

**Evaluation of Awareness About Hearing Disability, Central
Government Schemes and Policies Available for Individuals with
Hearing Impairment Among Medical Professionals**

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Registration No: P01II24S023017

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Degree of Master of Science
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June 2026

CERTIFICATE

This is to certify that this dissertation entitled "**Evaluation of Awareness About Hearing Disability, Central Government Schemes and Policies Available for Individuals with Hearing Impairment Among Medical Professionals**" is a Bonafide work submitted as part of the fulfilment of the degree of Master of Science (**Audiology**) of the student with Registration Number **P01II24S023017**. This has been carried out under the guidance of the faculty of this institute and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

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This is to certify that this dissertation entitled "**Evaluation of awareness about Hearing Disability, Central Government Schemes and Policies Available for Individuals with Hearing Impairment Among Medical Professionals**", has been prepared under my supervision and guidance. It is also being certified that this dissertation has not been submitted earlier to any other university for the award of any other Diploma or Degree.

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DECLARATION

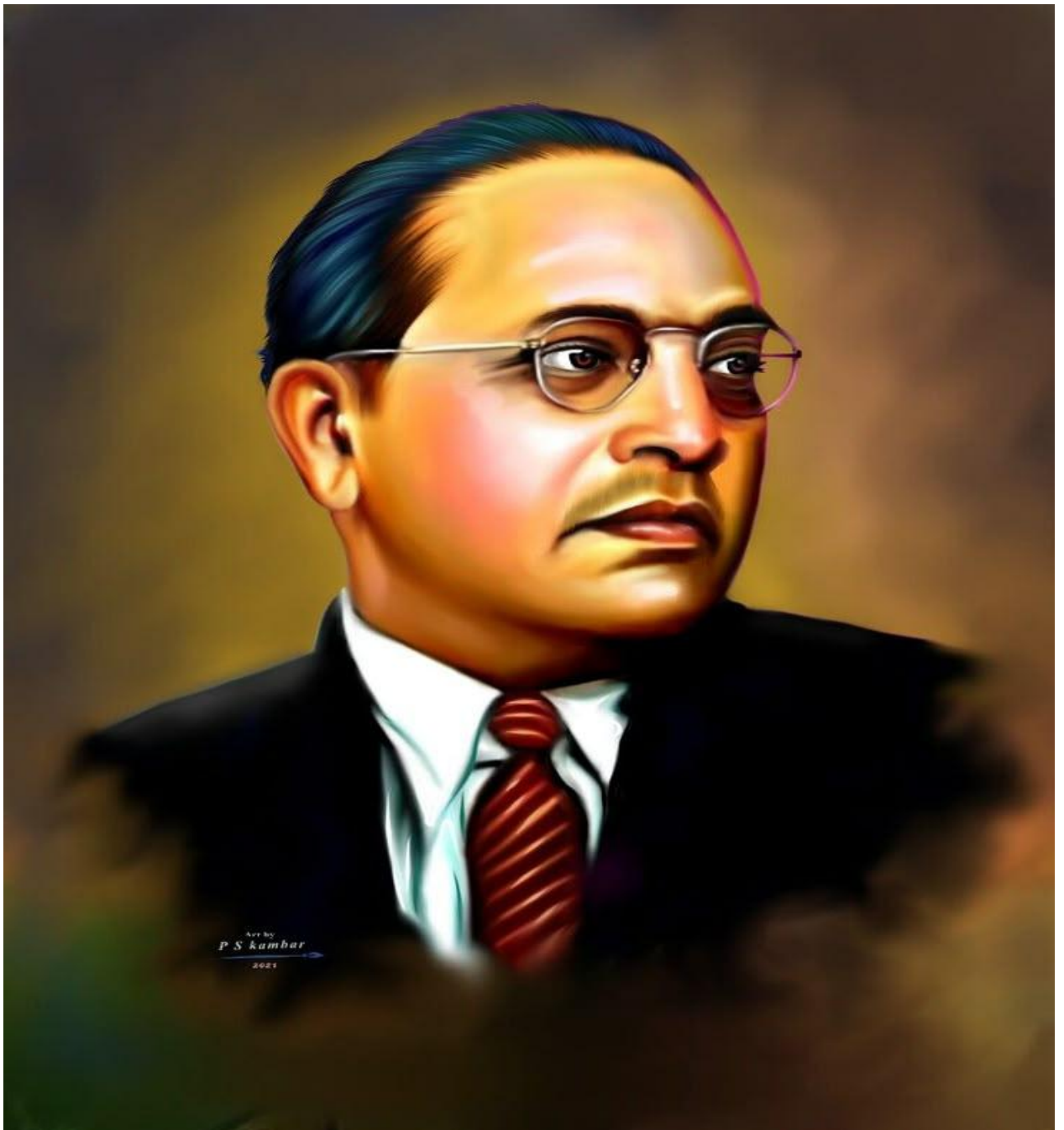
This is to certify that this dissertation entitled "**Evaluation of awareness about Hearing Disability, Central Government Schemes and Policies Available for Individuals with Hearing Impairment Among Medical Professionals**" is the result of my own study under the guidance of Dr. Mamatha N M, Assistant Professor of Audiology, All India Institute of Speech and Hearing, Mysuru and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

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I humbly dedicate this dissertation to Dr B. R. Ambedkar, whose vision, wisdom, and relentless efforts toward education, equality, and social justice continue to inspire generations. His belief in the power of knowledge and empowerment has been a guiding light throughout this academic journey. And I also dedicate this to My Family, Parents, all Teachers, Friends, and beloved Guide.



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-ಕುವೆಂಪು

Always seeking my parents' and teachers' blessings...

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Abstract

Introduction: Hearing impairment is a significant public health issue affecting communication, education, employment, and quality of life. Despite the presence of welfare programs and schemes by the Government of India, such as Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances Scheme (ADIP), National Programme for Prevention and Control of Deafness (NPPCD), Rashtriya Bal Swasthya Karyakram (RBSK), Deendayal Disabled Rehabilitation Scheme (DDRS), and Rashtriya Vayoshri Yojana (RVY), there is a lack of awareness among medical professionals regarding such schemes. As medical professionals play a significant role in early detection, counselling, referral, and rehabilitation of individuals with hearing impairment, creating awareness among them is essential.

Aim of the study: The current study aimed to measure awareness of hearing impairment disability and government welfare schemes related to hearing impairment among medical professionals.

Methods: A cross-sectional survey research design was used in this study. The sample consisted of 97 medical practitioners, including 50 MBBS and 47 BAMS practitioners from government hospitals as well as private hospitals in India. An already adapted and validated questionnaire developed by Rajinikanth and Mamatha (2023) was administered to assess awareness regarding hearing impairment and related government welfare schemes.

Results: The results of the current study found that most of the respondents had shown satisfactory awareness about the general factors concerning hearing disability, such as causes, risks, and possible ways of rehabilitation. But their awareness level was lower when it came to the government scheme, its eligibility criteria, referral process, and welfare measures. MBBS doctors have higher awareness than BAMS doctors in some aspects, like referring hearing disabled persons and government schemes. Significant relationships were found between the awareness levels of the respondents and factors such as professional qualification, working environment, and exposure to hearing impairment patients.

Conclusions: This study has pointed out many gaps in the awareness among medical professionals

regarding hearing impairment and welfare schemes for people with hearing disabilities. There is a need to organise special training and awareness programs to improve their knowledge, counselling abilities and referral practices. This will help in contributing to better rehabilitation support and service accessibility for individuals with hearing impairment,

Keywords: Hearing impairment, Awareness, Medical professionals, Government schemes, Rehabilitation, ADIP Scheme, Hearing disability, Referral practices, Audiology, Welfare policies.

CHAPTER 1

INTRODUCTION

As a hidden impairment, hearing loss is frequently perceived merely as a physiological rather than a functional or social deficiency. As stated by the Rochester Institute of Technology (2007), only the “tip of the iceberg” is usually visible. Since the symptoms usually start mild and progress slowly, individuals and their families may disregard or remain unaware of the condition.

In fact, in cases of post-lingual deafness, friends or relatives often notice the change before the individual does (Wikipedia contributors, 2025). Over time, impairment can affect teamwork, interpersonal relationships, and overall communication issues that conventional hearing tests might not reveal (Jensen et al., 2022). In addition, the condition is not limited to sensory loss alone; it also involves cognitive and contextual listening challenges, making it a complex issue that is often overlooked (Pichora-Fuller et al., 2022). According to the World Report on Hearing (2021), Hearing loss is the third leading cause of years lived with disability worldwide. This issue remains undiagnosed for a long time because of the stigmatisation and lack of awareness of symptoms. It may make it difficult for the appropriate specialists and legislators to assist those with hearing impairments.

The World Health Organisation (2018) reports that over 6.1% of the global population, approximately 466 million people, experience hearing loss. Adults were more likely to have hearing loss (93%) than children (7%). WHO estimates this figure might rise to over 700 million individuals globally by 2050 (WHO, 2021). According to reports, this was higher in low- and mid-income nations. In India, the prevalence of hearing impairment was reported to be 6.3% in 1997 (WHO, 1997). The estimated number of affected individuals increased from approximately 76.5 million in 2008 to around 100 million by 2018. According to the findings of the 75th National

sample survey (2017–2018), approximately 0.3% of Indians are estimated to have a hearing impairment. Roughly 49.8% of them said they could hear nothing or could only hear loud noises." According to a recent assessment, the prevalence of hearing loss in Indian studies ranged from 4.5% to 18.3%, with those over 60 accounting for 25% to 50% of the total (Verma et al., 2022). According to Garg et al. (2009), hearing loss was more common in rural areas than in urban ones. Hearing loss affected 56% and 62% of people over 60 who lived in rural and urban settings, respectively (Varshney, 2016).

Additionally, hearing loss is the most prevalent sensory deficiency in the aged population and is becoming a significant problem. This hinders communication, dramatically affecting daily living and leading to loneliness, reliance, frustration, and isolation (Ciorba et al, 2012). Soon after hearing loss, they may experience a loss of personal potential and financial hardship for themselves and the nation. The population is particularly vulnerable in low-income nations like India because of the inconsistent availability of newborn screening programs, the high rate of chronic ear infections in children, and the dearth of resources for the elderly. It should be mentioned that the most significant prevalence of hearing impairment is seen in rural and urban slums, which have the least access to tertiary treatment.

Three factors have contributed to the sharp rise in hearing impairment: (i) an ageing population; (ii) improved identification; and (iii) excessive noise exposure (Verma et al., 2022). Hearing loss can affect people of any age, impacting their social, emotional, and occupational functioning and communication abilities. Therefore, it is critical to identify and treat people with hearing impairments as soon as possible. In order to increase function, activity, and participation and, eventually, provide people with a higher quality of life, rehabilitation is crucial. The various rehabilitation strategies that have been used include:

The use of hearing technologies, including cochlear implants, implantable hearing aids, and conventional hearing aids; And Sign language and other sensory substitution techniques, such as Braille, Tadoma, print on palm, and speechreading; and Rehabilitative therapy, such as Total Communication and hearing and speech therapy, are some of the different rehabilitation strategies that have been employed. (World Hearing Report, 2021). However, it has been noted that barely 5 to 15% of people with hearing loss are receiving hearing aids in low- and middle-income countries (WHO, 2018). Similar problems arise in India, a developing nation, where many people lack the funds to purchase hearing devices for hearing rehabilitation. Due to this reason, the Indian government launched several programs, such as the Deendayal Disabled Rehabilitation Scheme (DDRS), Composite Regional Centres (CRCs), Rashtriya Vayoshri Yojana (RVY), and Assistance to Disabled Persons (ADIP), to give people from lower socioeconomic backgrounds various appliances and aids in addition to other financial benefits.

The Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP) Scheme was launched by the Government of India in 1981 to help individuals with disabilities by providing aids and devices at little or no cost. Two thousand fourteen cochlear implants were added as a special component of the ADIP Scheme, expanding its support to children with severe-to-profound hearing loss (ADIP Scheme, 2014). In 2022, updates made bilateral behind-the-ear (BTE) hearing aids, worth up to ₹15,000, available to children under 12 years of age. To qualify for these benefits, children must be Indian citizens, have a minimum hearing disability of 40% certified by a qualified medical authority, and come from families with a monthly income below ₹30,000 (ADIP Scheme, 2022).

Seniors in the Below Poverty Line (BPL) category can get physical assistance and listening devices under the RVY program (RVY, 2017). The "Senior Citizens Welfare Fund" covers the

costs tied to this program. The "Artificial Limbs Manufacturing Corporation (ALIMCO) is the only agency responsible for carrying out the plan. To address both preventive and promotive aspects of rehabilitation, including education, healthcare, employment and vocational training, research, and workforce development, the Ministry of Social Justice & Empowerment set up Composite Regional Centres (CRCs) for Persons with Disabilities in selected states (Vikaspedia, n.d.).

Rajanikanth and Mamatha (2023) developed and validated a 37-item questionnaire in English and Kannada to assess awareness of central government schemes and policies among individuals with hearing impairment and their caregivers. The study included 100 participants, 80 completing the Kannada version and 20 completing the English version. It also examined how demographic factors like age, gender, education, socioeconomic status, occupation, hearing status, and type of disability influenced awareness levels. The findings showed that these factors significantly impacted awareness, highlighting the need to consider sociodemographic characteristics when evaluating knowledge of disability welfare schemes.

Medical professionals play a vital role in the early identification, referral, and management of hearing impairments, as their knowledge and awareness directly affect timely diagnosis and access to rehabilitation services. A recent study in Sikkim by Sharma et al. (2024) examined the impact of a structured educational intervention on medical professionals' awareness of hearing impairment. The program provided training on hearing loss, assessment methods, and the role of audiologists in rehabilitation. Results showed that before the intervention, awareness among medical professionals was relatively low, especially concerning referral pathways and the scope of audiological services. Knowledge scores improved significantly after the training, with around 70% of participants showing meaningful gains. These findings underscore the importance of baseline knowledge. Among medical practitioners remains insufficient, yet targeted educational initiatives can effectively bridge this gap.

Although research on awareness and utilisation of central government schemes in audiology is limited, existing studies emphasise the need to enhance knowledge among stakeholders involved in rehabilitating individuals with hearing loss. Because these schemes are designed primarily for people with disabilities, including those with hearing impairment, medical professionals are key in identifying eligible individuals, providing counselling, and facilitating referrals to appropriate services. Therefore, assessing their awareness of these schemes is crucial, as it can directly influence patient access and utilisation. The present study seeks to evaluate the current awareness of central government schemes for individuals with hearing impairment among medical practitioners, thereby contributing to improved knowledge and practice within this professional group.

In order to provide the full range of services necessary for the rehabilitation of individuals with disabilities, including early intervention, the development of everyday living skills, education, and training, the Deendayal Disabled Rehabilitation Scheme (DDRS) aims to support non-profit organizations (DDRS, 2023) financially. Early and adequate rehabilitation is necessary for hearing loss because it is becoming more common in India. Individuals who lack financial resources find it challenging to purchase hearing aids. Numerous district, state, and federal programs provide financial assistance to people who require rehabilitation.

Need for the study

Hearing impairment is a medical condition and a social and psychological challenge. Individuals with hearing loss often face communication barriers, leading to social isolation and

loneliness, particularly among older adults (Shukla et al., 2020; WHO, 2021). These challenges may further contribute to academic underachievement and reduced employment opportunities (WHO, 2021; Shield, 2006). Additionally, hearing loss has been linked to adverse mental health outcomes, including an increased risk of anxiety and depression across children, adolescents, and older adults (Contrera et al., 2017; Theunissen et al., 2014). These difficulties limit full participation in society and often increase reliance on others. Despite the widespread impact, only 5 to 15% of people with hearing loss receive hearing aids in low- and middle-income countries (WHO, 2018). Similar challenges exist in India, where many individuals cannot afford hearing devices for rehabilitation. To address this gap, the Government of India has implemented programs such as the Deendayal Disabled Rehabilitation Scheme (DDRS), Composite Regional Centres (CRCs), Rashtriya Vayoshri Yojana (RVY), and Assistance to Disabled Persons (ADIP), providing assistive devices, financial support, and other benefits to individuals from lower socioeconomic backgrounds.

To support such individuals and help them become productive members of society, the Government of India has launched several welfare schemes. These include the Assistance to Disabled Persons (ADIP) Scheme, which provides durable and scientifically manufactured aids and appliances through implementing agencies such as ALIMCO, NGOs, and National Institutes (Department of Empowerment of Persons with Disabilities, n.d.-a). Another initiative is the Deendayal Disabled Rehabilitation Scheme (DDRS), which offers grant-in-aid support to NGOs for services such as special schools, vocational training, early intervention, and community-based rehabilitation (Department of Empowerment of Persons with Disabilities, n.d.-b; India Filings, n.d.). In addition, the Rashtriya Vayoshri Yojana (RVY) supplies assistive listening

devices, including hearing aids, to senior citizens from BPL families. It is fully funded and implemented through ALIMCO (National Portal of India, n.d.).

Despite the availability of multiple government schemes aimed at assisting people with disabilities, their utilisation remains limited due to several barriers. Key obstacles include a lack of awareness among potential beneficiaries, complex documentation processes, and insufficient outreach in rural areas (Sarkar & Rout, 2012; PMC team, 2021). Additionally, limited guidance from healthcare providers, lack of understanding of referral pathways, and low trust in service providers further impede effective service access (Zuurmond et al., 2019). Cultural barriers also play a role: many families remain unaware of eligibility criteria, fear bureaucratic delays, or are influenced by social stigma and misconceptions surrounding disability, resulting in a significant portion of the hearing-impaired population remaining underserved.

Medical professionals have been included in the present study because they serve as the first point of contact for individuals with hearing impairment and their families. Their role is critical in early detection, appropriate referral, and counselling, which can bridge the gap between beneficiaries and available government schemes. Lack of awareness among medical practitioners may contribute to underutilising welfare resources, whereas well-informed professionals can facilitate timely access to assistive devices, rehabilitation, and support services. Therefore, assessing their awareness is essential to improving the reach and effectiveness of disability-related initiatives.

Therefore, it is necessary to evaluate how many medical practitioners know about these schemes and how much they inform patients about them. Since doctors are often the first point of contact, their awareness and referral practices are crucial. Furthermore, awareness levels may differ across urban and rural regions, as well as by education and socioeconomic status. Studying

these variations will help identify the sections of society most needing focused awareness campaigns.

Thus, assessing the awareness and utilisation of central government schemes among medical practitioners is important for improving service delivery and enabling policymakers to design targeted strategies. Such evidence can guide the Government of India in deciding where, how, and for whom awareness should be created, ultimately improving the physical and mental health outcomes of children and adults with hearing impairments. A recent cross-sectional study conducted in a tertiary care setting in Eastern India revealed that while doctors exhibited slightly higher awareness of disability certification (27.3%) compared to nurses (14.4%), overall knowledge of government schemes remained low across all cadres (Kumar et al., 2024). This highlights that even medical professionals—who serve as the first point of contact—have significant gaps in understanding referral pathways and available welfare resources, making their inclusion in awareness assessments both critical and strategic.

Several studies have shown gaps in awareness and underutilization of available welfare schemes. For instance, Rajanikanth and Mamatha (2023) highlighted that many beneficiaries remain unaware of disability-related concessions due to a lack of proper dissemination of information. Similarly, Narayana and Vanaja (2009) reported limited awareness of government support systems among children with hearing impairment. Kumar et al. (2015) observed that inadequate counselling by healthcare professionals was a key barrier to scheme utilisation. In addition, Gupta and Agarwal (2020) emphasised the role of medical practitioners in linking patients to social welfare programs but noted significant gaps in their knowledge. The World Health Organisation (2021) also stressed the importance of integrating medical and social support systems to reduce the disability burden.

Despite the availability of many schemes, their impact is often diluted due to poor awareness among both beneficiaries and service providers. Since medical practitioners play a crucial role in counselling, certification, and referral, evaluating their awareness and utilisation patterns is essential. This study is therefore needed to identify existing knowledge gaps, strengthen medical education, and improve the overall implementation of central government schemes for the welfare of the hearing handicapped.

Aim of the study

The present study aims to assess the awareness about hearing disability, the central government schemes and policies available for individuals with hearing impairment among medical professionals. It will explore the factors influencing their knowledge, counselling, and referral practices.

Objectives of the study

- To assess the current level of awareness among medical professionals regarding hearing disability, related policies, and central government schemes available for individuals with hearing impairment.
- To identify factors (such as professional training, years of experience, and type of practice) contributing to better awareness among medical professionals regarding hearing disability, related policies, and central government schemes available for individuals with hearing impairment.
- To assess the awareness among BAMS and MBBS doctors about hearing disability and related government schemes available for individuals with hearing impairment.

Chapter 2

REVIEW OF LITERATURE

The process of communication between the child and the surrounding world is crucial when it comes to the development of their speech, cognition, and social skills. Usually, kids go through a stage from non-verbal to verbal communication. Nevertheless, kids with hearing impairment may show poor speech development due to the delay of the development process and the severity of the condition. In addition, profound hearing impairment affects verbal self-stimulation and makes the development of speech skills impossible (Kosovska Ristovski, 2021).

Hearing disability is one of the most frequently reported sensory deficiencies in the world, which affects almost 1.5 billion people (WHO, 2021). In India alone, roughly 63 million people suffer from some form of hearing deficiency (Rasiah & Sulakshan, 2020). While about five million people are completely deaf across the globe, others suffer from partial hearing problems, amounting to around two hundred million. It should be noted that two-thirds of those experiencing hearing disabilities live in LMICs, which creates even more barriers due to inadequate living standards and poor healthcare infrastructure (Malhotra et al., 2012; WHO, 2021).

Thus, there is an evident need to identify and help such patients as soon as possible. MBBS and BAMS specialists can be the first to diagnose hearing impairment, provide recommendations on how to rehabilitate and assist patients, as well as refer families to government welfare schemes. In case the problem goes unnoticed and untreated, the individual faces multiple disadvantages in terms of education, socialisation, and employment opportunities. Therefore, awareness of medical professionals regarding hearing disability and governmental programs is of paramount importance. Hearing loss is a sensitive issue, and many families do not actively seek intervention for their children despite the availability of rehabilitation options. In developed countries, universal newborn hearing screening has proven highly effective in the early identification, diagnosis, and rehabilitation of children with hearing impairment (Community Ear and Hearing Health, 2014). Early detection mitigates negative consequences on speech, language, education, and social development, highlighting

the importance of timely intervention.

Rehabilitation services like hearing aids and cochlear implants are readily available in developed countries, which have systematically established and government-sponsored programs for such rehabilitation services. For instance, in the United Kingdom, the National Health Service (NHS) offers cochlear implants free of charge to patients who qualify based on the criteria set by the National Institute for Health and Care Excellence (NICE) (NHS England, 2023; NICE Appraisal, 2018). Similarly, in the USA, cochlear implants, among other rehabilitation services, are paid for through medical insurance plans, namely Medicaid, Medicare, and the Veterans Administration (Mamo et al., 2016; Shan et al., 2020; Sorkin & Buchman, 2015).

However, the use of such interventions is restricted in poorer and developing countries like India owing to financial restrictions, lack of information, and geographic boundaries. While the Indian Government has launched schemes such as the ADIP Scheme for hearing aids and cochlear implants, their usage is restricted due to a lack of knowledge on the part of the beneficiaries about these facilities and/or improper guidance. It is at this point that medical practitioners, especially MBBS and BAMS doctors, play an important part. The knowledge and counselling skills of the doctor affect whether the family seeks the facility provided by these interventions. If the doctor himself does not have adequate information about the scheme of the government, many needy children and adults may continue without receiving treatment. Hence, comparisons in knowledge among various groups of doctors become imperative.

India has seen the implementation of provisions by the Ministry of Social Justice & Empowerment (MSJE, 2022) with regard to hearing aid support and assistance. The Ministry of Social Justice has started programs since 1981 that have included free or 50 per cent subsidy on hearing aid distribution, and also Cochlear Implantation from the government. Programs have been implemented in a range of schemes such as Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances (ADIP), National Program for Prevention and Control of Deafness (NPPCD), Rashtriya Bal Swasthya Karyakram (RBSK), and Rashtriya Vayoshri Yojana (RVY).

To get access to hearing aids through this scheme, it is necessary that the beneficiary should be an Indian citizen suffering from a hearing disability by at least 40%, and their family's monthly income should not exceed ₹30,000 (ADIP, 2024). Cochlear implants are also provided by the centrally sponsored schemes like ADIP, RBSK, and NPPCD.

2.1 Prevalence of Hearing Loss: Global and Indian Perspective

Deafness is another serious health problem globally. In the Global Burden of Diseases Study conducted by the WHO, deafness prevalence went up from 1.2 billion (17.2%) in 2008 to 1.4 billion (18.7%) in 2017. Hearing impairment ranks among the top three conditions associated with years lost to disability. It affects 39.5 million years of healthy life, compared to 27 million years in 2000. Deafness or severe HL in both ears is considered a disabling hearing impairment (DHI) based on criteria involving more than 40 dB in adults and more than 30 dB in children (Verma et al., 2021). Around 466 million persons worldwide (6.12% of the world's total population) suffered from DHI by 2018, and one-third were over the age of 65. Cases are expected to reach 630 million by 2030 and 900 million by 2050.

The prevalence rate of DHL differs depending on geographical locations. The prevalence rate for Ugandan adults is 11.7%, whereas the prevalence rate for elderly Brazilians is 69.6%. Additionally, in the Netherlands, 21% of elderly men and 18% of elderly women are part of the elderly population. It has been observed that in Europe, 30% of men and 20% of women have a hearing loss of 30 dB or more (Verma et al., 2021). Approximately 6–8% of Indians have hearing impairment, and it is common among rural residents and people from poor socioeconomic backgrounds.

2.2 Government Schemes and Policies in India

The Ministry of Social Justice and Empowerment (MSJE, 2022) has introduced several programmes for supplying hearing aids and cochlear implants to needy people. Free or at half cost hearing aids have been supplied by the Indian government since 1981, along with free of cost cochlear implantation. Various schemes in which these supplies can be obtained include the following: The

Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances (ADIP) Scheme is one of the many government schemes which provide financial aid to disabled persons for purchasing and fitting aids like hearing aids and wheelchairs.

The National Programme for Prevention and Control of Deafness (NPPCD) is a health programme initiated by the Government of India under the Ministry of Health and Family Welfare in 2007 (Ministry of Health and Family Welfare, 2007). The programme endeavours to prevent and control the primary causes of hearing impairment and deafness through early detection, diagnosis, treatment, and rehabilitation services. Its objective is to address preventable causes of hearing impairment by raising awareness, conducting hearing screening programmes, enhancing ENT and audiological services, and providing appropriate medical and rehabilitation services, such as hearing aids and referrals. The programme also stresses the need for training and development of skills among healthcare providers for effective ear and hearing care delivery (Ministry of Health and Family Welfare, 2007).

The Rashtriya Bal Swasthya Karyakram (RBSK) is a national child health screening and early intervention scheme implemented by the Ministry of Health & Family Welfare, Government of India, under the National Health Mission since 2013 (Ministry of Health and Family Welfare, 2013). The programme aims to identify and manage various diseases in children aged 0-18 years. It specifically focuses on “4 Ds” such as Defects at birth, Deficiencies, Diseases and Delays in development, including developmental disorders. RBSK has also incorporated hearing impairment and delay in speech and language development into its scope so that early screening can be done for the purpose of rehabilitation services.

The Rashtriya Vayoshri Yojana (RVY) is a central sector scheme initiated by the Government of India within the Ministry of Social Justice and Empowerment in 2017 to provide physical aids and assisted living devices to senior citizens who come from poorer economic sections of society (Ministry of Social Justice and Empowerment, 2017). This scheme is designed exclusively for seniors who have physical disabilities and impairments as a result of ageing. Some of these disabilities include hearing

impairment, partial blindness, tooth decay, and locomotor disability. Through this scheme, the beneficiaries receive various aids and devices, including hearing aids, a walking stick, a wheelchair, spectacles, dentures, and other devices free of cost. The scheme intends to help improve the quality of life of senior citizens by increasing their independence and mobility through assistive and rehabilitative means. The execution of this scheme takes place by conducting assessment camps and distribution camps in different areas of the country (Ministry of Social Justice and Empowerment, 2017).

Some of the eligibility criteria for accessing the benefits of ADIP include being an Indian citizen and having a hearing disability of 40% and below, as well as earning less than ₹30,000 per month as their family income (ADIP, 2024). There is also central government funding in programs like ADIP, RBSK, and NPPCD for cochlear implantation surgery for children with moderate to severe hearing disabilities.

2.3 Awareness Among Medical Professionals Regarding Hearing Disability Policies and Government Schemes

Although many governmental schemes like the ADIP Scheme, NPPCD, RBSK, and RVY have been initiated, research studies reveal that there is little awareness among medical practitioners about these schemes, their eligibility criteria, benefits, referral process, and rehabilitative services provided under these schemes for hearing-impaired people. The lack of knowledge among healthcare professionals about these schemes could lead to late detection, diagnosis, referral, and treatment of individuals with hearing disability, especially children born with hearing disability. Late intervention can lead to several detrimental effects, including poor speech and language skills, lower academic achievement, restricted social engagement, and reduced quality of life. Medical professionals must detect hearing disability at an early stage, counsel patients and their families about the benefits provided by the government and refer them for rehabilitation services. Hence, it is necessary to evaluate the level of awareness among medical professionals about governmental schemes for hearing disability to enhance resource utilisation and interdisciplinary collaboration.

2.4 Prevalence of Hearing Loss: Indian Perspective

In India, more than 70% of the population lives in the rural sector (NSO, 2018), and disabilities are relatively high in rural areas. Out of all types of disabilities, motor disability comes out to be at the top, whereas hearing disability is the second highest in terms of occurrence. Hearing disability made up 10% of all disabilities in the rural sector, while 9% was present in the urban sector during the 58th NSS survey conducted in 2002 (Verma et al., 2021).

Problems related to hearing disabilities in a developing country are not the same as those encountered in a developed nation. Hearing disability in a poor community is caused by several reasons, including lack of access to health care facilities, poverty, backwardness, illiteracy, and resource limitations. Hearing disability in such conditions is easier to prevent than cure (Malhotra et al., 2012; Sharma & Popli, 2023).

According to WHO estimates, there is a 6.3% prevalence of Disabling Hearing Loss (DHL) in India since 1997, rising from 76.5 million people in 2008 to 100 million in 2018. The burden of global DHL cases has been estimated at 28.2% in South Asia (Afghanistan, Bangladesh, Bhutan, India, Nepal, and Pakistan) in 2018, up from 27% in 2012. About 7.37% of the Indian population is affected by DHL, which accounts for 2.4% of children, while 4.57% and 0.5% account for high-income countries (Verma et al., 2021).

The National Sample Survey (NSS) conducted in 2002 found that Hearing Loss was the most common form of sensory disability and the second leading cause of disability in India, with 291 per 100,000 respondents affected, with the highest prevalence rate in rural areas (310) and the lowest in urban areas (236). Amongst these, severe (39%) and profound (32%) hearing impairment were more common. As per the Indian Census in 2011, the number of Indians reporting any disability was around 2.21%. Out of these, hearing (19%), vision (19%), and locomotor (20%) disabilities have been observed. About 0.3% of the population has a hearing disability, and almost 49.8% can hear little or nothing (NSS, 2018).

The proportion of cases of hearing impairment among children varies from 6.62% to 16.47%,

where otitis media is the most frequent cause (Verma et al., 2021). The results of community-based research in various age categories reveal that HL affects 6%–26.9%, whereas disabling HL makes up 4.5% to 18.3%. The risk of hearing impairment increases with age. This condition develops steadily until the age of 45-50, when a significant increase takes place. Almost all the patients above 60-65 years have experienced hearing impairment (more than 50%). In addition, almost 25% of patients suffer from debilitating hearing impairment. HL is more frequent in rural populations (Verma et al., 2021; Suneela Garg et al., 2008).

According to the findings of Chadha et al. (2014), a cross-sectional study evaluated 3,000 children (0-15 years) in Delhi for the prevalence of otitis media in three areas: non-slum urban, urban slums, and rural. CSOM prevalence was 2.6% in the non-slum urban population, 3% in the rural population, and 7.2% in the urban slum population.

Several studies have been done in India assessing the prevalence of hearing loss among children and community populations. According to Mishra et al. (2011), a multi-cluster study was done in Lucknow district from July 2003 through August 2004 to estimate the prevalence of hearing impairment in both rural and urban communities. The researchers observed that the total prevalence of hearing impairment was 15.14% and 5.9% for the rural and urban communities, respectively, and a greater prevalence of disabling hearing impairment was found among older people and deafness in the 0- to 10-year-old age group. The prevalence of sensorineural deafness in need of hearing aids was 20% and 50% in rural and urban communities, respectively.

Parvez et al. (2016) conducted a study regarding hearing loss in school-going children from 12 primary schools in the urban and rural areas of Aligarh, Uttar Pradesh. In this study, the prevalence rate was noted to be 17.9% (109/610). The prevalence rate in the rural area was higher than that of the urban area at 18.8% and 13.5%, respectively.

For South India, Rao et al. (2002) investigated 855 school-going children in the Rural Field Practice Area of Udupi Taluk, Karnataka, where they observed hearing impairment in 102 children (11.9%). In this case, more cases were seen in girls (12.1%), compared to boys (11.8%). Again, for

Jacob et al. (1997), when conducting a pilot study involving 284 children aged 6-10 years in rural primary schools, they observed that there were 34 children (11.9%) who had hearing impairment. Lastly, in the region of Pune Cantonment, comprising both urban and semi-urban areas.

A large study conducted by Mann et al. (1998) at Chandigarh involved the screening of 1,670 children between 12 and 14 years old (1,030 urban children; 640 rural children). It showed a greater number of people suffering from hearing impairment in the rural population (32.81%) compared to the urban population (6.31%). A community study conducted in rural Tamil Nadu with a total sample size of 5,621 subjects used a semi-structured questionnaire. It was discovered that 232 out of 5,621 subjects (4.1%) suffered from hearing impairment, whose range was 1.5% to 11.3%.

In summary, these investigations show that there are insufficient rehabilitation programs in rural India, where the cases of early identification, detection, and treatment are fewer than those in urban regions. Rural communities lack sufficient access to health professionals and health facilities, along with parental awareness and affordability of hearing aids (Verma et al., 2021; Galhotra & Sahu, 2019). As a solution to these problems, the implementation of the National Health Program for infant hearing screening has been proposed. Early identification and treatment of newborn babies with hearing impairment led to improved quality of life (Parab et al., 2018).

2.5 Policies for Persons with Disabilities in India

Historically, Indian disability policy has largely been based on a medical model, which views disability in terms of a problem that needs to be addressed medically. Some of the important acts in this regard include the Rehabilitation Council of India Act (1992), the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act (1995), also known as the PwD Act, and the National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities Act (1999).

According to the PwD Act (1995), India's first major disability legislation, there were seven types of disabilities: blindness, low vision, cured leprosy, hearing impairment, locomotor disability, mental retardation, and mental illness. The act included prevention and early diagnosis; education;

rehabilitation and employment; affirmative action; non-discrimination; research and development of the workforce; social security and grievance redressal provisions (Urooj-un & Shafi, 2019). "Able does not mean enabled. Disabled does not mean less able." -Khang Kijarro Nguyen

The Rights of Persons with Disabilities (RPwD) Act, 2016, made India move towards the social model of disability, which implies that disability is caused by social barriers rather than personal problems. According to the RPwD Act, persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairment and, because of this impairment, along with the various barriers posed by society, face difficulties in fully taking part in social life. The RPwD Act has increased the list of disabilities from seven to twenty-one. These additional disabilities are cerebral palsy, dwarfism, muscular dystrophy, acid attack victims, hard of hearing, speech and language disability, specific learning disabilities, autism spectrum disorders, chronic neurological disorders (multiple sclerosis, Parkinson's disease), blood disorders (haemophilia, thalassemia, sickle cell anaemia),

The RPwD Act provides reservations in employment and education to persons with disabilities who are categorised as benchmark disabilities. The government has to make sure that there is at least 4% of total job openings reserved for persons with benchmark disabilities, which can be broken down as follows: 1% reservation for blind and low vision; deaf and hard of hearing; locomotor disabilities, including cerebral palsy; leprosy cured; dwarfism; victims of acid attacks; muscular dystrophy; autism; intellectual disability; specific learning disability; and mental illness.

Further, 1% of the reservations are reserved for individuals with multiple disabilities, such as deaf blindness, from these categories. Within the context of higher education, the RPwD Act requires that 5% reservations be reserved for persons with benchmark disabilities at government and government-aided educational institutions, as well as an upper age limit of 5 years for admissions. In spite of the availability of these facilities, the public is unaware of the RPwD Act benefits (Vishwakarma, 2020).

Accessible India Campaign (Sugamya Bharat Abhiyan)

The Accessible India Campaign is an effort made by the Department of Empowerment of Persons with Disabilities (DEPwD). It was launched on December 3, 2015. The purpose of this campaign is to increase physical, transportation, and information accessibility for people with disabilities across India (Accessible India Campaign, 2015).

Unique Disability Identity Card (UDID)

The Universal Digital Identity Database (UDID) initiative, launched in September 2016, offers a universal digital platform for issuing disability certificates and identity cards. Each UDID card holds an 18-digit identity number, making it possible for recipients to benefit from government schemes, preventing duplicity and enabling entitlement tracking (UDID, 2016). Using the Swavlamban UDID portal, individuals can register for a disability certificate, renew it, or update disability-related data. Additionally, applications made offline are also digitally recorded. The scheme ensures that persons with disabilities have equal access to and accountability in the use of these resources (Singh & Sharma, 2021). Altogether, these schemes and measures create a complete approach towards empowering and integrating persons with disabilities, including deaf people, while emphasising the importance of raising awareness about them.

2.5.1 Persons with Hearing Impairment Facing Double Discrimination

The deaf are known to experience several problems because of the invisibility of the disability. Under the Act of the Rehabilitation Council of India in 1992, a hearing impairment is referred to as a hearing handicap that involves deafness, where there is a hearing loss of 70 decibels or higher in the best ear or complete hearing loss in both ears.

Table 2.1

Summarises the categories of individuals with hearing impairment in India (Urooj-un-Nisa & Shafi, 2019; AYJNIHH).

Categories	Type of Impairment	Decibel Level (Better Ear)	Speech Discrimination Score	Percentage of Impairment
I	Mild Hearing	26–40 dBHL	80–100%	<40%
II(a)	Moderate Hearing	41–60 dBHL	50–80%	40–50%
II(b)	Severe Hearing	61–70 dBHL	40–50%	71–100%
III	Profound Hearing	71–90 dBHL	<40%	100%
–	Total Deafness	≥90 dBHL	Very Poor	–

Note: dBHL = decibel Hearing Level; speech discrimination score = percentage of speech stimuli correctly identified in the better ear. Hearing impairment was classified by the severity of hearing loss in the better ear.

The degree of hearing impairment ranges from mild to profound, depending on the amount of auditory reception in the better ear. However, it is important to understand that not everyone with hearing impairment will be considered deaf. Individuals may regard themselves as 'Deaf' and become part of a subculture of people using sign language. Others who do not consider themselves 'deaf', but hard of hearing, are categorised as HoH and don't fit into the deaf or hearing community.

Hearing Impairment Definitions (RPwD Act, 2016)

A person is considered deaf if they have a hearing loss of 70 dB or more in speech frequencies in both ears. A person is considered hard of hearing if they have a hearing loss of 60-70 dB in speech frequencies in both ears.

Measurement of Air Conduction Thresholds (ACT)

The Air Conduction Threshold (ACT) test involves separate testing of the right ear and left ear through audiometry, typically conducted by an audiologist using pure tones. In case ACT does not provide reliable results, one can undertake other tests, such as immittance audiometry, speech audiometry, or Auditory Brainstem Response (ABR) tests, to obtain a precise measurement of ACT. Conditioned pure tone audiometry (CPA) and visual reinforcement audiometry (VRA) can be considered for children within the age bracket of three to five years, and tests like ABR or ASSR for infants.

Computation of the Percentage of Hearing Disability

Monaural Percentage of Hearing Disability:

In the first step, the Pure Tone Average (PTA) of the Air Conduction Threshold (ACT) is determined at 500, 1000, 2000, and 4000 Hz for each ear. Where there is no reaction in any frequency, then ACT = 95dB. The monaural percentage of hearing disability is also determined for the right and left ears. Finally, the percentage of hearing disability is evaluated by applying the following equation: $\text{Percentage of Hearing Disability} = (\text{Better ear \% of hearing disability} \times 5 + \text{Poorer ear \% of hearing disability}) \div 6$.

This standardised assessment method provides an objective measure of hearing impairment and assists in determining eligibility for rehabilitation services, hearing aids, and government benefits.

2.6 Central Government Schemes and Programs for individuals with Hearing Impairment

The Indian government has launched several schemes to assist people with hearing impairment and help them lead an active life. The two schemes launched by the Indian government are the National Programme for Prevention and Control of Deafness (NPPCD), launched in 2006, and Rashtriya Bal Swasthya Karyakram (RBSK), launched in 2013.

NPPCD was initiated in 2006 by the Ministry of Health & Family Welfare, India. The scheme aims to conduct hearing screening for communities, early diagnosis, and treatment of people with hearing loss. It seeks to bring about a reduction of 25% in the prevalence rate of hearing impairment and deafness in the future. The scheme financially assists states and central health departments to identify, diagnose, and treat ear-related issues causing hearing loss.

Launched in 2013 through the National Health Mission, the RBSK seeks to improve the welfare of children by offering them comprehensive health care from birth to 18 years of age. RBSK conducts tests for deformities in births, congenital deafness, development-related issues, ailments, and disabilities. The program uses mobile health teams consisting of doctors, paramedics, and nurses to screen children for any such conditions at Anganwadi centres, while tertiary health care is administered in hospitals for children with disorders. Interventions are provided free of cost (NHM, 2013; RBSK, 2013).

Both the NPPCD and RBSK play important roles in the systematic implementation of national hearing screening programs and in generating awareness regarding the diagnosis and rehabilitation of hearing loss. District Early Intervention Centres have been set up for follow-up care, tertiary-level referral for surgery, and rehabilitation services, such as the provision of hearing aids and cochlear implants, funded by the Ministry of Social Justice and Empowerment (Hadagalimath & Noolvi, 2018).

Challenges in Rural India

Although the child can be diagnosed at an early age, early rehabilitation is difficult, as even in rural regions, parents of children cannot afford to pay for hearing aids or cochlear implants due to financial constraints. As per the Socioeconomic and Caste Census (SECC), 2011 data, only 74.52% of rural households earn less than ₹5,000 per month, and most families residing in rural areas earn 5,000 to 10,000 per month. This implies that rehabilitation is expensive, and therefore, such programs require government support to assist children with hearing disabilities. Early rehabilitation is imperative for the child's speech and language development skills. Research conducted by Moeller (2000) found that children with hearing disabilities who were enrolled early had similar scores with normal children on the vocabulary test and verbal reasoning test at the age of five years.

ADIP Scheme Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances (ADIP). This scheme was introduced in 1981 to provide hearing aids or cochlear implants to eligible persons with hearing impairment. Cochlear implants were included in the scheme in the year 2014 (ADIP, 2014). As per the scheme, a person under the age of 12 years may avail himself/herself of

bilateral digital BTE hearing. Eligibility for this benefit requires that the person must be an Indian citizen and have at least 40% hearing disability. The monthly family income should not exceed ₹30,000. In addition, the individual should not have received financial assistance from any other source for the same purpose during the previous three years.

The minimum assistance period is one year for children under 12 (ADIP, 2022). These programs collectively ensure that early detection, intervention, and rehabilitation are accessible to children with hearing impairments, particularly those from economically disadvantaged backgrounds, facilitating their inclusion in mainstream education and society.

2.6.1 Additional Central Government Schemes and Support for individuals with Hearing Impairment

As per the ADIP program, there are financial aids available for children suffering from pre-lingual hearing loss with the following details (ADIP, 2022; MSJE, 2022): For children between 1 and 5 years of age suffering from pre-lingual hearing loss, financial aid is provided at ₹7.00 lakh per unit, which includes the procedure of cochlear implantation surgery, post-operative care, and rehabilitation. The complete cost will be borne by the government. For children aged between 5-18 years suffering from acquired hearing loss, financial aid is provided at ₹6.00 lakh per unit.

Criteria for free or subsidised cochlear implants are ascertained for children below the age of five years suffering from profound pre-lingual deafness. Persons having an income below ₹22,500 per month are entitled to financial assistance to the extent of 100%, while persons whose income is between ₹22,500 and ₹30,000 per month can avail themselves of 50% financial assistance. The Ali Yavar Jung National Institute of Speech & Hearing Disabilities (AYJNISHD), Mumbai, acts as the Nodal Agency for conducting Cochlear Implant Surgery under the scheme ADIP. The beneficiaries are also supplied with educational kits and other assistive devices.

All India Institute of Speech and Hearing (AIISH) Client Welfare Fund

The Client Welfare Fund (CWF), sponsored by the Ministry of Health & Family Welfare, is the scheme which provides monetary help to children suffering from poor hearing ability to get hearing

aids. The requirements for availing such benefits are Male children below 12 years of age, while female children, regardless of their age, can apply for the same. Families possessing the BPL (Below Poverty Line) or Antyodaya Anna Yojana card will be eligible for financial aid, whereby 60% of the hearing aid amount will be covered.

The program offers physical supports and assisted living gadgets, such as hearing aids, to older adults who are over the age of 60 years and fall into the BPL category. The program is supported through funds provided from the Senior Citizens' Welfare Fund, with ALIMCO as the implementing authority. Composite Regional Centres (CRCs) and District Disability Rehabilitation Centres (DDRCs). The CRCs have been set up since 2011 by the Ministry of Social Justice and Empowerment for offering services in the fields of prevention and promotion of rehabilitation of persons with disabilities. The CRCs offer facilities in the areas of health, education, employment, vocational training, research, and manpower development.

District Disability Rehabilitation Centres (DDRC) are collaborative efforts between the government of India and various states and are operated under the scheme of Deendayal Disabled Rehabilitation Scheme (DDRS). The District Disability Rehabilitation Centres provide all-around assistance to the disabled people living in rural regions, including identification of disabilities, awareness campaigns, early diagnosis and treatment, provision and maintenance of assistive devices, certification of disability, and facilitation of benefits. There are presently sixteen DDRCs working in seven different states in India.

Central Government Health Scheme (CGHS)

The CGHS ensures that the employees of the central government receive comprehensive health services, including the provision of hearing aids initially, as well as any replacements after five years, at the expense of the scheme, provided that there is a certificate of condemnation for the old hearing aid. This is inclusive of the cost of body-worn hearing aids, BTE, ITC, or CIC hearing aids.

2.6.2 Swavlamban Health Insurance Scheme and Additional Benefits for Persons with

Disabilities

The Swavlamban Health Insurance Scheme has been launched by the Ministry of Social Justice and Empowerment in association with The New India Assurance Company Limited to provide health insurance coverage for Persons with Disabilities (PwDs). The following are some features of the scheme, wherein benefits will be provided to people with disabilities aged 18-65 years and having a family annual income of less than Rs. 3, 00,000. This health insurance scheme is available for a person with disability and his/her family, comprising the spouse and a maximum of two children through the family floater cover scheme. Some other important aspects of the scheme are health insurance benefits, coverage of pre-existing diseases, and a maximum annual family floater cover of Rs. 2, 00,000. There are many disabilities which include blindness, low vision, leprosy cured, deafness, locomotors disablement, intellectual disability, and mental illness. This scheme is run in collaboration with National Institutes and Composite Regional Centres (CRCs), which come under the department of DEPwD.

This initiative focuses on enhancing the general well-being of people with disabilities by offering medical insurance at affordable rates. The Government of India offers educational concessions for the disabled student community who have a minimum disability of 40%, particularly the deaf. In the instructions and circulars issued in 2018 and 2019, special consideration is allowed during examinations and the curriculum for the students. One of the provisions is that they can forego one language from the syllabus when taking the Secondary (Class X) and Senior School Certificate (Class XII) examinations. Besides, the students can employ a scribe and get extra time according to the duration of the examination. For an exam lasting three hours, they will be awarded an additional hour, for one and a half hours, they will receive an additional thirty minutes, and for an hour, they will be offered an additional twenty minutes.

In India, under income tax laws, those who are disabled and even their dependents can enjoy tax concessions. Under Section 80U of the Income Tax Act, tax deductions are allowed for individuals having at least 40 per cent disability, which includes hearing disability, blindness, visual disability,

leprosy-cured disability, locomotor disability, intellectual disability, and mental illness. The condition of severe disability means disability to an extent of 80 per cent or more and can be either a single disability or a combination of different disabilities, like autism or cerebral palsy. Deductions allowed are as follows:

There are also transport concessions given by Indian Railways for people with disabilities. The concession varies between 25% and 75%, based on the nature of the disability, which includes orthopaedic disability, blindness, mental disability, and deaf and dumb disorders, in sleeper and AC categories. It also applies to a companion or attendant. In exceptional cases where mentally disabled people, who need companions to travel, blind passengers, and deaf and dumb passengers can travel without or with companions, a concession of 50% is granted on tickets and Monthly/Quarterly Season Tickets, respectively.

2.6.3 State Government Schemes and Programs for Individuals with Hearing Impairment

Sruthi Tharangam – Kerala

The Government of Kerala introduced the "Sruthi Tharangam" scheme in 2018 to offer cochlear implantation to children suffering from profound hearing disability (Kerala Social Security Mission, 2018). The Sruthi Tharangam scheme offers financial assistance for cochlear implants to children in Kerala. According to the scheme, children between the ages of 0 and 5 years whose families' total annual income does not exceed ₹2,00,000 and are permanent residents of Kerala are entitled to receive the benefit. This scheme offers cochlear implantation at no cost, which includes both surgical procedures and the device used for implants.

Snehasparsha Programme is the Department of Health & Family Welfare in Assam launched the Snehasparsha programme, which aims at improving health facilities for children in the state. The programme funds specialised treatment services such as cochlear implant surgery. Only children aged 14 years and below, whose yearly family income does not exceed ₹5,00,000, are eligible for the benefit package.

The Chief Minister's Comprehensive Health Insurance Scheme is one of the social security

schemes initiated by the state government of Tamil Nadu on 23 July 2009. This scheme was earlier called Kalaigiar Kaappittu Thittam. The scheme intends to provide good health services to qualified families. The scheme covers a sum of ₹5 lakh per family per year through cashless hospitalisation and provides free cochlear implantation surgery for children below the age of 6. The Chief Minister Comprehensive Health Insurance Scheme covers those poor families whose total income does not exceed ₹1,20,000 per year.

The Aarogyasri Community Health Insurance Scheme in Andhra Pradesh was introduced on 1st April 2007 to offer comprehensive health insurance cover to individuals living below the poverty line, such as those with cochlear implants. Individuals who have a BPL card become eligible for the coverage, whose eligibility can be ascertained using ration cards and health cards issued by the scheme. The Aarogyasri offers coverage for a surgical cochlear implant procedure along with auditory-verbal therapy services, where the sanctioned cost of the treatment is ₹6.50 lakhs per individual. This scheme is managed by a Trust, whereas the Star Health and Allied Insurance Company is the service provider.

2.7 Other Funding Sources and Global Perspectives on Hearing Care

Aside from the cochlear implants provided by the state government, there are some provisions in India that provide funds to children who suffer from hearing impairment. They consist of financial help provided by the Prime Minister's Fund, the Chief Minister's Fund, the MP Fund, and the MLA Fund. The patients or parents of the patients can approach the concerned office to get the funds needed for the installation of a cochlear implant or hearing aid devices. If we consider the case from a global perspective, we will notice that many countries have established funding programs and healthcare plans for hearing care services for hearing-impaired people.

United States of America (USA):

The United States has used direct-to-consumer hearing aid distribution systems in order to increase the effectiveness of hearing aids and decrease their prices (Mamo et al., 2016; Shan et al., 2020). Hearing aid services are covered by various health insurance plans like Medicare and Medicaid

in the United States. The latter is available to those who are above 65 years old and some younger persons with disabilities. Medicaid can be accessed based on income, disability, age, and other requirements, but hearing aids are not necessarily covered in all states and for all ages (Arnold et al., 2018).

Several studies carried out in the United States have pointed out the following observations about hearing health care insurance coverage. Arnold et al. (2018) found that out of the 50 US states, only 28 had hearing aid coverage schemes. The different eligibility criteria adopted by various states to qualify for coverage ranged from bilateral hearing aids accompanied by lifetime battery coverage to unilateral hearing aids accompanied by a limited battery supply. The researchers suggested a need to expand the coverage of supported essential wraparound services to allow for mandatory hearing healthcare coverage under Medicaid.

According to Marie (2020), audiologists, who are considered “non-medical” providers, usually find themselves constrained in insurance coverage when it comes to private insurance, Medicare, and Medicaid. Some states have tried to solve this problem with laws requiring mandatory coverage of audiology services and acknowledging audiology services as an essential benefit in Medicaid.

Additional research conducted by Frank Sorkin (2013) concerning cochlear implantation and awareness showed that cochlear implantation was less common in the US than in some European countries. There were such obstacles to cochlear implantation as poor public awareness, unclear referral procedures, political issues within the deaf community, and financial issues, especially among Medicaid patients. This comparative perspective emphasises the importance of increasing public awareness, establishing clear referral pathways, and providing adequate financial support to improve early intervention and the utilisation of hearing devices both in India and globally.

2.8 Cochlear Implant Utilisation and Post-Implantation Outcomes

Sorkin and Buchman (2015) explored the accessibility and usage of cochlear implant devices (CIs) across six highly developed nations. According to their findings, the highest usage of CIs in children was recorded in Australia at 98%, which was facilitated by effective neonatal hearing

screening programs and a comprehensive health care system. Other nations had relatively low usage levels: Sweden and the UK (90%), Germany (65%), and the US (50%).

Utilisation has also been found to be lower in Germany due to inadequate counselling on hearing aids, which can impact decision-making processes by those suffering from hearing impairment. Earlier research conducted by Frank Sorkin et al. in the United States (2013) has shown that low public awareness, politics, and economic factors have impacted the utilisation of cochlear implants, especially for those belonging to lower socio-economic backgrounds dependent on Medicaid. The above discussion underscores the significance of early diagnosis, higher levels of public awareness, and economic availability in enhancing cochlear implant utilisation.

Indian Context: ADIP Scheme and Hearing Aid Outcomes

The Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances (ADIP) Scheme provides government-funded hearing aids and cochlear implants to eligible individuals with disabilities in India. Several studies have evaluated the effectiveness of this program.

Aravinda et al. (2020) experimented on 200 subjects between 20 and 70 years old using the Satisfaction with Amplification in Daily Life (SADL) tool. According to the findings, hearing devices offered under the ADIP program helped improve speech perception and telephone conversation skills, thus boosting hearing satisfaction among the subjects. In another study, Dutta et al. (2020) focused on the knowledge level of the parents regarding the maintenance of the cochlear implant and its maintenance after its installation. Out of the 30 parents who were involved in the experiment, 83.33% of them were trained on implant maintenance, whereas the remaining 16.67% had not undergone such training.

Post-Implantation Outcomes

The research was carried out by Mehrotra et al. (2020), who retrospectively evaluated the benefits of cochlear implants among patients enrolled in the ADIP Scheme in the years 2016-2019. In this study, a positive change was observed in the auditory skills, language development, and quality of life of most participants who received cochlear implants as per the scheme's protocol. It was found

that the economically weaker children have been greatly aided by the scheme's services, with more than 78 per cent of them showing improvement in speech and hearing.

The second study conducted by Makar et al. (2021) focused on 93 children with severe hearing impairment in rural regions, who were given cochlear implants as a part of the ADIP program. After four years of continuous usage of cochlear implants, the scores obtained from the Auditory Skills Checklist (ASC) suggested that 100% of children detected sounds, 78% discriminated sounds, 72% identified sounds, and 56% comprehended sounds. Therefore, it was observed that the usage of unilateral cochlear implants greatly improves the auditory capabilities of children.

Studies have also been conducted concerning parental challenges associated with rehabilitation after undergoing a cochlear implant procedure. Ahuja & Kushawaha (2022) carried out a survey involving 30 parents of children who had undergone a cochlear implant operation under the ADIP program. In their study, which employed a rating scale of three points, the researchers analysed the challenges encountered in accessing post-operation rehabilitation services. One of the findings of the research included the importance of parental assistance in rehabilitation procedures.

2.9 Awareness, Utilisation, and Challenges in Cochlear Implantation and Hearing Aid Services

Other studies have been done to determine awareness and practices related to cochlear implantation among healthcare professionals. Ravi et al. (2023) performed an online cross-sectional study to determine otorhinolaryngologists' knowledge, attitude, and practices toward cochlear implantation in India. The researchers adopted a two-phased convenience sampling technique. In the first phase, a questionnaire that would evaluate the knowledge, attitude, and practice of otorhinolaryngologists regarding cochlear implants was created and tested. The validated questionnaire was then distributed to the Association of Otolaryngologists of India and the Cochlear Implant Group of India members through Google Forms.

There was a total of 106 otorhinolaryngologists who responded to the survey. The findings indicate differences in awareness concerning government schemes that offer cochlear implants. There was awareness concerning the Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances

(ADIP) Scheme among 55.7% of the respondents, awareness concerning the National Programme for Prevention and Control of Deafness (NPPCD) was observed among 37.7% of the respondents, and there was awareness concerning the Rashtriya Bal Swasthya Karyakram (RBSK) among 5.7% of the respondents. Just 0.9% of the respondents expressed awareness of the Sound Hearing Initiative. The study concludes that while the attitudes towards cochlear implantation are positive among Indian otorhinolaryngologists, it is important to raise awareness on innovation and government schemes.

Similarly, Ismail et al. (2019) performed a systematic review on the practices of hearing care professionals during consultation and their effects on adult patients' utilisation of hearing aids. Among the 17 articles reviewed, 12 concerned themselves with clinician behaviour, while five were interventional studies. There was a dearth of controlled clinical trials that associated clinicians' practices with patient outcomes in the study, making the case for developing a scientific research agenda very strong.

Challenges in Hearing Aid and Cochlear Implant Delivery

Beneficiary contact continues to be one of the key issues faced by many developing nations, like India, despite the successful dissemination of the use of hearing aids and cochlear implants through various initiatives. The following factors can be considered some of the factors that prevent access to these devices: Growing prevalence of hearing disability, inadequate knowledge on hearing loss among the general population, lack of government regulations as well as standardisation of programs related to hearing devices, insufficient third-party financing for hearing aids and cochlear implants, and shortage of affordable, quality hearing aids.

Follow-up after provision of hearing aids has similarly been identified as another problem in hearing health care programs (Bagatto et al., 2011; Seelman & Werner, 2014). The effectiveness of hearing health care programs in numerous developed countries has been assessed through constant monitoring of variables such as patient satisfaction and rehabilitation results to provide timely and proper interventions among hearing-impaired children. On the other hand, in India, the issue of hearing aid usage in government programs among children has hardly been studied scientifically.

Global and National Implications

Communication is vital for the development of speech and language skills, and for a child's proper social growth. Any problem with hearing could lead to delayed progress in speech, language, and social skills. Approximately one billion five hundred million individuals suffer from hearing impairment globally, and this number includes 63 million Indians. The rural population in India has relatively high levels of prevalence, as they do not have enough access to healthcare due to their poverty and lack of literacy. Timely diagnosis, like newborn hearing screening tests, is very important for hearing impairment. In the United States and the UK, the government gives away hearing aids and implants for free or at subsidised costs. India has its own programs for providing hearing devices to the poor: ADIP, NPPCD, RBSK, and RVY.

Most Indian policies are based on the medical approach, which is concerned with treatment and remediation of disabilities. Important laws include the Rehabilitation Council of India Act (1992), the Persons with Disabilities Act (1995), among others. Despite the legislation, there are several issues that have emerged, especially in the rural parts of India. Some of these issues include inadequate rehabilitation services. This results in poor chances for the early detection, prevention, and treatment of hearing impairment. There is enough evidence that shows disparity in healthcare access between the rural and urban communities, thereby resulting in high rates of hearing impairment. It is important to note that despite the laws put in place, the medical model prevails.

Comparisons of India with other developed nations show disparities between the two in terms of facilities, resources, and awareness programs that affect people who suffer from hearing problems. Hence, there is an urgent need to improve newborn universal screening systems in India to detect and manage hearing problems at an earlier stage. Moreover, it is necessary to promote community-based awareness programs that can reduce stigma surrounding hearing impairment and help people understand the situation to utilise all available services. Advocacy for such policies will be helpful in this regard.

But many of those who suffer from hearing impairment, along with the caregivers, do not know

about the various schemes and programs by the government meant for their welfare. Therefore, the objective of this research work would be to find out how aware people suffering from hearing impairment, along with their families/caregivers, are regarding various central government schemes and programs available to them.

CHAPTER 3

METHODS

The proposed study employed a cross-sectional, questionnaire-based survey to assess the awareness and utilisation of central government benefits for individuals with hearing impairment schemes among medical professionals. This design is appropriate as it enables data collection from a defined population at a single point in time, thereby providing an overview of the current level of awareness and utilisation of these schemes among the medical professionals.

Ethical clearance for the present study was obtained from the Institutional Review Board before data collection. All the procedures were carried out as per the ethical guidelines for biomedical and health research involving human participants issued by the AIISH (2023). Before initiating data collection, the purpose and nature of the study were explained to each participant in simple terms. Informed consent was obtained from every participant, ensuring their participation was voluntary, with the option to withdraw at any stage without any consequences. Confidentiality of the responses is assured, and the collected data is used solely for research purposes.

3.1 Participants

The study targeted registered medical practitioners (MBBS & AYUSH doctors) working in both government and private healthcare facilities in Mysore and Mandya districts. The participants were considered for the study only if they actively engaged in clinical practice during the data collection period. A total of 80 medical professionals have participated in the study. Demographic details such as age, gender, qualification, years of experience, and type of practice (government/private) were collected to analyse factors influencing awareness.

Inclusion criteria

Participants who fulfilled the following criteria were selected for the study.

- Registered medical practitioners who have graduated as MBBS or BAMS doctors.
- Medical professionals currently working in government hospitals, private clinics, medical colleges, and primary health centers within the study area during data collection.
- Medical professionals of all specializations like ENT, Pediatrics, and general surgeons, gynecologists etc.... were included in the study.

Exclusion Criteria

The following criteria were applied to exclude the participants from the study.

- Interns and non-practicing medical graduates.
- Practitioners who are unavailable during the data collection period, for example, due to leave, transfer, training, or refusal to participate.

Procedure

Data were collected using a questionnaire developed and validated by Rajanikanth and Mamatha (2023) to assess awareness of central government schemes available for the hearing-impaired population among parents and hearing impaired participants. Since the study targets medical professionals, the questionnaire was slightly adjusted with suitable changes to wording and content to fit this group. Additional items were included to assess referral practices and the professional responsibilities of medical practitioners toward individuals with hearing impairment. The participants' demographic details section, initially developed for parents or caregivers of deaf children, was modified to suit the medical doctors considered for the study. The original questionnaire that included information about participants' geographical location, provisional diagnosis of hearing loss, and details of any hearing aids used was removed. Following this, an information passage on informed consent was provided, where each participant was required to read and sign the informed consent form.

A panel of experts in audiology, speech-language pathology, and public health reviews the adapted version of the questionnaire to confirm its relevance and content validity. The public health professionals included faculty members/research experts with experience in community health and healthcare policy. A pilot study was also conducted with a group of medical professionals to ensure clarity, reliability, and applicability before the final administration.

Medical professionals working in government and private healthcare settings were approached to participate in the study. Each participant was provided with an informed consent form before data collection. The questionnaire was given in print or electronically, depending on what was convenient for participants (Google Form or email). Respondents were given clear instructions on how to complete the questionnaire, including the study's purpose, how to mark their responses, and the expected time required. They were asked to complete the questionnaire alone, without discussing it with others or seeking outside help, to preserve the validity of their answers. Participants had enough time to respond at their own pace. Once finished, the questionnaires were collected, coded, and entered Microsoft Excel for analysis.

Scoring

A two-point Likert rating scale accompanied each question in sections II and III to obtain responses from the study participants. The response categories are as follows: (1) Yes, I know, and (2) No, I do not know. The rating ranges from 1 to 0, with One indicating Yes, I know (they are aware of the attribute), and zero indicating No, I do not know (they are unaware of the attribute). All the interview sessions were recorded and scored later. Participants were instructed to read the guidelines, which included an example illustrating how to respond to the questionnaire.

Below is an example for clarification.

1. Are you aware of the UDID card?

- If your answer to this question is 'Yes,' You shall mark (✓) under 'Yes, I Know

as shown below.

Sl. No	Questions	Yes, I know (1)	No, I don't know (0)
1.	Are you aware of the UDID card?	✓	

The scoring pattern follows: The minimum possible score for each section is 0.

The maximum possible scores are 11 for Section II (Information Related to Hearing Loss & Disability) and 24 for Section III (Information Related to Central Government Schemes & Policies).

Data analysis

The responses collected after administering the questionnaire were considered for quantitative and qualitative analysis. Descriptive statistics were used to quantitatively analyse the collected responses, including the median score, interquartile range, and percentage. The data were analysed using SPSS (Version 26). The Shapiro-Wilk Test was done to test the normality of the data distribution. As the data did not show normal distribution, non-parametric tests such as the Mann-Whitney U Test and Kruskal-Wallis Test were carried out for further analysis.

CHAPTER 4

RESULTS

In the current research, the objective was to analyse the awareness of the medical professionals about hearing disability and the central government schemes and policies intended for the assistance and welfare of persons with disabilities, in individuals with hearing impairment. The current study comprised 97 respondents, wherein 50 respondents belonged to the Bachelor of Medicine and Bachelor of Surgery (MBBS) category, and 47 respondents belonged to the Bachelor of Ayurvedic Medicine and Surgery (BAMS) category. The average age of participants is 29.90 ± 6.90 years. The answers provided by all the participants in the questionnaire survey were on a dichotomous scale (Yes/No); All the statistical procedures were done using SPSS Software (Version 26). Frequency, percentage, median, and interquartile range (IQR) were the descriptive statistics used in the analysis of data. Normality test of distribution was performed using the Shapiro-Wilk test. As the data distribution was found to be non-normal, non-parametric tests like the Mann-Whitney test and Kruskal-Wallis test were used. The statistical significance level was set at $p < 0.05$.

The questionnaire survey in the current study has been developed into three sections: section one about demographic information about the participants, a second regarding awareness about hearing loss and disability and a third section dealing with awareness about central government schemes and policies for hearing impairment. Details about sections and question count have been provided in Table 4.1.

Table 4.1.

Distribution of Questionnaire Sections and Number of Questions

Sl. No	Section	Description	No. of Questions
1	Section I	Demographic Details	10
2	Section II	Information Related to Hearing Loss and Disability	11
3	Section III	Information Related to Central Government Schemes and Policies	21
Total			42

Note: Section I covered demographic variables of the participants, Section II assessed awareness about hearing loss and disability, and Section III assessed awareness about central government schemes and policies for persons with hearing impairment. The questionnaire comprised 42 questions in total.

The results of the present study are discussed under the following headings:

1. Outcome of Demographic Details
2. Awareness about Hearing Loss and Hearing Disability
3. Awareness about Central Government Schemes and Policies in Relation to Demographic Variables
4. Comparison of Overall Awareness Scores between MBBS and BAMS Participants
5. Median score and interquartile range of awareness regarding hearing disability and central government schemes and policies available for individuals with hearing impairment among different demographic groups of medical professionals across sections
6. Summary of Results

4.1 Outcome of Demographic Details (Section I)

A total of 97 medical practitioners participated in the survey. It was found from the demographic analysis that out of all the participants, 33 (34.0%) are male, while 64 (66.0%) are

female. In relation to the distribution by age, 18 (18.6%) respondents are below 25 years old, 65 (67.0%) are aged between 26-35 years, 8 (8.2%) are aged between 36-45 years, and 6 (6.2%) are above 46 but below 55 years. Regarding the professional qualifications, 50 (51.5%) are MBBS professionals, while 47 (48.5%) are BAMS professionals. As for the clinical experience in years, 34 (35.1%) have experience less than 1 year, 44 (45.4%) have 1-5 years' experience, 7 (7.2%) have 6-10 years' experience, and 12 (12.4%) have over 10 years of experience.

A Chi-square test of independence revealed no significant association between gender and professional group (MBBS and BAMS) ($p = 0.200$), indicating that male and female participants were similarly distributed across the two professional groups. However, a Chi-square test of independence revealed a significant association between age group and professional group ($p = 0.020$), indicating that the age distribution differed significantly between MBBS and BAMS participants. However, years of clinical experience were not significantly related to the professional group ($p = 0.531$); thus, there was no significant difference in the clinical experience between the MBBS and BAMS groups. There was a statistically significant relationship between the type of institute and the professional group ($p < 0.001$) because a greater proportion of the participants in the MBBS category were working in the government institute, while a larger proportion of participants in the BAMS group were working in the private sector. Moreover, a statistically significant relationship between the professional group and exposure to hearing impairment in their patient group ($p < 0.001$) showed that the participants in the MBBS group had more clinical exposure than those in the BAMS group.

The information given below is in terms of frequencies and percentages, showing the distribution of answers according to the demographic and questionnaire sections. According to the nature of the institution, 63 (64.9%) participants were employed in the government sector, whereas 34 (35.1%) participants were employed in the private sector. Concerning exposure to people having hearing impairment, 31 (32.0%) participants faced the condition frequently, 43 (44.3%)

participants faced it occasionally, 22 (22.7%) participants were rarely exposed to the condition, and 1 (1.0%) participant was never exposed to the condition.

As far as attending training and workshops concerning hearing impairment was concerned, 16 (16.5%) participants had undergone training, whereas a large number of 81 (83.5%) participants had not undergone training or a workshop. As far as awareness of central government schemes and policies was concerned, 22 (22.7%) participants were aware of the schemes, 44 (45.4%) participants were partially aware of them, and 31 (32.0%) participants were unaware of the schemes.

Distribution of respondents according to their participation in hearing disability related training and workshop, as well as knowledge about the policy implemented by the central government, is shown in Table 4. 2.

Table 4.2

Represents the classification of participants according to attendance at training workshops on hearing impairment and awareness about central government schemes and policies

Variable	Category	Frequency (n)	Percentage (%)
Training/workshops related to hearing impairment	Attended	16	16.5
	Not attended	81	83.5
Awareness about central government schemes and policies	Aware	22	22.7
	Partially aware	44	45.4
	Not aware	31	32.0

Note: A significant difference was found between the participants who attended training/workshops on hearing impairment and those who had not attended, indicating limited exposure to formal training programs. Similarly, the knowledge about the central government schemes and policies was low, with a small proportion of the participants being fully aware and most of the participants being either partially aware or not aware.

Respondents' awareness was measured using a Yes/No dichotomous response format in Sections II and III of the questionnaires. A yes answer was taken as an indicator of awareness, and a no answer showed the absence of awareness. The total score was calculated based on the proportion of yes answers from the questionnaire. Table 4.3 presents the demographic profile of the respondents according to gender, age, occupation, years of experience and type of institution attended.

Table 4.3

Demographic Characteristics of Participants (N = 97)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	33	34.0
	Female	64	66.0
Age	<25	18	18.6
	26–35	65	67.0
	36–45	8	8.2
	46–55	6	6.2
Profession	MBBS	50	51.5
	BAMS	47	48.5
Experience	<1 year	34	35.1
	1–5 years	44	45.4
	6–10 years	7	7.2
	>10 years	12	12.4
Institute	Government	63	64.9
	Private	34	35.1

Note: N = Total number of participants; n = Frequency; % = Percentage. MBBS = Bachelor of Medicine and Bachelor of Surgery; BAMS = Bachelor of Ayurvedic Medicine and Surgery. Age and experience are presented in categories based on years.

4.2 Awareness about Hearing Loss and Disability (Section II)

As per awareness about hearing disability (Section II), the answers collected from both MBBS and BAMS students collectively demonstrated that 94.8% of them were aware of some basics of hearing disability, which included identification of hearing disability, causes and risk factors, need for early diagnosis, newborn hearing screening, referral, and rehabilitation measures. Nonetheless, the level of awareness about various other aspects of hearing disability was relatively low in terms of the following percentages of positive response: Q2 - 80.4% (individuals having $\geq 40\%$ disability are eligible for benefits); Q3 - 61.9% (definition of hearing disability); Q4 - 57.7% (unilateral hearing loss is not qualified as disability); Q5 - 64.9% (mild to moderate bilateral hearing loss does not qualify for disability benefits); Q6 - 87.6% (deafness and hard of hearing differ in certain ways); Q7 - 51.5% (knowledge of UDID card); Q8 - 51.5% (knowledge of unique identification number of disabled individuals); Q9 - 53.6% (disability/UDID card requirement for government benefits). Information related to the awareness of participants about different dimensions of hearing impairment and disability is shown in Table 4.4. Responses to all eleven questions reveal the number of participants who were aware ("Yes") and not aware ("No") about each dimension.

Table 4.4

Number of participants who were aware of various aspects related to hearing impairment/disability (Section II)

Sl. No	Facts Related to Hearing Loss/Disability	Yes n (%)	No n (%)
Q1	Hearing impairment is covered under disability	92 (94.8%)	5 (5.2%)
Q2	Awareness of eligibility criteria ($\geq 40\%$ disability)	78 (80.4%)	19 (19.6%)
Q3	Awareness of benchmark criteria for hearing disability	60 (61.9%)	37 (38.1%)
Q4	Hearing loss in one ear does not qualify for disability benefits	56 (57.7%)	41 (42.3%)
Q5	Mild–moderate hearing loss is not eligible for disability benefits	63 (64.9%)	34 (35.1%)
Q6	Difference between deaf and hard of hearing	85 (87.6%)	12 (12.4%)
Q7	Awareness of the UDID card	50 (51.5%)	47 (48.5%)
Q8	Awareness of the Unique Disability ID (UDID) system	50 (51.5%)	47 (48.5%)
Q9	Requirement of disability/UDID card for benefits	52 (53.6%)	45 (46.4%)
Q10	Awareness of government schemes	58 (59.8%)	39 (40.2%)
Q11	Knowledge of where disability certificates are issued	57 (58.8%)	40 (41.2%)

Note: While most respondents knew that loss of hearing qualifies as disability and the difference between deaf and hard-of-hearing people, there was relatively low knowledge about the UDID card, the criteria for determining disability, and the issuance of disability certificates.

As can be seen from Table 4.4, there was a very high degree of awareness about the awareness level of hearing disability among participants regarding some aspects of hearing disability. The highest degree of awareness was found among participants for the aspect of "Hearing impairment is covered under disability," where 92 participants responded in favour of the affirmative out of 97 participants. Similarly, a high degree of awareness was also found for the difference between 'deaf' and 'hard of hearing' as well as the criteria for disability, both of which were marked by 85 and 78 participants, respectively.

The moderately high degree of awareness was found for benchmark criteria (60 participants), eligibility for benefits in case of mild to moderate hearing impairment (63 participants), as well as disability certification process (57 to 58 participants). On the contrary, low awareness about aspects of the UDID card was found, where only 50 to 52 participants responded affirmatively.

4.2.1 Awareness of Hearing Loss and Disability (Percentage)

The awareness regarding hearing impairment was evaluated based on the answers provided by the participants in Section II of the questionnaire. The distribution of awareness level percentages between MBBS and BAMS students for each question can be seen in Table 4.4. It was found that around 65.7% of feedback indicated awareness of hearing disability, whereas 34.3% indicated a lack of awareness of the subject among medical practitioners. It indicates that despite the reasonable awareness of the subject, there are a significant number of participants who are still unaware of certain facts related to hearing disability. The responses obtained by respondents can be represented by means of a graphical presentation. The distribution of respondents' responses (percentage) of overall awareness regarding hearing loss, disability and Central Government Schemes among medical professionals for Sections II and III is provided in Figure 4.1.

Figure 4.1: Figure showing the distribution of overall awareness regarding hearing loss, disability and central government schemes among the participants in Section II and Section III

**Overall Distribution of Awareness Regarding
Hearing Loss, Disability and Central Government Schemes
Among Medical Professionals**

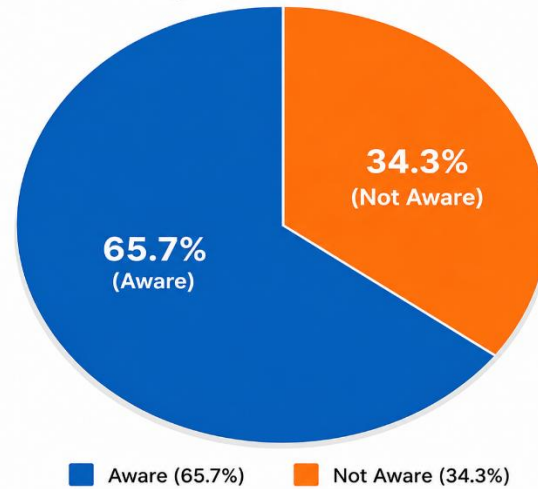


Figure 4.1 shows the general awareness of hearing loss, disability and central government schemes among medical practitioners. Most of the participants (65.7%) show awareness, while a relatively smaller proportion of the participants (34.3%) show no awareness at all.

In case of Section II, the relationship between professional groups (MBBS and BAMS) with the response of the participants for awareness questions was tested by performing Chi-square tests. Statistically significant differences were not found between MBBS and BAMS for questions Q2 (awareness about eligible criteria for government benefits in case of disability $\geq 40\%$), Q3 (eligibility criteria for hearing disability certificate), Q4 (unilateral hearing loss is generally not classified as disability), Q5 (eligibility of mild to moderate bilateral hearing loss as disability), Q6 (distinction between deafness and hard of hearing), and Q9 (necessity of disability/UDID card to access government benefits), since the p-value was higher than 0.05. However, statistically significant differences were identified in the case of Q7 (awareness about UDID card; $\chi^2 = 5.42$, $p = 0.019$), Q8 (awareness about unique identification number for PWD; $\chi^2 = 3.69$, $p = 0.054$), and Q10 (awareness about government scheme/concession for hearing loss patients; $\chi^2 = 3.32$, $p = 0.068$).

4.4 Awareness of Central Government Schemes and Policies (Section III)

The awareness among the medical practitioners about the various programs and policies of the Central Government regarding hearing impairment and disability was evaluated based on a dichotomous response, that is, Yes/No. "Yes" signified awareness, and "No" signified lack of awareness. Detailed results, including the frequency and percentage distribution of awareness about various programs and policies of the Central Government regarding hearing impairment and disability among MBBS and BAMS candidates, are provided in Table 4.5. The percentage distribution of awareness of different questions among participants in the MBBS, BAMS, and their combination categories is shown in Table 4.5.

Table 4.5:

Number of participants aware of various Central Government schemes and policies related to hearing impairment (Section III)

Sub-section	Scheme / Policy	Yes n (%)	No n (%)
National Programs	NPPCD	23 (23.7%)	74 (76.3%)
	RPWD Act (2016)	75 (77.3%)	22 (22.7%)
	Hearing aids & CI (ADIP)	40 (41.2%)	57 (58.8%)
	ADIP benefits	70 (72.2%)	27 (27.8%)
	RBSK provides hearing aids	61 (62.9%)	36 (37.1%)
	Free CI for children	58 (59.8%)	39 (40.2%)
	CI is covered under the schemes	42 (43.3%)	55 (56.7%)
Rehab Schemes & Centres	>6 yrs congenital not eligible	31 (32.0%)	66 (68.0%)
	5–18 yrs acquired eligible	33 (34.0%)	64 (66.0%)
	ADIP income criteria	36 (37.1%)	61 (62.9%)
	RVY scheme	31 (32.0%)	66 (68.0%)

Sub-section	Scheme / Policy	Yes n (%)	No n (%)
Social Security	Composite Regional Centres	23 (23.7%)	74 (76.3%)
	Rural rehab centres	68 (70.1%)	29 (29.9%)
	DEICs	59 (60.8%)	38 (39.2%)
	District Rehab Centres	57 (58.8%)	40 (41.2%)
	Disabled Welfare Office	73 (75.3%)	24 (24.7%)
	Swavlamban Insurance	80 (82.5%)	17 (17.5%)
	Flexitime at workplace	60 (61.9%)	37 (38.1%)
	Educational schemes	68 (70.1%)	29 (29.9%)
	Accessible India Campaign	31 (32.0%)	66 (68.0%)
	5% reservation in education	31 (32.0%)	66 (68.0%)
Education & Employment	Extra time in exams	73 (75.3%)	24 (24.7%)
	Language exemption	80 (82.5%)	17 (17.5%)
	4% reservation in jobs	60 (61.9%)	37 (38.1%)
	Railway concession	68 (70.1%)	29 (29.9%)
	Bus concession pass	31 (32.0%)	66 (68.0%)
Travel & Tax	Income tax benefits	31 (32.0%)	66 (68.0%)

Note: The participants were relatively more aware of the RPWD Act, Swavlamban Health Insurance, language relaxation, and examination concessions. On the other hand, there was low awareness regarding NPPCD, Composite Regional Centres, Accessible India Campaign, bus concessions, and income tax relief schemes.

With respect to knowledge regarding the central government's schemes/policies (Section

3), there were different levels of awareness reported by participants of the MBBS and BAMS professional categories. Relatively high levels of awareness were reported for Q2 and Q4 questions; whereas relatively low levels of awareness were reported for Q1, Q12 and Q20. The relationship between professional category (MBBS and BAMS) and awareness responses was done through the use of the Chi-square test of association. There was no statistical significance among some questions ($p > 0.05$). Nevertheless, there is statistical significance among some questions, such as Q3 ($\chi^2 = 4.46$, $p = 0.034$), Q4 ($\chi^2 = 6.03$, $p = 0.014$), Q5 ($\chi^2 = 4.52$, $p = 0.033$), Q11 ($\chi^2 = 7.97$, $p = 0.004$), Q12 ($\chi^2 = 9.21$, $p = 0.002$), Q13 ($\chi^2 = 6.07$, $p = 0.013$), Q14 ($\chi^2 = 4.18$, $p = 0.040$), and Q20 ($\chi^2 = 7.97$, $p = 0.004$). Individuals under the MBBS professional category have higher awareness than individuals in the BAMS professional category in relation to questions

Sub-section Analysis

From Table 4.5, it can be observed that, regarding the National Programs category, higher awareness was recorded for the RPWD Act (2016) (77.3%) and the ADIP program (72.2%). Lower awareness for NPPCD (23.7%) and cochlear implant benefits through schemes (43.3%) was found.

Regarding the Rehabilitation Schemes & Centres category, higher awareness was recorded for District Disabled Welfare Officers (75.3%) and Rural Rehabilitation Centres (70.1%). Lower awareness about Composite Regional Centres (23.7%) and the RVY scheme (32.0%) was seen.

In the Social Security Schemes category, comparatively higher awareness was observed for Swavlamban Health Insurance (82.5%) and educational schemes and policies (70.1%), whereas awareness regarding the Accessible India Campaign (32.0%) was relatively low. In the Education and Employment category, awareness of the language exemption (82.5%) and extra time during examinations (75.3%) was higher than awareness of reservation in education (32.0%).

In the Travel and Tax Concessions category, awareness regarding the railway concession (70.1%) was relatively higher, whereas awareness regarding bus concession passes and income tax benefits remained comparatively lower.

Overall Awareness

The general awareness in Section III is very low, with just 17.63% answering Yes, whereas 59.62% answered No, reflecting poor awareness among doctors regarding the government's schemes and policies.

4.4.1 Comparison of Awareness Regarding Hearing Disability and Central Government Schemes Between MBBS and BAMS Professionals

A comparison of awareness levels about the hearing disability and central government schemes between MBBS and BAMS doctors showed clear differences between these two categories. Even though the level of awareness among both professional categories was very low, the level of awareness about some items in Section III about governmental schemes was comparatively higher among BAMS doctors. The relationship between the two variables was tested using the Chi-square test of association. Statistically significant differences were found for several items like awareness about benchmark criteria for certification for hearing disability, $\chi^2(1) = 4.46$, $p = 0.034$; awareness about not considering unilateral hearing loss for disability benefits, $\chi^2(1) = 6.03$, $p = 0.014$; awareness about eligibility of mild to moderate bilateral hearing loss for disability benefits, $\chi^2(1) = 4.52$, $p = 0.033$; awareness about National Programme for Prevention and Control of Deafness, $\chi^2(1) = 7.97$, $p = 0.004$; awareness about RPWD Act, 2016, $\chi^2(1) = 9.21$, $p = 0.002$; awareness about hearing aids and cochlear implants under ADIP Scheme, $\chi^2(1) = 6.07$, $p = 0.013$; Awareness about the availability of the benefits offered by the ADIP Scheme, $\chi^2(1) = 4.18$, $p = 0.040$; and awareness regarding Composite Regional Centres, $\chi^2(1) = 7.97$, $p = 0.004$. While the former had more experience working with hearing-disabled people, there

was significantly less awareness among MBBS professionals in relation to certain government schemes and rehabilitative aids, in comparison to BAMS professionals. Nevertheless, upon comparing the total awareness scores of the two, no significant association could be established.

4.4.2 Overall Awareness Pattern

As far as the conclusions made from the results obtained from this study were concerned, it became clear that the awareness of the medical professionals concerning the problem of hearing disability, along with its clinical aspects mentioned in Section II of the questionnaire, was comparatively higher than the awareness about Central Government schemes, rehabilitation services, and welfare policies for hearing disability mentioned in Section III of the questionnaire.

It appears that while the participants had some basic knowledge about hearing impairment and disability, they were not adequately aware of the various government schemes and welfare policies. Medical professionals have a very important role in the early detection, referral, counselling, and rehabilitation of hearing-impaired individuals. In view of the relatively lesser awareness in Section III, it is necessary to improve the process of dissemination of information on Central Government schemes and rehabilitation policies among doctors. Inclusion of such subjects in the curriculum of medical institutions, workshops, and continuous professional training may prove useful in increasing awareness and rehabilitation of patients. Overall, from the results obtained, it seems that although the medical professionals were aware of the general characteristics of deafness, relatively less awareness was found about the central government schemes and policies for deaf people. This further showed that professional experience, institution, interaction with the patients, and training.

4.5 Median score and interquartile range of awareness regarding hearing disability and central government schemes and policies available for individuals with hearing impairment among different demographic groups of medical professionals across sections

Median and interquartile range (based on response Scores) of different demographic groups across ‘Section II’ of the questionnaire, i.e., ‘Information related to hearing loss and disability’ and ‘Section III’, i.e., ‘Information related to central government schemes and policies’, is presented in Table 4.6.

Table 4.6:

Median and Interquartile Range (IQR) of awareness scores for Section 2 (Hearing Disability) and Section 3 (Central Government Schemes and Policies) among different demographic groups of medical professionals

Demographic Variable	Category	Sec 2 Median	Sec 2 IQR	Sec 3 Median	Sec 3 IQR
Group	MBBS	9	7–12	8	5–11
	BAMS	8	6–12	9	6–14
Gender	Male	10	7–13	10	6–13
	Female	9	7–11	8	6–11
Age Group	<25 yrs	9	7–12	9	6–13
	26–35 yrs	10	7–13	9	6–13
	36–45 yrs	8	6–10	8	5–9
	46–55 yrs	6	4–8	6	2–7
Years of Clinical Experience	<1 yr	9	7–12	8	6–14
	1–5 yrs	9	7–12	9	7–11
	6–10 yrs	10	8–13	10	7–13
	>10 yrs	7	5–9	7	4–10
Type of Institute	Government	10	7–13	9	7–13
	Private	8	5–11	8	3–10

Demographic Variable	Category	Sec 2 Median	Sec 2 IQR	Sec 3 Median	Sec 3 IQR
Exposure to Patients with HI	Never	2	2–2	2	2–2
	Rarely	8	5–11	8	3–10
	Occasionally	8	6–12	8	6–12
	Frequently	10	8–13	10	9–13
Training / Workshops	Yes	14	13–16	14	13–16
	No	8	6–11	8	5–10

Note: It was found that higher median scores were found for Sections 2 and 3 among MBBS professionals, males, people aged between 26 and 35 years, people with exposure to hearing-impaired individuals, and people who have been trained. People above the mentioned age limit, those without any exposure to hearing-impaired individuals, and those who never attended training sessions showed lower median scores.

From the table above (Table 4.6), it is possible to conclude that the median awareness score for Section II and Section III varied from one demographic category of medical professionals to another. In the group of professionals, the MBBS category had higher median awareness scores in Section II than the BAMS category. In contrast, the BAMS group had higher median awareness scores in Section III. Concerning gender, males had higher median awareness scores compared to females in Sections II and III. In terms of age groups, respondents between the ages of 26 and 35 years old had the highest median awareness scores, while those between the ages of 46 and 55 had the lowest awareness scores in Sections II and III.

Considering the years of experience, medical professionals with six to ten years of experience had the highest awareness scores compared to their colleagues with more than ten years of experience in Sections II and III.

Depending on the type of institution, the participants of government institutes exhibited better awareness score medians compared to the participants from the private institutes in both sections. Regarding interaction with patients suffering from hearing impairment, the participants who interacted frequently with such patients displayed higher awareness scores, while the participants who had not interacted with such patients displayed lower awareness scores in both Section II and Section III. Moreover, the participants who attended training sessions or seminars about hearing disability recorded much higher awareness score medians than the participants who did not attend any training session in both Section II and Section III.

For years of experience, the highest median awareness scores belonged to the '6-10 years' category, while the lowest belonged to the '>10 years' category in both Section II and Section III. Regarding the type of institution, doctors belonging to Government institutions scored the highest median awareness scores when compared to those in private institutions in both sections. With respect to frequency of exposure to hearing-impaired patients, the 'Frequently' exposed category recorded the highest median awareness scores, whereas the 'Never' exposed category registered the lowest scores in both sections. Finally, the highest median awareness scores were recorded among doctors having attended training workshops on hearing impairments, and the lowest median awareness scores were recorded among doctors who had not attended any such workshops.

4.5.1 Comparison of awareness among medical professionals of different demographic groups across domains

As the data was found to be not normally distributed according to the results of the Shapiro-Wilk test for most of the parameters investigated ($p < 0.05$), the non-parametric methods were applied for analysis of the level of awareness among the participants. The Mann-Whitney U test was used to compare two different groups (gender, educational qualification (MBBS/BAMS), institute type, training on deafness). The Kruskal-Wallis test was chosen to compare several different groups (age

group, years of working experience, frequency of interactions with patients with hearing impairment). All these methods were used to establish the presence of differences in the level of awareness concerning hearing disability and government programs among healthcare professionals.

Domains identified are:

Domain 1: This domain relates to Section II of the questionnaire dealing with the topic “Information related to Hearing Disability.”

Domain 2: This domain relates to Section III of the questionnaire dealing with the topic “Information related to Central Government Schemes and Policies available for Individuals with Hearing Impairment.”

4.5.2 Difference in awareness across age groups

A Kruskal-Wallis test was conducted in order to find out the presence of any difference in awareness levels of the age groups in the two domains. It was found that there was no significant difference between the awareness levels of the age groups in Domain 1, $H(3) = 2.991$, $p = 0.393$, and Domain 2, $H(3) = 6.105$, $p = 0.107$. As the obtained values of p were higher than 0.05, the difference in awareness levels between the age groups could not be considered statistically significant. The age groups considered for this purpose included those who were less than 25 years old, aged 26 to 35, 36 to 45, and 46 to 55.

Table 4.7

Comparison of awareness scores across different age groups using the Kruskal–Wallis test

Domain	Chi-Square (H)	df	p-value	Interpretation
Domain 1	2.991	3	0.393	Not Significant
Domain 2	6.105	3	0.107	Not Significant

- p-value of < 0.05 indicates a significant difference

From Table 4.7, it can be observed that there was no significant difference in awareness scores across different age groups for either Domain 1 or Domain 2, as the obtained p-values were greater than 0.05. This indicates that awareness regarding hearing loss, disability, and government schemes and policies was comparable among all age groups included in the study.

4.6 Summary of Results

The present study investigated awareness about hearing disability and government schemes and policies on hearing impairment among health care practitioners. The sample comprised a total of 97 respondents; out of them, 50 were MBBS, and the rest, i.e., 47, were from BAMS backgrounds. The questionnaire involved three parts relating to demographic information, awareness about hearing impairment and disability, and awareness about government schemes and policies related to hearing impairment. Frequency, percentage, median, and interquartile range (IQR) served as descriptive statistics for data analysis. For inferential statistics, the Chi-square test of association was employed to investigate any association between profession and responses on awareness. In order to check whether the data distribution is normal or not, the Shapiro-Wilk test of normality was conducted. As the data distribution was non-normal, non-parametric statistics was utilized. Mann-Whitney U test was applied in case of two groups, while Kruskal–Wallis test was adopted when more than two variables were being compared.

The demographic data showed that most of the participants were female and were aged 26-35 years. Most of the participants had between 1 and 5 years of experience working in clinics and were

associated with the government institutes. More involvement and training programs were seen in the case of MBBS professionals when compared with BAMS professionals.

As far as the section on awareness about hearing loss and disability (Section II) is concerned, the study revealed that respondents had good awareness in terms of general knowledge on issues like hearing impairment as a disability and the difference between deaf and hard of hearing. Awareness levels on disability certification, UDID cards, and government schemes were relatively moderate to poor. Important differences between MBBS and BAMS respondents have been found in awareness concerning UDID cards, the Unique Disability Identification scheme, and government schemes concerning hearing impairment.

As far as awareness about the Central Government schemes and policies on hearing loss (Section III) is concerned, medical professionals had comparatively poor awareness in the area. Good levels of awareness were found on the RPWD Act, educational concessions, language exemption, and Swavlamban Health Insurance Scheme, while poor levels of awareness were found on NPPCD, composite regional centres, Accessible India campaign, bus concession pass, and income tax benefit schemes. Important differences in awareness between MBBS and BAMS medical professionals on selected government schemes were found.

From the analysis using median and interquartile range, it is evident that scores in awareness were relatively high amongst MBBS doctors in Section II and amongst BAMS doctors in Section III. High awareness scores were further seen amongst individuals working in government facilities, individuals frequently exposed to people suffering from hearing impairment, and individuals who have attended training and workshops regarding hearing impairment.

Using non-parametric statistical tests such as the Mann-Whitney U test and Kruskal-Wallis test, there was no statistically significant difference between the scores for awareness concerning hearing disability awareness and awareness of the governmental schemes and policies in place

regarding hearing disability ($p > 0.05$). Thus, from the study, the results indicated that healthcare workers were quite aware of hearing disability; however, their awareness regarding the governmental schemes, rehabilitation programs, and welfare services for the hearing disabled was relatively poor.

CHAPTER 5

DISCUSSION

The current research aimed to determine the medical professional's knowledge about hearing loss, disability, and various central government schemes and policies designed to support and benefit persons with hearing disabilities. The findings obtained from the questionnaire administered among medical professionals are discussed in the following sections.

Selection and modification of the questionnaire

In the current study, the questionnaire used has been modified from an existing instrument that measured awareness among medical professionals about hearing disability and various schemes by the Central Government. Since the existing questionnaire was developed for assessing awareness among people suffering from hearing impairment and their caregivers, some modifications had to be made to make the questionnaire consistent with the current research objectives, focusing on medical professionals.

A comprehensive analysis of the existing questionnaire was conducted, in which some domains were considered. Such domains were awareness about hearing disability certification, central government schemes such as hearing aid and cochlear implantation, programs initiated at the national level, rehabilitation facilities, social security benefits, education facilities, employment opportunities, and concessions for travelling that can be enjoyed by people suffering from hearing disabilities in India. Changes have been made to some items on the questionnaire to ensure that they are relevant and understandable to doctors. For example, demographic-related items in the questionnaire were modified to suit the study population and the medical context of hearing disability.

The adjusted questionnaire, which included adjustments to the demographic information, was submitted to seven professional audiologists who did content validation on the questionnaire

regarding its relevance, understandability, non-repetition, and appropriateness for the respondents.

Pilot Testing

An almost refined copy of the questionnaire was given to some people so that the understanding level of the questions could be measured. In light of their suggestions, only a few changes were made in the demographic part of the questionnaire, such as using simpler language for the categories of education and age group.

5.1 Awareness of Hearing Impairment and Hearing Disability Concerning Demographic Factors (Section II)

The results from the present study showed that the level of awareness concerning hearing loss and hearing disability was different for various demographic factors among medical professionals. This includes the age group of the medical professional, their professional qualification, clinical exposure of medical professionals to patients with hearing impairment and attending training programs/ workshops on hearing disability. Medical professionals having higher clinical exposure to patients with hearing impairment and medical professionals attending hearing disability-related workshops/training programs showed higher awareness levels than the rest. Similar observations were made where MBBS professionals showed relatively higher awareness levels concerning some aspects of hearing disability compared to BAMS professionals.

As far as awareness is concerned, it is clear from the present study that the respondents have comparatively high awareness about fundamental issues pertaining to hearing disability, such as identification of hearing loss, early diagnosis, screening programs for babies born with hearing loss, referral services, and rehabilitation programs. High awareness was seen in the cases of identification of hearing disability as a type of disability and distinction between deafness and hard-of-hearing. In another study carried out by Pathak and Deshpande (2021), it was found that healthcare workers had good knowledge about the screening of hearing disability and the significance of its early identification and intervention.

However, low awareness was seen when benchmark criteria and eligibility criteria for disability benefits were considered, along with UDID card and other issues related to the certification of disability. Low awareness about eligibility criteria for disability benefits and benchmark disability may be attributed to the fact that healthcare workers do not have direct involvement in assessing hearing disability. Therefore, they are unaware of the calculation of the percentage of hearing disability. The results obtained from the current study agree with those of Berry et al. (2009), which indicate that the medical practitioners with increased exposure and participation in services associated with rehabilitation were found to possess better knowledge about managing disabilities, rehabilitation practices, and welfare services related to individuals with disabilities.

On the contrary, comparatively high awareness about the disability certification process in the current study could be attributed to the indirect clinical exposure resulting from patients' referrals and interaction with patients in the hospitals. In another study conducted among healthcare professionals by Majumdar et al. (2025), inadequate awareness regarding disability certification procedures and welfare programs for person with disabilities was reported. In addition, the importance of raising the awareness level of healthcare professionals about these issues was also stressed to improve rehabilitation and access to benefits.

Furthermore, it was observed that the gender of participants did not show any statistically significant association with the level of awareness among them. Younger participants, middle-aged participants, people with more clinical experience, and participants who have undergone training were seen to score better in awareness. Similar results were found by Berry, Devapitchai, and Raju (2009). Also, similar observations have been made by Majumdar et al. (2025), where it was seen that professional exposure, continued medical education, and training were related to higher awareness about disabled persons.”

In conclusion, the results obtained from this study reveal that while there is sufficient

knowledge regarding clinical aspects of deafness among the physicians, their level of awareness pertaining to issues of disability certification and government assistance programs, as well as rehabilitation facilities, was comparatively lower. The above-mentioned results highlight the importance of including such policies, processes, and rehabilitation procedures in their training programs for future success in their careers.

5.2 Awareness Regarding Hearing Disability and Central Government Schemes Among Medical Professionals Across Different Demographic Groups

The extent of awareness about hearing impairment, Central Government schemes, and other relevant policies among health professionals has been determined with the help of different demographic characteristics like age, sex, professional qualification, type of institute, duration of clinical practice, and participation in disability and hearing impairment workshops/CMEs. The analysis of data obtained reveals that there were variations in awareness among certain demographic groups; however, no significant gender difference in awareness has been found. “It has been revealed from the findings that the health professionals possess relatively higher awareness in the field of hearing impairment and its clinical aspects, while awareness about the relevant Central Government schemes and policies has remained relatively lower.

There were variations in awareness scores depending on the ages of the participants. Participants who fell under the age category of 26–35 years exhibited relatively higher scores in Sections II and III, while participants who were aged between 46–55 years scored relatively low in these sections. This could possibly be because of their relatively recent educational background, involvement in medical education programs, and knowledge update about various disabilities. These results are also similar to the observations made by Majumdar et al. (2025), where they stressed the significance of awareness.

As observed in the present study, professionals employed in Government institutions demonstrated relatively better awareness levels than those working in private institutions. This

may be because medical professionals in Government institutions are more frequently involved in public health programs, hearing disability certification procedures, rehabilitation services, and implementation of Government welfare schemes. Furthermore, professionals who had closer interaction with persons with hearing disabilities and those who had attended training programs/workshops related to hearing disability showed better awareness scores compared to those with limited exposure. Similar observations have been reported in previous studies, which emphasized that professional exposure, training, and involvement in disability-related services contribute significantly to awareness regarding disability certification, rehabilitation, and welfare schemes (Majumdar et al., 2025; RPwD Act guidelines, 2016).

One of the important issues that has been pointed out from this research study was that medical practitioners had limited awareness about the process of implementation, eligibility, and utilization of government schemes for people suffering from hearing disability. Low levels of awareness regarding policies can make it difficult for healthcare professionals to help people with hearing impairment to avail themselves of available facilities. Similar observations were made by Majumdar et al. (2025), who highlighted that healthcare professionals lacked awareness regarding disability certificates and welfare programs."

According to professional qualification, MBBS practitioners had a relatively high awareness level compared to BAMS practitioners on hearing loss, certification of disability, UDID cards, and the schemes of the Central Government. The reason for this can be the higher exposure in their clinical work and interdisciplinary approach toward the management of disability patients with disabilities and interaction with various disability services in general. This finding is similar to that of the study conducted by Ganesh Kumar et al. (2022), where they observed that health professionals with higher clinical experience and medical knowledge have relatively high awareness regarding disability services and rehabilitation practices in India. More so, given the few studies that have been conducted about the awareness of government schemes and disability

policies among medical practitioners in India, it is necessary to conduct studies like the current one.

5.3 Awareness of Central Government Schemes and Policies (Section III)

The results obtained from the current study suggested that medical professionals exhibited relatively lower awareness of various schemes and policies implemented by the Central Government in connection with hearing impairment, as compared to their knowledge of hearing disability and related clinical aspects. It seems to be evident that there was some discrepancy between the knowledge of hearing impairment as a clinical condition and awareness of various government schemes and rehabilitation services for patients with hearing impairment.

While several schemes and policies have been formulated by the Government of India to offer benefits to persons with hearing impairment, including rehabilitation services, provision of hearing aid and cochlear implants, educational, travel, and other financial benefits, the majority of respondents exhibited inadequate awareness in relation to various government schemes and benefits available for persons with hearing impairment. Similar results were noted by Berry, Devapitchai and Raju (2009), according to whom healthcare professionals exhibited inadequate awareness in relation to various disability acts and welfare programs provided to persons with disabilities. According to the authors, a lack of awareness in this regard may affect the effectiveness of referral services and rehabilitation programs for persons with hearing impairment.

Comparatively higher levels of awareness were noted with respect to cochlear implant programmes, the RPWD Act (2016), and educational benefits, among other topics in the current research. This might be due to the increased visibility and availability of cochlear implants during clinical practice and treatment. Similar findings have been reported by Pathak and Deshpande (2021), who noted higher levels of awareness of clinicians regarding interventions in their direct practice than welfare measures by the government.

On the other hand, awareness about some other national programs, ADIP benefits,

rehabilitation centres, travel concessions, tax benefits, and social security measures was relatively lower among the respondents. According to Majumdar et al. (2025), similar trends had been seen regarding healthcare professionals and family members of patients suffering from disabilities. The researchers stated that low awareness could be attributed to insufficient information and training among others.

In addition, it was observed in the present study that there is variation in the level of awareness about Central Government schemes and policies based on demographic factors such as professional qualifications, clinical exposure, and participation in workshops for training for the hearing impaired. Participants with more clinical exposure towards people with hearing impairment and attending training programmes had comparatively higher levels of awareness. Such observations have also been made in earlier research studies wherein professional experience and special training programs were seen to be linked with better levels of awareness about rehabilitation and welfare services for disabilities.

Thus, it can be concluded from the findings of the present study that there is a need for increasing awareness about Central Government schemes, disability policies, and rehabilitation among medical practitioners. Disability legislation and rehabilitation services could be incorporated into undergraduate medical courses, training programs for doctors, and medical workshops.

The relatively low level of awareness about various schemes and policies of the Central Government seen in the current study can be attributed to various reasons. For instance, one such reason might be the lack of incorporation of various disability welfare schemes, rehabilitative care, and government policies regarding hearing impairment in the curriculum of the health profession. Lack of exposure and training about disability certification and government welfare programmes during their professional career could also have played a role in low awareness levels among health professionals. In addition to this, a lack of interaction with various rehabilitation professionals,

audiologists, and special educators regarding various welfare programmes might also have been a factor affecting the awareness levels of health professionals. The other possible reason could be the low usage of various information sources like official websites, educational seminars, and Continuing Medical Education (CME) programs. Similar results were found in studies conducted by Majumdar et al. and Berry et al. (2025), where they pointed out that the lack of training and availability of information was the primary cause of low awareness among healthcare professionals.

In the demographic analysis in the current study, it was found that MBBS professionals and professionals from government institutions had relatively more knowledge about deafness, procedure for disability certification, and policies of the central government about hearing disability than BAMS professionals and professionals from private institutions. It is likely due to their higher level of experience with clinical settings and patients.

Nevertheless, the overall level of awareness among medical professionals was found to be insufficient. The findings of the present study indicate the need for structured awareness programmes, inclusion of disability-related policies and welfare schemes in the medical curriculum, and regular professional training programmes to improve awareness levels among healthcare professionals. Medical practitioners serve as an important first point of contact for individuals with hearing impairment and play a significant role in early identification, referral, counselling, and rehabilitation services. Similar findings were reported by Sharma et al. (2023), who observed that awareness programmes and educational interventions significantly improved the knowledge of medical practitioners regarding hearing impairment, its assessment, and management. Likewise, Berry, Devapitchai and Raju (2009) reported that inadequate knowledge regarding disability legislation and welfare schemes among healthcare professionals highlights the need for educational interventions, workshops, and inclusion of disability-related topics in medical education.

Awareness Regarding Hearing Disability and Central Government Schemes And Policies Across Age Groups

There have been noticeable disparities between the levels of awareness in the various age groups of medical professionals. Medical professionals within the older age brackets were found to be more aware. This could be attributed to their extensive clinical experience, exposure to patients from different demographics, and awareness of the referral process. Young medical professionals, especially the newly graduated, were found to have low awareness.

Awareness Regarding Hearing Disability and Central Government Schemes and Policies Between Male and Female Professionals

Results revealed there were no significant differences in terms of awareness between men and women medical practitioners. This implies that gender does not really affect awareness in the healthcare field, given that both genders are provided with equal opportunities for education and training.

Awareness Regarding Hearing Disability and Government Schemes Among MBBS and BAMS Healthcare Practitioners

From the current study, differences in awareness regarding hearing disability, processes of certification, UDID cards, and central government schemes were found in MBBS and BAMS healthcare practitioners. Comparatively better awareness scores were found among MBBS healthcare practitioners than BAMS healthcare practitioners for some aspects related to hearing disability and central government schemes. The differences were significant for UDID card and scheme awareness.

Relatively higher levels of awareness were recorded for MBBS-trained health care providers, most likely due to more clinical practice, referrals for rehabilitation centers, and more knowledge about disability and their policies acquired during training. On the contrary, relatively lower awareness was recorded among BAMS-trained health care providers, especially on policy

matters and certification of disability. Past research had already identified professional qualifications, education, and clinical experience as influencing factors of awareness related to disability policies, welfare programs, and rehabilitation services among health care professionals (Berry et al., 2009; Terry & Meara, 2024).

5.4 Clinical Relevance of Study Findings

The conclusions drawn from this study have significant clinical implications. While there was sufficient knowledge about the diagnosis and clinical implications of hearing disability among the medical fraternity, insufficient knowledge about the various Central Government schemes, the process of disability certification, and rehabilitation, which would affect patient management and rehabilitation. Lack of knowledge among physicians about these factors would lead to inappropriate referrals to an audiologist or any other person in the field of rehabilitation, lack of information about financial assistance programmes and inappropriate use of rehabilitation facilities for patients with hearing disability.

Individuals with hearing disabilities from poor families could suffer most from a lack of awareness because of their heavy reliance on the benefits of the government scheme and the various social programmes to access hearing aids, cochlear implantation programme, rehabilitation, and education. Thus, increasing the knowledge of medical professionals about hearing disability and its associated government programmes would help in the early detection of patients with hearing disability, proper referral to rehabilitation facilities, and efficient use of benefits from the government. This is consistent with the results of past research work, where increased awareness among the medical professionals was found to play a significant role in providing rehabilitation services to persons with disabilities.

5.6 Comparison with Previous Study

Similarly, the results of the current study are also consistent with the earlier research studies that have indicated the poor knowledge among health care professionals regarding various schemes

introduced by the government for people suffering from hearing impairment. Similar results were obtained by Berry et al. (2009) in their study Knowledge about Persons with Disability Act (1995) among Health Care Professionals Dealing with Persons Affected by Disabilities, where health care professionals displayed poor knowledge about various disability welfare schemes and disability laws. It is also important to enhance the knowledge of health care professionals about welfare programs and disability acts.

On the other hand, Pathak and Deshpande (2021) found that healthcare professionals had greater awareness regarding hearing impairment problems and their management than rehabilitation facilities and government welfare programs.

It is noted that the results found in the current study are in agreement with those mentioned in the study by Rajnikanth & Mamatha (2023). The researchers indicated the lack of knowledge about the availability of government schemes, rehabilitation services, and welfare policies among individuals with hearing disabilities and their caregivers. The current research also supports the need for raising awareness about disability-related schemes, rehabilitation services, and welfare policies.”

In summary, the present study, along with other studies in the literature, suggests that professional experience, continuing education, and involvement in rehabilitation activities help enhance awareness levels among medical professionals related to hearing impairment, processes of disability certification, and welfare schemes of the Central Government.

Strengths of the Questionnaire

One advantage of the questionnaire is that it uses an already established and structured questionnaire, which increases the relevance of its contents. The questionnaire's adaptation to medical personnel facilitates the measurement of awareness within a critical stakeholder group responsible for the care and rehabilitation of patients. Furthermore, the questionnaire addresses various relevant areas of hearing disability and government programs.

Weaknesses of the Questionnaire

Since this instrument was designed for another demographic, some constraints may appear despite any efforts at adapting it. In addition to the lack of major changes or further validation in a large sample, the piloting of the instrument was carried out using only a few respondents. This may not be representative of all medical practitioners.

CHAPTER 6

SUMMARY AND CONCLUSIONS

Loss of hearing ability can affect anyone, irrespective of age, and this problem has a negative effect on communication, quality of life, and personal well-being. Early detection and rehabilitation can help to address this issue, and healthcare professionals play a major role in the identification, referral, and treatment of patients with hearing disability. There are many central government schemes and policies available in India; however, their effectiveness depends directly on the level of awareness among medical professionals. This study sought to assess the level of awareness about hearing disability, central government schemes, and policies among healthcare professionals using a questionnaire adopted from previous studies. The results of the study showed that the awareness level of medical professionals about hearing impairment and disabilities was moderate; however, their awareness about government schemes and policies was considerably low. It was noted that while knowledge of clinically oriented concepts, such as cochlear implant, was good, there was inadequate awareness about issues like the eligibility criterion for disability, the disability certificate, the social security scheme, and other welfare initiatives. The results obtained from the analysis of various demographic variables revealed that awareness about government schemes and policies was significantly affected by age, educational qualification, and profession, but there was no significant effect of gender and area of residence on the awareness level. Professionals who were more educated and had more experience in the clinical environment had a higher awareness level. In conclusion, the results show that the awareness level of medical professionals about government schemes and policies is quite low.

6.1 Summary of Findings

It can be concluded that the modified questionnaire was effective in measuring awareness regarding hearing disability as well as government welfare schemes. Overall, awareness of hearing impairment and disability was moderately high among medical professionals. However, there were

some concerns identified with regard to the knowledge of government schemes particularly regarding eligibility criteria and procedural aspects. The level of awareness of government schemes and policies was comparatively lower than awareness related to hearing problems and hearing disability. It may be noted that medical professionals demonstrated better performance in clinical knowledge compared to their awareness of government policies and social security schemes. Furthermore, a notable lack of awareness was observed regarding the eligibility criteria and operational procedures of various government schemes.

Age emerged as an important variable, as it was found to significantly influence the awareness of professionals regarding government schemes and related processes. However, no significant differences were observed between male and female medical professionals in terms of awareness levels, nor between professionals from urban and rural settings. In contrast, educational qualification was found to have a significant impact on awareness levels among medical professionals.

Conclusions:

The current study has found that although medical practitioners have adequate knowledge about hearing impairment and disability, their awareness of governmental schemes and policies intended for individuals with hearing impairment is relatively poor. This lack of awareness may affect their ability to appropriately counsel patients and to help them in availing government welfare services and rehabilitation facilities. In addition, the level of awareness was found to be more associated with the educational background and professional experience of medical practitioners rather than demographics such as gender and location of living.

Implications of the study

- The findings can provide the central government with an idea of awareness and knowledge level among medical professionals regarding central government schemes for individuals with hearing impairment. This may help policymakers in strengthening the implementation and outreach of such schemes.
- Improving awareness and knowledge of medical professionals can enhance their ability effectively counsel, guide and refer persons with disabilities to avail welfare services and rehabilitation benefits.
- The study findings may serve as an input for the inclusion of information related to government welfare schemes within medical education curricula and Continuing Medical Education (CME) programs in medical education modules.
- This will contribute to the development of a more comprehensive healthcare system in which medical treatment is integrated with social support and financial security for individuals with disabilities.

References

- 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 the general public in Buraidah, Saudi Arabia. *International Journal of Community Medicine and Public Health*, 8(4), 1583–1589. <https://doi.org/10.18203/2394-6040.ijcmph20210990>
- Arnold, E. A., Fuller, S., Kirby, V., & Steward, W. T. (2018). The impact of Medicaid expansion on people living with HIV and seeking behavioral health services. *Health Affairs*, 37(9), 1450–1456. <https://doi.org/10.1377/hlthaff.2018.0414>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191.
- Berry, B. S., Devapitchai, K. S., & Raju, M. S. (2009). Knowledge about persons with disabilities act (1995) among health care professionals dealing with persons affected by disabilities. *Indian Journal of Leprosy*, 81(1), 5–11.
- Bhowmick, S., Banerjee, S., Das, S., Nath, A., Kundu, D., Das, A., Das, N., Ray, K., & Purkayastha, S. K. (2022). Awareness and understanding among patients about patient safety in India: A cross-sectional questionnaire-based study. *Journal of Patient Safety and Risk Management*, 27(1), 21–25. <https://doi.org/10.1177/25160435211065672>
- Chadha, S. K., Gulati, K., Garg, S., & Agarwal, A. K. (2014). Comparative prevalence of otitis media in children living in urban slums, non-slum urban and rural areas of Delhi. *International Journal of Pediatric Otorhinolaryngology*, 78(12), 2271–2274. <https://doi.org/10.1016/j.ijporl.2014.10.032>
- Chauhan, R. C., Mishra, A. K., Kandan, M., & Singh, Z. (2015). Self-reported hearing impairment among rural adult population of coastal Tamil Nadu. *International Journal of*

- Otorhinolaryngology and Head and Neck Surgery*, 1(1), 23–27.
<https://doi.org/10.18203/issn.2454-5929.ijohns20150582>
- Ciorba, A., Bianchini, C., Pelucchi, S., & Pastore, A. (2012). The impact of hearing loss on the quality of life of elderly adults. *Clinical Interventions in Aging*, 7, 159–163.
<https://doi.org/10.2147/CIA.S26059>
- DDRS. (2023). *Deendayal Disabled Rehabilitation Scheme*. Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, Government of India.
<https://depwd.gov.in/ddrs/>
- DDSCs. (2023). *District Disability Rehabilitation Centre (DDRC)*.
- Dutta, P., Dey, S., & Malakar, I. (2020). Parental knowledge and understanding of monitoring and maintenance of cochlear implants under the ADIP scheme. *Journal of Indian Speech Language & Hearing Association*, 34(1), 17–22. https://doi.org/10.4103/jisha.jisha_12_19
- Garg, S., Chadha, S., Malhotra, S., & Agarwal, A. K. (2009). Deafness: Burden, prevention and control in India. *The National Medical Journal of India*, 22(2), 79–81.
- Ghori, Z. N. (2021). *Development of a quality-of-life questionnaire in English and Kannada for children using hearing devices* (Doctoral dissertation, All India Institute of Speech and Hearing, Mysuru, India).
- Government of India, Ministry of Statistics and Programme Implementation. (2020). *Health in India: NSS 75th round (July 2017–June 2018), Report No. 586 (75/25.0)*. <https://www.mospi.gov.in/>
- Hanson, M. J., Gutierrez, S., Morgan, M., Brennan, E. L., & Zercher, C. (1997). Language, culture, and disability. *Topics in Early Childhood Special Education*, 17(3), 307–336.
<https://doi.org/10.1177/027112149701700305>
- Health Insurance Scheme–Tamil Nadu. (2009). *Chief Minister's Comprehensive Health Insurance Scheme*.
- Hinderink, J. B., Krabbe, P. F. M., & Van Den Broek, P. (2000). Development and application of a

- health-related quality-of-life instrument for adults with cochlear implants: The Nijmegen Cochlear Implant Questionnaire. *Otolaryngology–Head and Neck Surgery*, 123(6), 756–765. <https://doi.org/10.1067/mhn.2000.108203>
- Herrmann, D., & Guadagno, M. A. (1997). Memory performance and socio-economic status. *Applied Cognitive Psychology*, 11(2), 113–120.
- Ismail, A. H., Munro, K. J., Armitage, C. J., & Dawes, P. D. (2019). What do hearing healthcare professionals do to promote hearing aid use and benefit among adults? A systematic review. *International Journal of Audiology*, 58(2), 63–76. <https://doi.org/10.1080/14992027.2018.1531154>
- Jacob, A., Rupa, V., Job, A., & Joseph, A. (1997). Hearing impairment and otitis media in a rural primary school in South India. *International Journal of Pediatric Otorhinolaryngology*, 39(2), 133–138. [https://doi.org/10.1016/S0165-5876\(96\)01479-6](https://doi.org/10.1016/S0165-5876(96)01479-6)
- Jamnagarwala, K. S. (2024). Knowledge and attitude about newborn hearing screening among gynaecologists: Pre- and post-awareness session analysis. *Journal of Early Hearing Detection and Intervention*, 9(2), 51–55.
- Kalpana, R., & Chamyal, P. C. (1997). Study of prevalence and aetiology of hearing loss amongst school-going children. *Indian Journal of Otolaryngology and Head & Neck Surgery*, 49(2), 142–144. <https://doi.org/10.1007/BF03023793>
- Karovska Ristovska, A. (2021). *Communication methods for students with hearing impairment*. <https://www.researchgate.net/publication/353909977>
- Kerala Social Security Mission. (2018). *Sruthitharagam*.
- Korver, A. M. H., Smith, R. J. H., Van Camp, G., Schleiss, M. R., Bitner-Glindzicz, M. A. K., Lustig, L. R., Usami, S., & Boudewyns, A. N. (2017). Congenital hearing loss. *Nature Reviews Disease Primers*, 3(1), 16094. <https://doi.org/10.1038/nrdp.2016.94>
- Kubba, H., Swan, I. R. C., & Gatehouse, S. (2004). The Glasgow Children's Benefit Inventory: A new

- instrument for assessing health-related benefit after an intervention. *Annals of Otolaryngology, Rhinology & Laryngology*, 113(12), 980–986. <https://doi.org/10.1177/000348940411301208>
- Lieu, J. E. C., Kenna, M., Anne, S., & Davidson, L. (2020). Hearing loss in children. *JAMA*, 324(21), 2195. <https://doi.org/10.1001/jama.2020.17647>
- Maharana, P. K., Rai, V. G., Pattebahadur, R., Singhi, S., & Chauhan, A. K. (2017). Awareness and knowledge of glaucoma in central India: A hospital-based study. *Asia-Pacific Journal of Ophthalmology*, 6(3), 243–249. <https://doi.org/10.22608/APO.2015166>
- Majumdar, R., Chauhan, S., Preenja, R. K., & Bhardwaj, S. B. (2025). Awareness of rights amongst caregivers of children with disabilities: A hospital-based survey. *Indian Journal of Physical Medicine & Rehabilitation*, 35(1), 27–32.
- Makar, S., Rao, N., Basu, J. L., & Lenka, J. (2021). Effectiveness of cochlear implant in children with profound sensorineural hearing loss below poverty line in rural India: A longitudinal study. *International Journal of Otorhinolaryngology*, 7, 6–10. <https://doi.org/10.11648/j.ijo.20210702.11>
- Malcolm, K. A., Suen, J. J., & Nieman, C. L. (2022). Socioeconomic position and hearing loss: Current understanding and recent advances. *Current Opinion in Otolaryngology & Head and Neck Surgery*, 30(5), 351–357. <https://doi.org/10.1097/MOO.0000000000000831>
- Mehrotra, R. (2020). A study of outcomes following cochlear implantation in children under ADIP scheme: An Indian experience. *Online Journal of Otolaryngology and Rhinology*, 2. <https://doi.org/10.33552/OJOR.2020.02.000547>
- Mishra, A., Verma, V., Shukla, G. K., Mishra, S. C., & Dwivedi, R. (2011). Prevalence of hearing impairment in the district of Lucknow, India. *Indian Journal of Public Health*, 55(2), 132–134. <https://doi.org/10.4103/0019-557X.85251>
- Moeller, M. P. (2000). Early intervention and language development in children who are deaf and hard of hearing.

- National Programme for Prevention and Control of Deafness. (2006). *Operational guidelines for the 12th Five Year Plan*. Ministry of Health & Family Welfare, Government of India.
- Parab, S. R., Khan, M. M., Kulkarni, S., Ghaisas, V., & Kulkarni, P. (2018). Neonatal screening for prevalence of hearing impairment in rural areas. *Indian Journal of Otolaryngology and Head and Neck Surgery*, 70(3), 380–386. <https://doi.org/10.1007/s12070-018-1386-4>
- Parvez, A., Siddiqui, A., Khan, Z., Hashmi, S., & Khan, M. (2016). Prevalence of hearing impairment among primary school children in rural and urban areas of Aligarh, Uttar Pradesh, India. *International Journal of Community Medicine and Public Health*, 1273–1277. <https://doi.org/10.18203/2394-6040.ijcmph20161397>
- Rajanikant, B., & Mamatha, N.M. (2023). Development of A Questionnaire in English and Kannada to Evaluate the Awareness About Hearing Disability, Central Government Schemes and Policies for Individuals with Hearing Impairment. *Dissertation submitted as part of fulfillment for the degree of Master of Science, submitted to the University of Mysuru*.
- Rao, R. S. P., Subramanyam, M. A., Nair, N. S., & Rajashekhar, B. (2002). Hearing impairment and ear diseases among children of school entry age in rural South India. *International Journal of Pediatric Otorhinolaryngology*, 64(2), 105–110. [https://doi.org/10.1016/S0165-5876\(02\)00032-0](https://doi.org/10.1016/S0165-5876(02)00032-0)
- Ravi, R., Gunjawate, D. R., Bhandarkar, A. M., & Yerraguntla, K. (2023). Knowledge, beliefs, and practices towards cochlear implantations among otorhinolaryngologists in India. *Indian Journal of Otolaryngology and Head and Neck Surgery*, 75, 433–439. <https://doi.org/10.1007/s12070-023-03527-5>
- Sanderson, G., Ariyaratne, T. V., Wyss, J., & Looi, V. (2014). A global patient outcomes registry: Cochlear pediatric implanted recipient observational study (Cochlear™ P-IROS). *BMC Ear, Nose and Throat Disorders*, 14(1), 10. <https://doi.org/10.1186/1472-6815-14-10>
- Scholes, S., Biddulph, J., Davis, A., & Mindell, J. S. (2018). Socioeconomic differences in hearing

- among middle-aged and older adults: Cross-sectional analyses using the Health Survey for England. *BMJ Open*, 8(2), e019615. <https://doi.org/10.1136/bmjopen-2017-019615>
- Shan, A., Lin, F. R., & Nieman, C. L. (2020). Age-related hearing loss: Recent developments in approaching a public health challenge. *Current Otorhinolaryngology Reports*, 8(1), 24–33. <https://doi.org/10.1007/s40136-020-00271-0>
- Smith, B., Zhang, J., Pham, G. N., Pakanati, K., Raol, N., Ongkasuwan, J., & Anne, S. (2019). Effects of socioeconomic status on children with hearing loss. *International Journal of Pediatric Otorhinolaryngology*, 116, 114–117. <https://doi.org/10.1016/j.ijporl.2018.10.032>
- Sorkin, D. L. (2013). Cochlear implantation in the world's largest medical device market: Utilization and awareness of cochlear implants in the United States. *Cochlear Implants International*, 14(Suppl. 1). <https://doi.org/10.1179/1467010013Z.000000000076>
- Thammaiah, S., Manchaiah, V., Easwar, V., & Krishna, R. (2016). Translation and adaptation of five English language self-report health measures to South Indian Kannada language. *Audiology Research*, 6(1), 153. <https://doi.org/10.4081/audiores.2016.153>
- Varshney, S. (2016). Deafness in India. *Indian Journal of Otology*, 22(2). <https://doi.org/10.4103/0971-7749.182281>
- World Health Organization. (2018). *Addressing the rising prevalence of hearing loss*. World Health Organization.
- Yellaiah, J. (2013). Health insurance in India: Rajiv Aarogyasri Health Insurance Scheme in Andhra Pradesh. *IOSR Journal of Humanities and Social Science*, 8(1).