Aud Vestib Res (2021);30(4):264-272.
DOI: https://doi.org/10.18502/avr.v30i4.7474

RESEARCH ARTICLE

Parent's satisfaction on tele-listening training for children with hearing impairment during COVID-19

Jyothi Shivaswamy, Divya Mary Jose, Neelamegarajan Devi*, Chandni Jain

Department of Audiology, All India Institute of Speech and Hearing, Mysuru, India

Received: 25 May 2021, Revised: 8 Jul 2021, Accepted: 15 Jul 2021, Published: 15 Oct 2021

Abstract

Background and Aim: Rehabilitation services to individuals with hearing impairment were on hold with widespread COVID-19. So, rehabilitation services were mandated mainly through telepractice for children with hearing loss. Evaluating the effectiveness of tele-practise compared to face-to-face therapy is of utmost importance for evidence-based approaches. Therefore, the present study aimed to evaluate the parent's satisfaction with tele-listening training for children with hearing impairment during COVID-19.

Methods: Fifty-four parents of children with hearing loss participated in the study. The parents satisfaction on tele-listening training was evaluated through the Parent Satisfaction Questionnaire in terms of 1) the audio and video quality during teletherapy; 2) equipment use 3) general parent-therapist interaction and communication during teletherapy; 4) service delivery and convenience; and 5) overall satisfaction with the teletherapy.

Results: The results showed a higher parent satisfaction rating to avail rehabilitation services through tele-modality during the pandemic. Tele-listening training sessions had helped parents continue training their children at home with the therapist's guidance online. However, parents were not satisfied with their child's interaction with the therapist as they found it difficult to maintain attention throughout the online session.

Conclusion: Although most participants agreed that tele session could not replace face-to-face auditory-verbal therapy (AVT) programs, most of them were satisfied with the outreach AVT program. These favorable responses from parents highlight that the digital revolution and other technological advancements support the service providers in Audiology, especially during the COVID-19 pandemic.

Keywords: Tele-listening training; questionnaire; satisfaction; rehabilitation

Citation: Shivaswamy J, Jose DM, Devi N, Jain C. Parent's satisfaction on tele-listening training for children with hearing impairment during COVID-19. Aud Vestib Res. 2021;30(4):264-72.

Introduction

Coronaviruses (CoV) are a vast family of viruses that affects the respiratory system. It results in a wide range of symptoms, varying from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) [1]. COVID-19 is a contagious disease first reported in Wuhan City, China [2,3]. It crossed the borders rapidly and affected many people worldwide, and WHO declared

* **Corresponding author:** Department of Audiology, All India Institute of Speech and Hearing, Mysuru, Karnataka 570006, India. Tel: 0091-9480442139, E-mail: deviaiish@gmail.com

COVID-19 as a pandemic [2]. The COVID-19 pandemic has adversely affected the effective delivery of health care services worldwide, including India. To edge the infection's multiplication and defend the susceptible population from getting affected by the COVID-19, some of the children's rehabilitation services, like speech-language therapy and listening training, physiotherapy, were interrupted.

Listening training is a holistic intervention approach for children with hearing loss, emphasizing the need for early identification of hearing loss, early intervention with appropriate amplification technology, and intensive one-to-one rehabilitation with an active parental contribution. It involves individualized sessions to make the children learn to use listening as the primary modality to develop speech and language [4]. Then, the therapist guides them to plan different activities that provide a listening experience to the child [5].

Due to the current pandemic situation, face-to-face listening training sessions are impossible for different reasons, such as travel restrictions, the need to maintain social distancing, and the necessity to wear masks [6]. Hence the only solution to provide listening training for children in their critical period of speech and language development from a distance is telepractice. Telepractice is the "application of telecommunication technologies for the delivery of speech-language pathology and professional audiology services at a distance by linking clinician to client or clinician to clinician for assessment, intervention and or consultation"[7]. Telepractice offers significant advantages, as it provides better speech-language pathology and audiology services; clients with linguistic and cultural diversity can get better access. Telepractice also improves multi-disciplinary team member's collaboration; and saves travel time with cost benefits for the needy [7].

A survey on the use of telepractice among audiologists and speech-language pathologists has reported that 11% of respondents delivered services using telepractice, and 43% expressed interest in using it in the future [8]. Studies have been done related to the need, importance, and practical outcomes, of telepractice among various health services like cardiology, otology, pediatrics, psychology, and speech-language pathology [9,10]. However, these studies focus on the use of telepractice for diagnostic assessment rather than intervention. Chen and Liu [11] studied auditory-verbal therapy (AVT) effectiveness through telepractice for the language development of Mandarin-speaking preschoolers with hearing loss. The results revealed that telepractice is a viable alternate for face-to-face therapy, especially for those who live in rural areas.

Many researchers have probed into the impact of COVID-19 on access to hearing health care services. Dham et al. [12] discussed the interrupted cochlear implant habilitation due to COVID-19 and ways to overcome this. They used tele habilitation through verified digital platforms like websites and apps and constant guidance from the therapist. Another study by Sahoo et al. also looked into the impact of COVID-19 on cochlear implant rehabilitation of children using an online questionnaire survey conducted on parents [13]. All the parents have undoubtedly reported that COVID-19 had adversely affected their access to avail hearing health care facility in mapping, troubleshooting, and rehabilitation through auditory verbal therapy. However, 96% of parents documented that the new rehabilitation method, i.e. teletherapy, had helped their children though they have faced challenges during the online sessions [13]. Teleservices, which were an experiment in the past, has now become the necessity of the day. An internet-based survey was conducted to understand the impact of COVID-19 on the services to cochlear implant users by Saxena et al. [14]. They reported that 60% of their respondents indicated that teletherapy was as effective as one-to-one therapy mode and 33% of respondents preferred teletherapy over one-to-one sessions even in normal (non-pandemic) days, and 41% do not prefer and others might prefer.

Telepractice sessions exert the same technique as traditional therapy sessions. The barely considerable disparity here is that the child who

enrolls for therapy and the expert therapist is not in the same space. The therapy sessions are planned at a suitable and appropriate time for each client. Then through a secure video platform, both of them log in together in agreement. The effectiveness of providing listening training through tele mode is not known as there are very few studies probing into the same. Constantinescu [15] reported the parent and therapist satisfaction in AVT through tele sessions using a questionnaire. In general, parents and therapists had expressed high satisfaction in the AVT program given online. The language performance of children with bilateral hearing loss through telepractice was also evaluated and reported to be effective as conventional therapy sessions [16]. However, the practice of tele sessions for the intervention of children with hearing loss has not been used regularly. Due to the current pandemic situation, rehabilitation services were mandated mainly through telepractice and sessions. Hence, there is a need to measure the parental satisfaction of the services that the professionals provide. Parent satisfaction describes the satisfaction of parents with demanded services from the health care system. Weissenstein et al. [17] have identified five reasons to study parent satisfaction: parental satisfaction as an indicator of quality care, for the best possible medical treatment of children, it is essential to include parents in the treatment regime, compliance with medical treatment, understanding of medical information, in times of the free market economy the new critical patient has a free choice of pediatric day centers. A very beneficial tool for the assessment of parent satisfaction is a questionnaire-based survey. The advantages of a questionnaire are manifold: The parents can answer questions anonymously and don't have to fear negative consequences for of their judgment. Questionnaires are economic, time efficient and are regarded as more voluntary from the parents [3-5]. Thus, the present study aimed to report the parent's satisfaction with tele-listening training for children with hearing impairment during COVID-19.

Methods

The study was conducted at All India Institute of Speech and Hearing, an autonomous institute under the Ministry of Family and Health Welfare, Government of India. Initially, a total of sixty-eight participants (parents of children with hearing impairment) who were attending tele mode of therapy at the time of pandemic were considered for the study. All the participants were contacted over the telephone to explain the study and obtain their consent for participation. Fifty-four participants who gave their verbal consent over the phone were selected for the present study using convenience sampling. The remaining fourteen participants could not be contacted as their phones were switched off or not reachable. All the participants were selected following the Ethical Guidelines for Biobehavioral Research Involving Human Subjects [18]. The study adheres to the guidelines and standards of the Helsinki declaration [19]. Verbal consent was obtained over telephone from all the participants, considering the participants' social distancing norms and safety for inclusion into the study. Each participant was thoroughly explained the purpose of the research study. Before administering the questionnaire, information regarding the child's age, duration of face-to-face therapy and online therapy, education of the parent, and socioeconomic status were also collected over the phone. Further, information regarding their living place, mode of attending the online session, education level of the parents were also collected. Parents were also asked to provide any additional comments relating to each section where appropriate.

The age of the children with hearing loss varied from six months to six years; mean (SD) age range of years 3.5 (1.45). The duration of face-to-face therapy attended varied from one month to two years; mean (SD) age range of years –0.87 (–0.61). The parents who participated in the study had at least a primary education level. Before the pandemic, children who had attended the conventional listening training sessions and are currently attending tele-listening training sessions were selected for the study. The mean duration of the online therapy that was taken varied between 1 month to 6 months. All the

Table 1. Detailed demographic characteristics of the parents and children who participated in the study

Demographic details	n (%)
Age of the child (in years)	
0.6 to 1.6	7 (13)
1.7 to 2.6	3 (5.6)
2.7 to 3.6 years	19 (35.2)
3.7 to 5 years	18 (33.3)
5.1 to 7 years	7 (13)
Gender of the child	
Male	34 (63)
Female	20 (37)
Duration of online therapy	
1 month to 2 months	5 (9.3)
3 to 4 months	45 (83.3)
5 to 6 months	4 (7.4)
Living place of the participant	
Urban	19 (35.18)
Rural	35 (64.8)
Educational qualification of parents	
lower primary	2 (3.7)
SSLC	14 (25.9)
PUC	16 (29.6)
Under Graduate degree	18 (33.3)
Post Graduate degree	4 (7.4)
Income Slab of parents*	
less than Rs 10000/month	43 (79.6)
Rs 10001 - 15000/month	5 (9.3)
Rs greater than 15000/month	6 (11.1)

SSLC; secondary school leaving certificate, PUC; pre-university course

*Classified based on ADIP (Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances) scheme

children were diagnosed with bilateral severe sensorineural hearing loss. And these children were using binaural digital hearing with aided audiogram being within the speech spectrum. However, the listening age of these children varied between three months to twelve months. Telepractice sessions were scheduled for each client weekly, twice according to their convenient day and time. The Parent Satisfaction Questionnaire adapted from Constantinescu [15] was used to collect information regarding therapy sessions' provided through tele mode. The questionnaire has 16 items for the parents that evaluate the effectiveness of teletherapy in terms of 1) the audio and video quality during teletherapy; 2) equipment use (e.g. Mobile phone, WhatsApp/google meet); 3) general parent-therapist interaction and communication during teletherapy; 4) service delivery and convenience; and 5) overall satisfaction with the teletherapy. The participants were contacted over the telephone, and the audiologist (who is different from the one who provided the actual therapy) administered the questionnaire over the phone in the form of an interview. Parents were asked to rate each question on a 4-point rating scale. Along with the rating, the parents were also asked to provide reasons and explanations on providing too high or too low rating, which was documented separately.

Data analysis

The data were subjected to statistical analyses using the Statistical Package for the Social Sciences (Version 20, SPSS Inc, Chicago). Descriptive statistics were done in which the frequency and percentage of the responses were calculated.

Results

The demographic characteristics of the parents and children who participated in the study are listed in Table 1.

Further, an attempt was made to apply the chi-square test for the association to study the relationship between demographic data and parent satisfaction. However, the expected frequency was less than five, which violated the assumption of the chi-square test. Hence only

descriptive statistics are discussed. Responses of the parents with respect to each question in terms of percentage are illustrated in Table 2.

Regarding audio quality, 31% and 17% of the participants rated it as good and excellent, respectively. A similar trend was noted in the opinion of video quality too (41% reported as good and 11% reported as excellent). Further, technical difficulties requiring troubleshooting were rarely reported (54%) or never reported (11%) by most participants.

The majority of parents reported comfortable (74%) or very comfortable (17%) using the equipment for delivering tele sessions. Under general interaction and communication, parents were asked to rate their interaction and child's interaction with the therapist during tele sessions. It has been noted that most of the parents were satisfied (76%) or as satisfied as face-to-face therapy sessions (22%) in terms of their interaction with the therapist. However, half of the parents were not satisfied (56%) with their child's interaction with the therapist during online sessions. Though most participants never considered (50%) tele sessions as an alternative to face-to-face therapy sessions, the overall satisfaction towards the outreach AVT program was high (78%).

Discussion

The need for tele-listening therapy became mandated in the field of Audiology due to the COVID-19 pandemic. Since face-to-face therapy during the pandemic requires protective tools like a face mask, sanitizers, social distancing, and other obligations, it was challenging to provide optimal rehabilitation by the service providers [20]. Also, the lack of transportation made way for the initiation of tele-listening training as a priority for audiologists as the children with hearing loss are in the critical age of development [21]. Furthermore, the parents' satisfaction concerning the online therapy is essential as it provides more confidence to the therapist and the professional regarding their services.

Section 1: audio and video quality

Evaluating the results related to the audio and video quality through the tele sessions in the present study, half of the participants evaluated the audio and video quality through the tele sessions as poor (6% for audio and 5.6% for video quality) or fair (46% for audio and 42.6% for video quality). Also, 31% of the participants had faced technical difficulties often and had to troubleshoot. The audio and video quality majorly depend on the speed of the internet connection or the mobile network's strength that the client uses [22]. In the present study, most of the participants were from rural areas (64.8%) and among them, 51.1% of parents reported always /often faced technical difficulty, which required troubleshooting. In India, there is a poor internet connection in rural areas, which would have led to interruptions, such as audio delays, video pausing, and insufficient clarity during the session [23]. Therefore, the problem was troubleshot by disconnecting and reconnecting the video call, switching over to voice call, moving to another room/out of the house where the signal is better. As the last option, the parents were asked to send the recorded session to the therapist for later analysis.

Section 2: equipment use

In equipment use, the majority of the parents were comfortable (63%) in using the equipment (Skype, web camera, speakers, and microphone), and this percentage increased with the increase in the duration of online therapy (74%). Further, the majority of the parents used mobile phones for the tele-listening training sessions. A few participants faced difficulties using mobile phones in the initial few sessions, such as making a video call in WhatsApp/Google meet, recording a session, and sharing it through WhatsApp. However, after three to four months of online sessions, they became confident in using it. Constantinescu [15] also reported similar findings wherein parents' comfortability in using the equipment improved substantially after six months of online sessions. The improvement in parents' comfortability suggests that inexperience or unfamiliarity in using equipment is not a significant hindrance in listening

Table 2. Responses to the parent satisfaction questionnaire

Questions	Response and corresponding percentage			
Section 1: audio and video quality				
What is your opinion of the sound quality?	Poor 6%	Fair 46%	Good 31%	Excellent 17%
What is your opinion of the video quality?	Poor 5.6%	Fair 42.6%	Good 41%	Excellent 11%
How often do you experience technical difficulties that require troubleshooting during the sessions?	Never 11%	Rarely 54%	Often 31%	Always 4%
Section 2: equipment use				
How comfortable were you when you first started using the equipment?	Very uncomfortable 6%	Uncomfortable 17%	Comfortable 63%	Very comfortable 15%
How comfortable are you now when using the equipment?	Very uncomfortable 0%	Uncomfortable 9%	Comfortable 74%	Very comfortable 17%
How easy to use the equipment (Mobile phone, Zoom, WhatsApp)?	Very difficult 0%	Difficult 6%	Easy 74%	Very easy 19%
Section 3: general interaction and communication				
How comfortable are you when participating in the outreach AVT sessions?	Very uncomfortable 0%	Uncomfortable 33%	Comfortable 52%	Very comfortable 15%
How comfortable is your child when participating in the outreach AVT sessions?	Very uncomfortable 22%	Uncomfortable 57%	Comfortable 15%	Very comfortable 6%
How comfortable are you when discussing matters with your therapist online?	Very uncomfortable 0%	Uncomfortable 11%	Comfortable 61%	Very comfortable 28%
How satisfied are you with your level of interaction/rapport with the online therapist?	Very dissatisfied 0%	Dissatisfied 2%	Satisfied 76%	As satisfied as face to face 22%
How satisfied are you with your child's level of interaction/rapport with the online therapist?	Very dissatisfied 9%	Dissatisfied 56%	Satisfied 33%	As satisfied as face to face 2%
How confident are you that your therapist is gaining an adequate understanding of your child's development and progress via the outreach AVT sessions?	Very unsure 0%	Unsure 30%	Confident 61%	Very confident 9%
Section 4: service delivery and convenience				
Do you feel that the quality and delivery of the online lessons are consistent from week to week?	Never 0%	Rarely 9%	Often 80%	Always 11%
Are the outreach AVT sessions a better alternative than traveling regularly (e.g., weekly or every two weeks) to receive face-to-face AVT sessions?	Never 50%	Rarely 37%	Often 9%	Always 4%
Section 5: overall satisfaction				
How satisfied are you overall with the outreach AVT program?	Very dissatisfied 0%	Dissatisfied 15%	Satisfied 78%	As satisfied as face to face 7%
Would you recommend this service to someone else in a similar situation to yourself?	Definitely not 4%	Probably not 9%	Probably 63%	Definitely 24%

AVT; auditory-verbal therapy

training programs. In addition to it, parents used mobile phones for online listening training sessions in the present study. Hence, they did not have to purchase any additional equipment for the same. Therefore, parents considered it as a cost-effective management option during the pandemic.

Section 3: general interaction and communication

Concerning general interaction and communication, most parents were comfortable (52%)

and very comfortable (15%) when participating in the tele-listening training session. However, a low rating/uncomfortable (57%) regarding children's participation in outreach listening training sessions can be attributed to their young age. It was noted that 89.6% (26/29) of the parents whose children were less than 3.6 years reported low ratings. The lower rating could be because they were distracted by the mobile phone when placed in front of them during the session. Such difficulties are reported in other speech pathology telemedicine studies. Therefore, it is proposed that telemedicine services may be more suitable for older children. In a few instances, parents were counseled in detail regarding how to carry out the activities at home. They were encouraged to send videos that the therapist analyzed, and further suggestions were given. However, Constantinescu [15] reported that the children's young age did not significantly negatively impact the successful delivery of tele-listening training as parents were considered the primary language model. The therapist guided them in carrying out the tele-listening training sessions.

Further, the scores also reflected that most parents were comfortable (61%) and very comfortable (28%) in discussing matters online with the therapist and the excellent rapport built between the parent and the therapist. Parents were confident that the therapist had an adequate understanding of their child's improvement online. Constantinescu [15] also reported similar findings wherein most parents were also as comfortable as face-to-face while discussing matters online.

Most parents were satisfied (76%) and as satisfied as face-to-face therapy (22%) with their interaction/rapport with the therapist. However, 56% of parents report that they were dissatisfied with their child's interaction/rapport with the online therapist followed by satisfaction (33%). Satisfaction also could be attributed to the young age of the participants. It was noted for children below 3.6 years of age, 75.8 % (22/29) of parents reported the level of interaction as either dissatisfies or very dissatisfied. However, children's young age did not significantly negatively impact the successful delivery of tele-listening training as parents were considered the primary language model, as the therapist guided them in carrying out the tele-listening training sessions. This was reflected in parents' high comfortability in discussing matters online with the therapist and the excellent rapport built between the parent and the therapist. Parents were confident (61%) or very confident (9%) that the therapist had an adequate understanding of their child's improvement online. In a few instances, parents were counseled in detail regarding how to carry out the activities at home. They were encouraged to send videos that the therapist analyzed, and further suggestions were given.

Section 4: service delivery and convenience

Parents felt that online sessions' quality and delivery were reliable from week to week (Often-80% and Always-11%). Though more than half of the participants reported that it is never (50%) or rarely (37%) a better alternative to face-to-face listening training sessions, they all agreed that tele-listening training sessions were beneficial in the current pandemic situation. Few of them reported that they were able to continue the therapy at home even during this pandemic. The child also made good progress due to the involvement of other family members. Some parents even felt satisfied with the outreach service as they did not have to relocate from their native place to attend therapy.

Section 5: overall satisfaction

Parents were satisfied (7%) or satisfied (78%) with the tele-listening therapy. Similar results have been reported in the literature wherein parents were satisfied with the online listening training [15,16]. However, few of them reported that they could continue the therapy at home even during this pandemic. The child also made good progress due to the involvement of other family members. Some parents even felt satisfied with the outreach service as they did not have to relocate from their native place to attend therapy. However, 15% of the parents were dissatisfied as they experienced difficulties making the child sit for the online session as the chil-

dren would get distracted using mobile phones. A few of the parents felt that the sessions were taken by themselves instead of face-to-face sessions, where the therapist would lead the sessions. Nevertheless, considering the effect of this pandemic situation on the critical development age of speech and language, most parents said they would probably (63%) and definitely (24%) recommend the tele-listening training program to others.

Conclusion

COVID-19 had a significant impact on all health services, including rehabilitation services. Tele sessions have replaced face-to-face therapy sessions to prevent the spread of the disease. The present study focused on the parent's satisfaction with tele-listening training for children with hearing impairment during the COVID-19 pandemic. The results showed that tele-listening training sessions helped parents continue training their children at home with the therapist's guidance online. However, parents were not satisfied with their child's interaction with the therapist as they found it difficult to maintain attention throughout the online session. Nevertheless, despite the technical difficulties and poor cooperation of a few young children attending tele sessions, there was a higher parent satisfaction rating to avail rehabilitation services through tele sessions. This favorable feedback from parents highlights that the digital revolution and other advancements in technology had supported the rehabilitation professional to overcome the negative impacts of the COVID-19 pandemic on providing services to a certain extent.

Acknowledgments

The authors thank the participants for their cooperation. We thank the Director, All India Institute of Speech and Hearing, Mysuru, for permission to carry out the study.

Conflict of interest

The authors declare no conflict of interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Cascella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R. Features, Evaluation, and Treatment of Coronavirus (COVID-19). 2021; In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan.
2. World Health Organization W. Novel Coronavirus (2019-nCoV): situation report, 3. 2020.
3. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020;382(8):727-33. doi: 10.1056/NEJMoa2001017
4. Dornan D. 'Let's hear and say': a current overview of auditory-verbal therapy. Asia Pac J Speech Lang Hear 1999;4(2):141-54. doi: 10.1179/136132899805577079
5. Kaipa R, Danser ML. Efficacy of auditory-verbal therapy in children with hearing impairment: A systematic review from 1993 to 2015. Int J Pediatr Otorhinolaryngol. 2016;86:124-34. doi: 10.1016/j.ijporl.2016.04.033
6. Smith AC, Thomas E, Snoswell CL, Haydon H, Mehrotra A, Clemensen J, et al. Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). J Telemed Telecare. 2020;26(5):309-13. doi: 10.1177/1357633X20916567
7. Mohan HS, Anjum A, Rao PKS. A survey of telepractice in speech-language pathology and audiology in India. Int J Telerehabil. 2017;9(2):69-80. doi: 10.5195/ijt.2017.6233
8. American Speech-Language-Hearing Association. Knowledge and skills needed by speech-language pathologists providing clinical services via telepractice. 2005. Available from www.asha.org/telepractice.htm.
9. Goldenberg D, Wenig BL. Telemedicine in otolaryngology. Am J Otolaryngol 2002;23(1):35-43.
10. Blackham R, Eikelboom RH, Atlas MD. Assessment of utilization of ear, nose, and throat services by patients in rural and remote areas. Aust J Rural Health. 2004; 12(4):150-1. doi: 10.1111/j.1440-1854.2004.00587.x
11. Chen P-H, Liu T-W. A pilot study of telepractice for teaching listening and spoken language to Mandarin-speaking children with congenital hearing loss. Deaf Educ Int 2017;19(3-4):134-43. doi: 10.1080/14643154.2017.1402567
12. Dham R, Arumugam SV, Dharmarajan S, Mathews S, Paramasivan VK, Kameswaran M. Interrupted cochlear implant habilitation due to COVID-19 pandemic-ways and means to overcome this. Int J Pediatr Otorhinolaryngol. 2020;138:110327. doi: 10.1016/j.ijporl.2020.110327
13. Sahoo L, Kumari A, Patnaik U, Dwivedi G. Cochlear implant rehabilitation during Covid-19 pandemic: A parents' perspective, 17 September 2020, PREPRINT (Version 1) available at Research Square. doi: 10.21203/rs.3.rs-79606/v1
14. Saxena U, Chacko G, Kumar SBR, Nagabathula V, Damarla V, Saxena U, et al. Effect of COVID-19 on cochlear implant users: parental perspectives. Clin Arch Commun Disord. 2021;6:12-7. doi: 10.21849/cacd.2021.00353

15. Constantinescu G. Satisfaction with telemedicine for teaching listening and spoken language to children with hearing loss. J Telemed Telecare. 2012;18(5):267-72. doi: 10.1258/jtt.2012.111208
16. Constantinescu G, Waite M, Dornan D, Rushbrooke E, Brown J, McGovern J, et al. A pilot study of telepractice delivery for teaching listening and spoken language to children with hearing loss. J Telemed Telecare. 2014;20(3):135-40. doi: 10.1177/1357633X14528443
17. Weissenstein A, Straeter A, Villalon G, Luchter E, Bittmann S. Parent satisfaction with a pediatric practice in Germany: A questionnaire-based study. Ital J Pediatr. 2011;37:31. doi: 10.1186/1824-7288-37-31
18. Veskatesan S. Ethical guidelines for bio-behavioral research. Mysore: All India Institute of Speech and Hearing; 2009.
19. Schuklenk U. Helsinki declaration revisions. Issues Med Ethics. 2001;9(1):29.
20. Grimm CA. Hospital experiences responding to the COVID-19 pandemic: results of a national pulse survey March 23–27, 2020. Washington, DC: US Department of Health and Human Services OoIG. 2020 Mar 23:1-41.
21. Kanji A. Models of care in early intervention for children with hearing impairment. In: Khoza-Shangase K, Kanji A, editors. Early Detection and Intervention in Audiology. An African Perspective. 1st ed. Johannesburg: Wits University Press; 2021. p. 137-54.
22. Edwards M, Stredler-Brown A, Houston KT. Expanding use of telepractice in speech-language pathology and audiology. Volta Rev. 2012;112(3):227-42.
23. Nigam N, Batra G. Development of rural india: from wired to wireless network- a comparative study. Int J Adv Res. 2016;4:1063-9. doi: 10.21474/IJAR01/785