

Awareness of Hearing Loss in Children among General Population, Prevention and Rehabilitation

Amol Khale¹, Shweta Baviskar², Sanket Katkar³, Astha Madharia⁴

^{1,2}Associate Professor, Department of ENT and Head-Neck Surgery, Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital, Thane, Maharashtra, India

³Assistant Professor, Department of ENT & Head-Neck Surgery, Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital, Thane, Maharashtra, India

⁴Senior Resident, Department of ENT & Head-Neck Surgery, Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital, Thane, Maharashtra, India

Received: 01-06-2026 / Revised: 15-07-2026 / Accepted: 21-08-2026

Corresponding author: Dr. Shweta Baviskar

Conflict of interest: Nil

Abstract

Background: Awareness about hearing loss in children is important in general population for early detection and timely intervention. Multiple studies have been conducted to assess shortfall in subjects seeking appropriate treatment promptly. One such study has been conducted in a tertiary care centre in Mumbai, India.

Materials and Methods: This study investigated the awareness of hearing loss in children in general population through a self-administered questionnaire survey. A total of 855 participants visiting a tertiary care center in Mumbai, India were included in this study.

Results: About half of the participants (54.2%) were found to be aware of screening tests for hearing loss in a child at birth, while slightly more (60.9%) were aware of surgical options in case the child is detected with hearing loss. 48.6% had the knowledge of schemes and concessions offered by government to hearing impaired children, and 22.5% participants reported ever having the chance to attend an event that entails details of such government schemes.

Conclusion: Despite facilities that are available, accessible and affordable, there exists a lack of knowledge among general population on hearing loss in children and treatment options. Responses from the current study should raise concerns about the dire need to educate and sensitize the public in general. Early identification of hearing loss in children is paramount for successful implementation of early hearing intervention and favourable prognosis.

Keywords: Childhood hearing loss; Hearing screening; Public awareness; early intervention; Hearing rehabilitation.

DOI: 10.25258/ijcpr.18.9.36

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Over 5% of the world's current population (430 million people) require rehabilitation to address their disabling hearing loss (including 34 million children), and it is estimated to double over time. By 2050, nearly 2.5 billion people are projected to have some degree of hearing loss, and more than 700 million, or 1 in every 10 people, will depend on hearing rehabilitation. [1]

Unaddressed hearing loss poses a global cost, not only monetary, but socioeconomic as well. Disabling hearing loss that is defined as hearing loss greater than 35 dB in the better ear. Nearly 80% of people with disabling hearing loss live in low- and middle-income countries, including India. Hearing loss can affect one or both ears and to

difficulty in hearing conversational speech or loud sounds. People who are hard of hearing usually communicate through spoken language and can benefit from hearing aids, cochlear implants, and other assistive devices, as well as captioning. Deaf people mostly have profound hearing loss, which implies very little to no hearing. They can benefit from cochlear implants. Some of them use sign language for communication.

Causes of hearing loss include a myriad of factors most effective at certain ages of life. During the prenatal period, the most noteworthy factors are genetic factors, including hereditary and non-hereditary hearing loss, and intrauterine infections (for example, rubella and CMV). During the

perinatal period, birth asphyxia, hyperbilirubinemia, and low birth weight are the most likely causes. During childhood and adolescence, the most common causes are chronic ear infections, otitis media with effusion, and meningitis. Trauma to the ear or head, loud noise/loud sound exposure, ototoxic medicines, and nutritional deficiencies are not age-specific, and delayed-onset or progressive genetic hearing loss is not age-specific but can cause serious otologic sequelae, including hearing loss. When unaddressed, hearing loss impacts many aspects of life, i.e., limitations in communication and speech, adversely affected cognition, limitations in access to education and employment, poor social isolation, loneliness, and stigma, and impact on society and economy.

In children, nearly 60% of hearing loss is due to avoidable causes that can be prevented through the implementation of public health measures. Effective strategies for reducing hearing loss include immunization, good maternal and childcare practices, genetic counselling, identification and management of common ear conditions, and rational use of medicines to prevent ototoxic hearing loss. Early identification of hearing loss is key to effective management, and this requires systematic screening for detection in those who are most at risk, i.e., newborn babies and infants, pre-school and school-age children, and children receiving ototoxic medicines.

Rehabilitation helps hearing-impaired children to function at their optimum, which means they can be as independent as possible in everyday activities. Specifically, rehabilitation helps them to participate in education, work, recreation, and meaningful roles, for example, in their families or communities, throughout their lives. Interventions for rehabilitation include the provision of, and training in the use of, hearing technologies (e.g. hearing aids, cochlear implants and middle ear implants); speech and language therapy to enhance perceptive skills and develop communication and linguistic abilities; training in the use of sign language and other means of sensory substitution (e.g. speech reading, use of print on palm, Tadoma, signed communication); the provision of hearing assistive technology, and services (e.g. frequency modulation and loop systems, alerting devices, telecommunication devices, captioning services and sign language interpretation); and counselling, training and support to enhance engagement in education, work and community life.

The aim of the current study is to assess how much of the aforementioned knowledge is prevalent in the general public, which is a direct reflection of the promptness to seek hearing rehabilitation when required.

Materials and Methods

Questionnaire: The questionnaire for the survey was framed under the domains of awareness of hearing loss in children, availability of screening tests and rehabilitation options, identifying risk factors and preventive measures. The questionnaire was framed in English language and was validated by five qualified professionals from the department of Otorhinolaryngology, further modified by incorporating their recommendations. The final questionnaire consisted of 21 self-administered open ended and closed ended questions. It was then translated to local language (Marathi) and validated by a reliable professional with proficiency in Marathi language to check for accuracy and comprehensibility of the content. The questionnaire was formulated, and modified in the month of May.

Participants: A total of 855 participants between the ages of 12 to 85 were selected using random sampling method. Participants were selected from the general population including patients visiting the tertiary care centre for consultation, relatives, students, sanitation workers and health care professionals. Patients with debilitating diseases, patients undergoing psychiatric treatment, and professionals and students of audiology were excluded from the study.

Methodology

An observational qualitative descriptive study design was adopted for this survey. This study was conducted for the duration of 1 year from May 2025 to May 2026. The questionnaire was circulated directly to participants who were voluntary and co-operative. The participants were requested to attempt all questions and provide genuine answers.

Statistical Analysis: The responses from all the participants were objectively analysed for the completion of survey. Incomplete responses were discarded from the analysis.

The obtained data was processed and analysed by Python Data Analysis with Pandas and Matplotlib. Descriptive statistics were used, and responses were determined in terms of mean, frequency counts, percentage scores, charts and graphs.

Results

Demography: More than half of participants were young (58.1%), followed by middle aged people (37.3%) ranging from the ages of 25 to 55 years. Meagre 4.7% were above 55 years of age. Females comprised of 53.9% of the participants. Socio-economically, majority of participants belonged to middle class (81.7%), while lower class comprised only of 3.5%.

Awareness about hearing loss in general: Only 25% of participants reported having an acquaintance with a hearing impaired child, while only 12.3% reported having acquaintance with a person proficient in sign language. 9.2% of the participants believed that the hearing loss in children could be contagious, while 7.7% stated they would keep distance from such a kid in fear of

contracting the infection. Almost half of the participants (46.8%) did not know where the nearest school for hearing impaired children is. Amongst the ones who knew, only 34.9% reported it being within 5 kilometers of distance. 18.3 % participants reported such schools to be within 15 kilometers of distance from them.

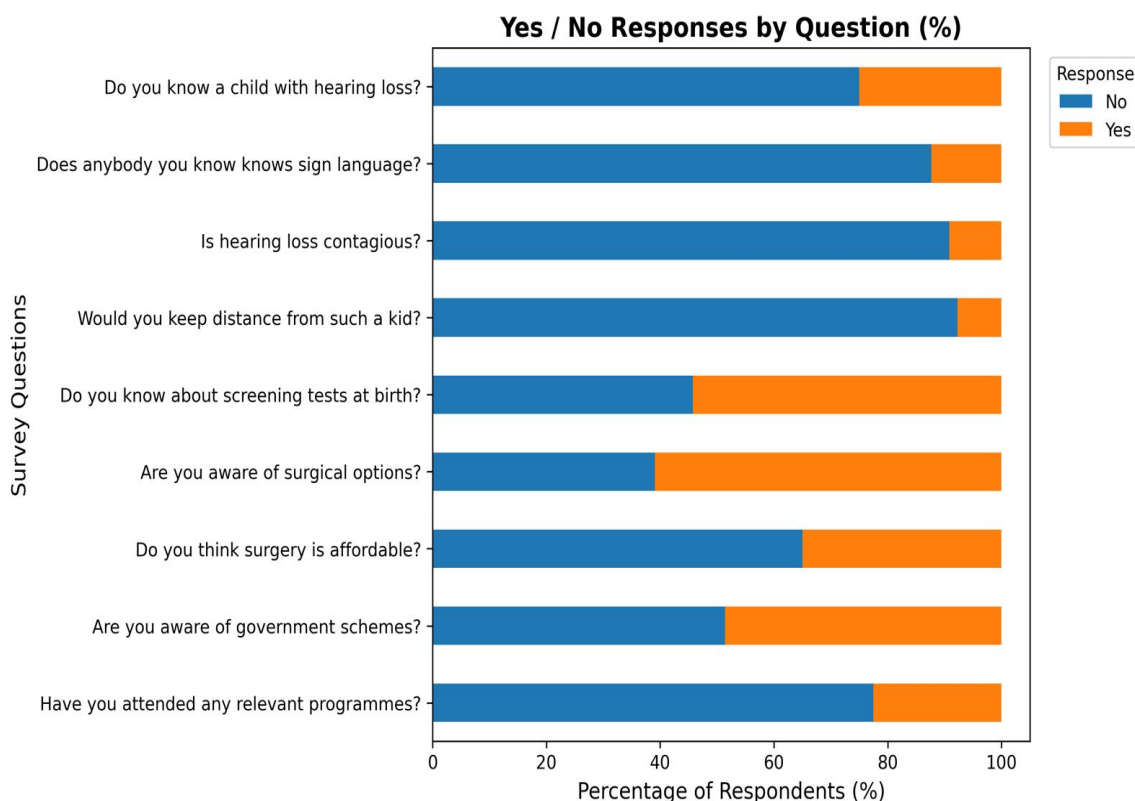


Figure 1: Responses to the questions

Awareness about public health measures: 54.2% of participants were aware of screening tests conducted in newborns, and 48.6% were aware of the schemes and concessions offered by the Government of India. On the contrary, only 22.5% of participants ever had the chance to attend an event broadcasting health care programmes targeted towards preventing and treating hearing loss in children.

Awareness regarding rehabilitation: Majority of participants (77.1%) opted for consulting a local physician in case they suspect hearing loss in a child, rather than choosing to wait and watch (12%)

or using Over-The-Counter topical solutions in an attempt to treat child's hearing loss at home. 1.4% (12 out of 855) participants reported they would opt for other measures instead. Majority (65.4%) said that the best course of action is to seek treatment immediately rather than waiting for the child to develop speech, which coincides precisely with majority (68.6%) reporting that rehabilitation is most effective when sought at the earliest.

While 60.9% of participants were aware that there are surgical options available to address hearing loss in children, only 35% of participants believed that it is affordable.

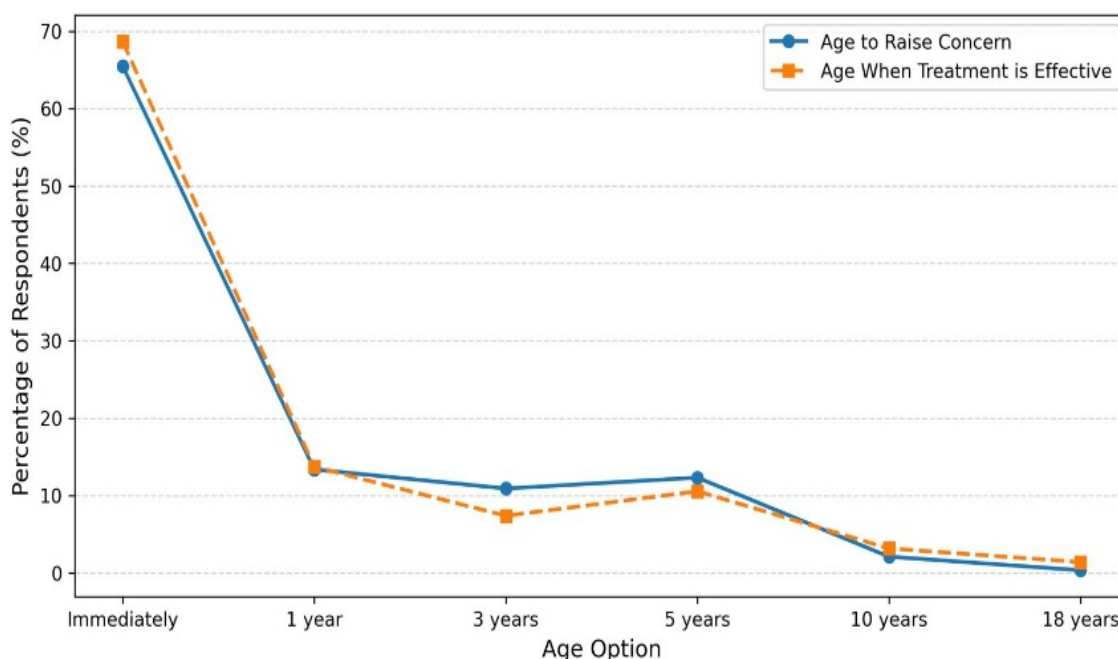


Figure 2: Comparison of perceived age to raise concern versus treatment effectiveness

Awareness about identifying features, risk factors and preventive measures: Cumulative data suggests that 57.4% of participants attributed a positive family history to be a risk factor for the child in that family to be born with / develop hearing loss later in life. NICU stay (46.1%), diseases in child that require hospital admission after perinatal period (33.5%), and diseases in mother during pregnancy (43.3%) were also considered important risk factors. 38.7% participants identified acoustic trauma in a child to be a significant risk factors, and 30.3% participants attributed hearing loss in children to chronic illnesses. 4 out of 855 participants identified other risk factors including ototoxic medication and physical trauma.

Genetic testing and counselling prior to marriage and childbirth was considered to be the most effective preventive measure by 44.0% of participants. Vaccination (37.7%), institutionalised delivery (34.9%), and body hygiene (34.2%) comprised of about one third of the responses each. 48 out of 855 participants identified other preventive measures such as regular health check-up.

Discussion

Assessing awareness amongst the general population regarding hearing loss in children helps not only to identify lacunae in the implementation of screening programs and aid better accessibility, affordability, and availability of treatment options, but also ensures to palliate the lives of the impaired & their families in cases where the impairment cannot be rectified. For instance, as per the Order of the Ministry of Railways, Government of India,

a deaf & dumb person traveling alone by rail (both afflictions together in the same person) on production of a certificate from a government doctor is eligible for a 50% concession in fare. Schemes like this offer to ease out a significant proportion of the general population that hearing-impaired people comprise. Verma et al. [2] concluded that community-based studies (all ages) reported a prevalence of hearing loss between 6% and 26.9% and a prevalence of disabling hearing loss between 4.5% and 18.3%.

ADIP scheme (Assistance to Persons with Disabilities for Purchase/Fitting of Aids/Appliances) provides hearing aids as well as corrective surgeries like cochlear implantation. Drennan et al [3] reported that cochlear implantation in 1-year old children, in India would be cost-effective and significantly improve their quality of life.

Such measures increase the probability of recipients to develop speech comparable to peers of same age group with no impairment, and decrease dependence on alternatives like sign language. Statistical tests by Alsaawi et al [4] revealed that individuals >25 years had significantly better awareness toward hearing loss and awareness toward speech development. Tyagi et al [5] reported a tremendous jump in the number of prelingual cochlear implant recipients attending mainstream education from 49.4% pre-implantation to 70.6% post-implantation. Shakrawal et al [6] also concluded children who were implanted early in childhood had more rapid language growth rates than children implanted later in childhood. This reinforces the idea of smoother integration of

hearing impaired children into society as contributors in socioeconomic growth of the country. Department of Social Welfare in India launched a centrally sponsored scheme 'Scheme of integrated education of disabled children' in 1974 (transferred to Department of Education since 1982) to provide allowances such as book & stationery, uniform, transport, necessary aids and so on. Mildly and moderately hearing impaired, or children with multiple handicaps along with mild hearing handicap are covered under this scheme.

Zahir et al [7] found 57.42% of the parturient mothers in their study to be unaware of the hearing screening programs available in hospitals and clinics and its importance. This serves as a barrier to seeking early treatment for a deaf child and requires awareness programs to expand their current scope. Rautara et al [8] found 66.01% of mothers and 56.22% of pregnant women in their study to be more aware of prenatal risk factors for hearing loss in infants as compared to peri and postnatal. Ravi et al [9] found majority of the pediatricians in their study to be confident about their knowledge on neonatal hearing screening protocols yet expressed a need to know more about several intricacies regarding the same.

Galhotra et al [10] identified some of the key issues in the implementation of the hearing screening program to be lack of human resources, inadequate infrastructure, equipment-related shortcomings, and low priority for hearing impairment prevention. National Program for Prevention and Control of deafness and Rashtriya Bal Swasthya Karyakram are initiated by Government of India which are significant milestones in the implementation of systematic nationwide hearing screening programs. Sharma et al [11] inferred that overall awareness about hearing loss type, cochlear implantation and its uses, and different aspects of childhood hearing loss were poor amongst school teachers and they benefitted significantly from the awareness program conducted during this study. Similar results were shown in primary school teachers by Dsouza et al [12].

Conclusion

This study highlights the existing gaps in awareness among the general population regarding childhood hearing loss, its risk factors, preventive measures, screening programs, rehabilitation options, and government welfare schemes. Although many participants recognized the importance of early medical consultation and intervention, knowledge regarding newborn hearing screening, affordability of treatment, and available support services remained inadequate. Given the significant impact of untreated hearing loss on a child's speech, language, educational, and social development, strengthening public

awareness initiatives is essential. Community-based educational programs, improved dissemination of information, and greater public engagement can facilitate early identification, timely intervention, and better rehabilitation outcomes for hearing-impaired children.

References

1. "Deafness and Hearing Loss." World Health Organization, World Health Organization, 3 Mar. 2026, www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss.
2. Verma RR, Konkimalla A, Thakar A, Sikka K, Singh AC, Khanna T. Prevalence of hearing loss in India. *Natl Med J India* 2021;34:216–22.
3. Drennan, Ward & Banerjee, Souvik & Garrison, L. (2015). PSS26. Estimating cost-effective device prices for Pediatric Cochlear implantation in India. *Value in Health*. 18. A183. [10.1016/j.jval.2015.03.1058](https://doi.org/10.1016/j.jval.2015.03.1058).
4. Alsaawi, O. K., Alharbi, S. M., Althunian, A. M., & Alahmad, M. F. (2021). Awareness and knowledge of hearing loss, hearing management modalities, speech and language pathology among general public in Buraidah, Saudi Arabia. *International Journal of Community Medicine and Public Health*, 8(4), 1583–1591. <https://doi.org/10.18203/2394-6040.ijcmph20210990>
5. Tyagi P, Chauhan D, Singh A, et al. Clinical and Social Outcomes of Cochlear Implantation in Older Prelinguals. *Journal of Audiology & Otology*. 2023 Apr;27(2):63-70. DOI: 10.7874/jao.2022.00262. PMID: 36791798; PMCID: PMC10126583.
6. Shakrawal N, Sonkhya N, Agarwal S, Grover M. The Effect of Age at Cochlear Implantation on Speech and Auditory Performances in Prelingually Deaf Children. *Indian Journal of Otolaryngology and Head and Neck Surgery : Official Publication of the Association of Otolaryngologists of India*. 2022 Aug;74(Suppl 1):52-61. DOI: 10.1007/s12070-020-01821-0. PMID: 36032837; PMCID: PMC9411477.
7. Zahir S, Ravindran G, Abraham A, Sasidharan PP. Awareness of hearing loss in newborns and newborn hearing screening facilities among parturient. *J Community Health Manag* 2024;11(1):29-34.
8. Rautara, S., Sahoo, S., Dash, N., & Bhoi, R. L. (2021). A study on awareness of hearing health, risk factors, prevention, and intervention of hearing impairment-among pregnant women and mothers of newborn in urban area, Bhubaneswar. *International Journal of Community Medicine and Public Health*, 9(1), 294–302. <https://doi.org/10.18203/2394-6040.ijcmph20215013>

9. Ravi R, Gunjawate DR, Yerraguntla K, Lewis LE, Rajashekhar B. A national survey of knowledge, attitude and practices among pediatricians towards newborn hearing screening in India. *International Journal of Pediatric Otorhinolaryngology*. 2017 Apr;95:9-14. DOI: 10.1016/j.ijporl.2017.01.032. PMID: 28576542.
10. Galhotra A, Sahu P. Challenges and Solutions in Implementing Hearing Screening Program in India. *Indian J Community Med*. 2019 Oct-Dec;44(4):299-302. doi: 10.4103/ijcm.IJCM 7319.PMID:31802788;PMCID: PMC6881890.
11. Sharma BSD, Asuri S, Thontadarya S, et al. Change in Knowledge and Attitudes about Hearing Loss and Cochlear Implants among the School Teachers. *Int J Otorhinolaryngol Clin* 2024;16(2):83–88
12. Dsouza, Nilisha Angelin; Ranjan, Rajesh. Awareness, knowledge, and practice among regular primary school teachers about hearing impairment. *Hearing Balance and Communication* 22(3):p 71-78, Jul–Sep 2024. | DOI: 10.4103/HBC.HBC_5_24.