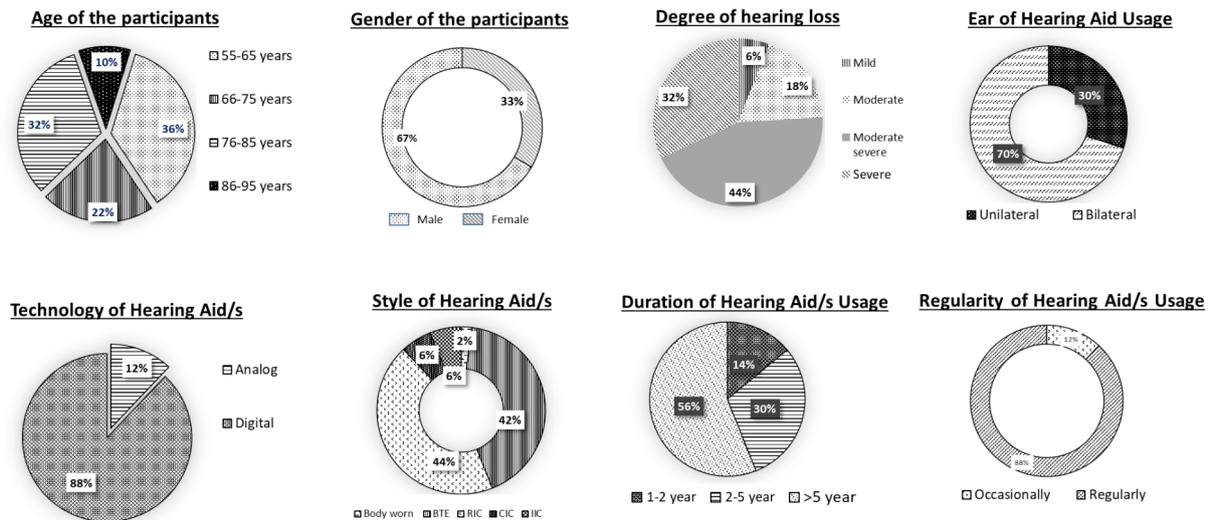


Fig. 1 Baseline demographic details of the participants (n = 50) along with the status of hearing health, and hearing aid/s of the participants, retrieved from section A of the questionnaire

with variable degrees. Most of them had moderate to severe hearing loss, followed by mild, moderate, and severe sensorineural hearing loss. Hence, most of the participants were equipped with bilateral digital hearing aids. Regarding the style of hearing aid/s worn, most of them had Behind-The-Ear (BTE) followed by Receiver-In-Canal (RIC), Body-Level, Completely-In-Canal (CIC), and Invisible-In-Canal (IIC) hearing aids. Participants were all regular hearing aid users and had been using them for at least a year.

Section B focused on the participants’ perception of potential factors that may have hurdled hearing care services due to the pandemic (Table 1). In the study, it was found that 46% (n = 23) of the participants were just as concerned about their hearing health as they were about their overall health. Most of them i.e., 84% (n = 42) reported having no variation in the severity of hearing health due to the pandemic while 16% (n = 8) reported having an increment in the severity affecting daily communication needs. Yet, 52% (n = 26) of them felt the need to increase the number of visits to audiologists during the restrictions. However, only 14% (n = 7) were able to do so while 86% (n = 43) were unable to access the audiological services. These variations in responses were further inspected with questions on possible hurdles to smooth availability of hearing care services due to the COVID-19 pandemic were asked. There were approximately 54% (n = 27) of the participants who sort of agreed that the closure of hearing aids companies and audiological centers negatively contributed the access to audiological services. Only 32% (n = 16) of the participants believed that the distance was a major obstacle for them to access audiological services, while others disagreed. Likewise, the majority of 56% (n = 28) of them did not feel the

lack of transportation was the major obstacle due to the restrictions. On the other hand, 30% (n = 15) believed a lack of caretakers affected the frequency of visits to audiological centers, while another 70% (n = 35) of them need not require any assistance to make the visit. Meanwhile, most of them i.e., 66% (n = 33) agreed on the lack of concern given by the government agencies on hearing health services during the restrictions. The increased cost of hearing services including the cost of accessories and unreasonable additional charges for home delivery during restrictions were reported as the major factors by 62% (n = 31) of the participants. In the case of remote services provided, 52% (n = 26) of the participants were unable to utilize the service while 34% (n = 17) of them disagreed

In light of the restrictions due to the COVID-19 pandemic, inputs were taken on the experience of each of the participants. The majority of the participants i.e., 54% (n = 27) of them rated their experience as good, while 46% (n = 23) disagreed with it. Therefore, suggestions were asked from each of the participants to eliminate these barriers for smooth access to audiological services. About 16% (n = 8) suggested the need for remote services, 18% (n = 9) expressed more home visits, and 12% (n = 6) suggested reasonable charges for the provision of services. Only 4% (n = 2) of them advocated the need for empathetic clinicians whereas 18% (n = 9) reported the need to notify patients regarding their audiological findings. However, only one of the participants highlighted the need for relaxation of COVID-19 guidelines to have easy access to audiological services

The Chi-Square test was performed to understand the association between the above-mentioned variables. It was

Table 1 Perception of the participants on potential factors that may have hindered hearing care services due to the COVID-19 outbreak, retrieved from section B of the questionnaire

S.N.	Questions	Rating scale	Frequency of responses	Percentage (%)
1.	Priority to hearing health as compared to overall health during COVID 19 pandemic	Equally Preferred	23	46
		Strongly preferred	15	30
		Moderately Preferred	10	20
		Lowest Preferred	2	4
		Not a Priority	0	0
6.	Deterioration in hearing health during COVID 19 pandemic	Increased	8	16
		Not changed	42	84
		Decreased	0	0
9.	Probability of visits to audiologist in the pandemic	Increased	26	52
		Not changed	24	48
		Decreased	0	0
12.	Frequency of visits to an audiologist since the beginning of the pandemic.	Never	43	86
		Less often	6	12
		Very often	1	2
15.	Closure of audiological centres and companies manufacturing hearing equipment.	Strongly disagree	5	10
		Disagree	6	12
		Neither agree nor disagree	12	24
		Agree	13	26
		Strongly agree	14	28
20.	Distance as the barrier	Strongly disagree	10	20
		Disagree	10	20
		Neither agree nor disagree	14	28
		Agree	11	22
		Strongly agree	5	10
25.	Unavailability of caretaker to accompany during the visit to audiological centres	Strongly disagree	13	26
		Disagree	11	22
		Neither agree nor disagree	11	22
		Agree	5	10
		Strongly agree	10	20
30.	Lack of transportation	Strongly disagree	18	36
		Disagree	10	20
		Neither agree nor disagree	11	22
		Agree	5	10
		Strongly agree	6	12
35.	Lack of focus of government agencies on facilitating hearing health services	Strongly disagree	6	12
		Disagree	1	2
		Neither agree nor disagree	9	18
		Agree	19	38
		Strongly agree	14	28
40.	High Cost of hearing aids and accessories as well as home-based services	Strongly disagree	6	12
		Disagree	1	2
		Neither agree or disagree	12	24
		Agree	21	42
		Strongly agree	10	20
45.	Not able to use hearing aid technology for remote services	Strongly disagree	15	30
		Disagree	2	4
		Neither agree nor disagree	7	14
		Agree	13	26
		Strongly agree	13	26

Table 1 (continued)

S.N.	Questions	Rating scale	Frequency of responses	Percentage (%)
50.	Experience during covid 19	Good	20	40
		Got help	7	14
		Didn't get help	17	34
		Hearing deteriorated	6	12
54.	Suggestions to overcome the barriers to having easy access to audiological services	No comments	15	30
		Remote services	8	16
		Home visit	9	18
		Reasonable rates	6	12
		Empathetic clinician	2	4
		Information imparting	9	18
		Relaxation with guidelines	1	2

found to have a positive correlation between the age of participants and the technology of hearing aids. The degree of hearing loss was found to significantly affect the everyday life of the participants, the style of hearing aid/s opted and the duration of hearing aid/s used. There was a significant correlation between the probabilities of visits to audiologists since the beginning of the pandemic with the deterioration of hearing abilities as well.

Discussion

Hearing loss is one of the most common clinical conditions that affect older adults. This can lead to the deterioration of social functioning can be affected by hearing impairment as we age. Therefore, the primary clinical intervention for people with hearing loss is the use of hearing aids [27]. Hearing aids have been reported to enhance the quality of life in several ways such as the improvement of communication and intimacy among family members; emotional stability and perception of physical and mental well-being [28]. As with any device, handling a hearing aid can be challenging for older people due to their limitations in manual dexterity along with the lack of exposure to the proper care and maintenance of the device [29]. Furthermore, the older adults are considered the most vulnerable to COVID-19, and have resulted in the restrictions of mobility restrictions, which in turn have limited their access to hearing health care services (30). Therefore, the current study aimed at addressing the issues faced by older adults using hearing aid/s from the imposition of restrictions due to the COVID-19 pandemic in India.

The present study involved fifty older adults who were using hearing aid/s prior to the outbreak of the pandemic. Most of these individuals were in the age range of 55–66 years and the least was 86–95 years of age. Though

age-related hearing loss is found to spike with age, most older adults with hearing difficulties avoid using hearing aids as they do not perceive their hearing problems to be severe enough [30]. In the present study, there were more males using hearing aid/s than females. Such a variation across gender could be due to the greater likelihood of males having a hearing impairment than women females. Previous research has demonstrated that men and women differ significantly with respect to several audiological and non-audiological factors, which are likely to influence their use of hearing aids [31]. A possibility for these differences can be explained by the fact that men are relatively exposed to greater noise levels at workplaces than females [32]. All the participants were having sensorineural hearing loss which is the most prevalent type of hearing loss among the aging population [33]. Most participants had moderately severe hearing loss followed by mild, moderate, and severe hearing loss. Although CIC and IIC are more cosmetically appealing styles of hearing aids, it was found that most of the participants were using BTE and RIC hearing aid/s. This could be due to the majority of participants with a higher degree of hearing loss. Electroacoustics measurements have revealed that the RIC hearing aids have a smoother frequency response and a wider bandwidth. Also, BTE hearing aids are more desirable due to the higher MPO along with their tubing resonance [34]. Also, the vast majority of the participants were regular bilateral digital hearing aid users. In part, this can be attributable to effective audiological counseling that emphasizes the importance of binaural amplification regardless of the degree of asymmetry of hearing loss. Also, the awareness of the benefit of digital hearing aid/s to enhance the signal-to-noise ratio could have motivated them to acquire the device [35].

The present study further attempted to explore the potential COVID-19 related factors that may have hurdled hearing care services to older adults using hearing aid/s. Most

participants reported that they equally prioritized their hearing health along with overall physical and mental health well-being during COVID 19 pandemic. This could be due to the fact that all the participants in the study were hearing aid users for more than a year and were well aware of the importance of hearing in their daily communication needs [28]. The present finding revealed most of the participants experienced no significant change in their hearing health during the COVID-19 pandemic. Yet some reported deteriorating hearing health during the same time period and wished to see an audiologist. The gradual nature of age-related hearing loss would explain these findings during COVID-19 restrictions. It is therefore important to realize that many older adults still required hearing health care services during the restrictions when most of the audiological centers were closed or gradually reopening [36]. Moreover, the frequency of visits to an audiologist since the beginning of the pandemic was found to be low in the study. Therefore, as a part of the questionnaire, we tried exploring the possible reasons behind it. More than half of the study population believed that the closure of hearing aids companies and audiological centers had negatively impacted access to audiological services during the pandemic. A similar study has been reported from Jordan by Alquadah et al., [24] where patients reported the limited availability of the hearing aids and accessories. Considering the restricted scenario, these services were not feasible across India as well, thereby, affecting the patients' satisfaction. Moreover, participants agreed that the distance, the inaccessibility to the transportation, and the lack of caretakers during the restrictions were some of the concerning factors that would have contributed to the unavailability in availing audiological services [37]. A huge rise in the price of audiological services was perceived by most participants as the barrier to availing these services. The participants also pointed out that the government agencies could have reduced these barriers by intercepting and facilitating hearing health care services during the restrictions. Though tele-audiology was on rise during the pandemic, a mere percentage of the participants reported receiving some kind of troubleshooting services through online mode. Though many studies in the past have reported the usefulness of tele-audiology for clinical services [38], the response in the present study suggests the lack of adaptation of these technologies by audiologists and hearing providers to enhance remote practice. In addition, this might also be due to the poor internet connectivity, the use of low-end hearing aids, and a lack of exposure to online platforms among older adults using hearing aid/s [5, 24]. The present study also attempted to elicit patients' perceptions on way to break down these barriers where suggestions such as enhancement in the quality and increment in the frequency of tele-audiology, home visits, and remote

services were received. Some of the participants urged the need to have an empathetic clinician while others suggested having hearing health care friendly COVID-19 guidelines.

In the study, we observed a positive correlation between the age of the participants & technology of the hearing aid/s being used. In our study, most of the participants were in the age range of 55–65 years and so were comfortable enough with handling digital programmable hearing aids. Studies have also shown that programmable hearing aids have positive and efficient effects on hearing and the quality of life among older adults with hearing impairment [39]. In the study, the degree of hearing loss was found to significantly affect the everyday life of the participants. Hearing aids have been reported to be popular among users with higher degrees of hearing impairments and so it explains the longer duration of their usage in more severe cases [40].

Conclusion

To conclude, the present study reported the impact of the COVID-19 outbreak on older adults with hearing aid/s. In the study, the closure of hearing aid companies and audiological centers was found to have a negative impact on availing audiological services. Moreover, a huge hike in the price of these services made it impossible for people to afford them. Despite the availability of tele-audiology, older adults were not able to make the best use of it due to numerous reasons. We sought to explore patients' perceptions to break down these barriers by enhancing the quality of tele-audiology, home visits, and remote services. Therefore, the present study may facilitate the planning and implementation of policies related to audiological services, especially during time of crisis, which may help strengthen our hearing health care system.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12070-022-03209-8>.

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Contribution Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Validation; Roles/Writing - original draft; Writing - review.

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Declarations

Conflict of Interest The authors declare no conflicts of interest.

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