



# AUDIOLOGY IN INDIA

- *By Vinaya Manchaiah, 2016*

## INDIA



**Population:** 1.27 billion (2015 estimate)

**Area:** 1,269,346 square miles

**GDP(PPP):** \$8.20 trillion (2015 estimate)

**Languages:** Hindi & English (Official) & 22 regional languages (officially recognized)

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# DEMOGRAPHIC INFORMATION

The Republic of India is a country in South Asia. It is the seventh largest country by area, second most populous with more than a billion people, and the most populous democracy in the world. India is well known for its culture, language and religion.

**Table 1:** Country information (source Wikipedia)

<b>Country name</b>	Republic of India
<b>Population</b>	1.27 billion (2015 estimate)
<b>Area</b>	1,269,346 square miles
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India has, arguably, greater linguistic diversity than any other large country. The precise number of language spoken in India is probably over 1,000. More than 10,000 people speak each a total of 122 languages. The big six languages – Hindi, Bengali, Telugu, Marathi, Tamil and Urdu – are each spoken by more than 50 million people. Hindi and English are the official languages.

India has various religions. The faith of more than 80% of the people is Hinduism, considered the world's oldest religious and philosophical system. Islam and Christianity are practiced by around 13% and 2.5% respectively by Indian population. Sikhism, Ayyavazhi, Buddhism and Jainism Are Indian-born religious systems that are strong and influential not only in India but across the world.

The Indian culture, often labelled as an amalgamation of several cultures, spans across the Indian subcontinent and has been influenced by a history that is several millennia old. In addition to languages and religions, Indian cultural diversity has also been heavily influenced by the socio economic status of people.

## HISTORY OF AUDIOLOGY/ AURAL CARE

The profession of Otolaryngology in ancient India can be dated back into time between 1000 BC and 100 AD (Pothula et al., 2001), however, Otology as an independent profession gained more recognition after 1950 (Bhargava & Bhargava, 1996). The profession of audiology is relatively new and took root nearly half a century ago. Since then both of these professions have undergone some major developments and offer a wide range of ear and hearing healthcare services.

Indian traditional medicine, such as Ayurveda, Unani and Siddha has some treatment solutions to ear and hearing problems. However, various well-established audiological centers offer modern hearing healthcare services throughout the country. The traditional Ayurvedic

medicine focuses on diet and natural herbs as a treatment solution to hearing loss with the view that these herbs will have a beneficial healing effects over the complete human body in a natural way including the ear. The American rehabilitation models influence the modern hearing healthcare that includes hearing assessment and hearing rehabilitation with the use of modern technological devices such as hearing aids.

Typically, children born with significant hearing loss have been educated in special schools for hearing impairment, where education via Indian Sign Language is promoted (Vasishta, Wilson and Clyde, 1978; Jepson, 1991). In recent years, audiological rehabilitation with amplification use is becoming popular and oral communication has become more prevalent. Many special schools have upgraded their mode of instruction to oral. Fully-fledged hearing services were established in some parts of the country as the field of audiology developed.

Education of Audiology professionals in India first started at University level as a Master's program, similar to that in other countries. There are now a number of higher education institutions providing speech and hearing education and services across India. Also, hearing healthcare services available throughout the country at different levels, although mainly available in urban areas.

## **HEARING LOSS INCIDENCE AND PREVALENCE**

Population survey has revealed that over 21 million people in India suffer from some kind of disability, which is equivalent to 2.1% of the population. Estimated prevalence of hearing impairment in India varies significantly depending on the definition used (Manchaiah et al., 2009). The World Health Organization (WHO) suggests a disabling hearing impairment of 5.9% (World Health Organization, 1999), whereas National Sample Survey Organization (NSSO) suggests a prevalence of 16.5% (3,061,700 people) have some form of hearing disability (National Sample Survey Organization, 2002). Hearing impairment remains a major social and health issue in India, like many other disabilities. This prevalence figure could be considered slightly on the high side because the definition of hearing impairment is rather loose and it includes conductive, mild, unilateral types of hearing loss in addition to permanent hearing loss. NSSO estimates that about 60% of those with hearing difficulties are not using any sort of assistive device as the severity of the disability is less than severe degree (Singal, 2008). The definition of disability and different types of disabilities varied from time to time and they are also differently defined by Census and NSSO (Mitra and Sambamoorthi, 2006). Due to this reason estimated prevalence of Census and NSSO are not comparable.

The figures from a study on disability show that old age (26%), other illness (25%), ear discharge (15%) and injury other than burns (5%) are the main causes of hearing disability in India (Patel, 2009). Estimated figures on prevalence show that adult onset deafness is about 8% and childhood onset deafness is about 2% (World Health Organization, 2007). Owing to the tropical

weather conditions, large numbers of adults and children develop hearing impairment as a result of ear infections such as otitis media. Among school going children, the incidence of ear infection is significantly more in children from rural areas compared to those who live in the cities (Tuli et al., 1988; Mann et al., 1998).

## INFORMATION ABOUT AUDIOLOGY

### EDUCATION

India has robust training and education for audiologists compared to many low and middle-income countries. In 1964, the first Audiology & Speech Language Therapy program was started at the twin institutes; BYL Nair Charitable Hospital and T. N. Medical College in Mumbai. In the same year the All India Institute of Speech and Hearing (AIISH) was established by the Government of India, which is now a premier Speech and Hearing institute in South-East Asia. Both programs were heavily influenced by American colleges and offered a dual degree in audiology and speech and language pathology. This dual degree practice is still present in most schools both at bachelors and master's levels.

Currently there are over 50 institutes all over the country offering speech and hearing courses. The entry level for the profession as independent practitioner is a bachelor's degree in Speech and Hearing Sciences. These programs are four years in duration and focus on speech and hearing sciences with approximately 1,500 hours of clinical practice. The typical program includes both audiology and speech language pathology, although various specialized master's programs in audiology are in existence. In addition, many universities offer certificate and diploma courses to train clinicians at a basic level and doctoral programs to train clinical scientists at a higher level. The Rehabilitation council of India (RCI) provides accreditation for these programs. The curriculum is regularly updated through RCI mandated workshops and all the schools follow a minimum common curriculum. Many of these programs are internationally recognized offering students the opportunity to study with people of different linguistic and cultural backgrounds. To assist this, the course has an expectation that students be able to communicate in English.

Following are some of the well-recognized audiology programs in India.

- [All India Institute of Speech & Hearing \(AIISH\), Mysore University](#)
- [Ali Yavar Jung Institute for the Hearing Handicapped \(AYJNIHH\) in four different Universities across India](#)
- [Manipal College of Allied Health Sciences, Manipal University](#)
- [Sri Ramachandra Medical Centre \(SRMC\), Sri Ramachandra University](#)
- [Post Graduate Institute of Medical Education & Research \(PGIMER\)](#)
- [Topiwala National Medical College c/o BYL Nair Charitable Hospital](#)

Following are some of the courses:

- Bachelors in Audiology and Speech Language Pathology (BASLP)
- Bachelor of Education - Hearing Impaired (BEEd-HI)
- Masters of Science - Audiology and Speech Language Pathology (MSc ASLP)
- Masters of Science - Audiology
- Masters of Science - Speech Language Pathology (MSc SLP)
- Master of Education - Hearing Impaired (MEd - HI)
- Doctor of Philosophy (PhD) - Audiology
- Doctor of Philosophy (PhD) - Speech Language Pathology
- Doctor of Philosophy (PhD) - Speech and Hearing Sciences

It is estimated that over 10,000 people have graduated out of Indian speech and hearing schools since 1966, with an estimated 6,000 to 7,000 audiology professionals currently practicing currently in India.

## **AUDIOLOGY PRACTICE: PUBLIC VS PRIVATE (SERVICES OFFERED, COST, ETC.)**

In India, professional audiological services are available in both the public and private sectors. Healthcare services including audiological services are offered at primary, secondary and tertiary levels.

Ear-care services are available at primary or community levels, secondary and also tertiary levels, however, hearing care may only be available at secondary and tertiary levels. At primary levels the services are provided by primary care nurses, community volunteers and/or health workers and these centers may not be exclusively devoted to ear and hearing healthcare. However, they offer basic ear examination, medication, public awareness and referral. Some of the ENT/audiology institutes and/or departments also carry out regular residential screening and awareness camps at community levels and piloting school screening and newborn hearing screening programs. Secondary levels are usually district health centers. The services such as ear and hearing evaluation, appropriate medical intervention for the ear disorders and simple ear surgery are offered by either general medical practitioners or otolaryngologists at this level. Tertiary levels are usually an ENT department/center consisting of a wide range of expert staff including otolaryngologists, audiologists, audiometricians, hearing aid specialists, ENT nurses, speech therapists, teachers of the deaf, etc. Depending on the department they offer a wide range of services such as medical examination and treatment, microsurgery, detailed audiological investigations and interventions. These services are catered mainly by private sector facilities with an anticipated market share of over 90% (Easwar et al., 2013). Table 2 provides approximate numbers of centers at various levels (World Health Organization, 2007). However, more recent estimations are that there are over 500 audiology clinics based all over

India. However, most of these clinics or institutes are based in urban locations, consequently are not accessible to everyone, particularly the large remote rural populations. There is also a shortage of qualified professionals and infrastructure.

**Table 2:** Approximate number of ear and hearing healthcare centers in India

<b>Centers</b>	<b>Level</b>	<b>Approximate Number</b>
Primary Health Centers	Primary	22974
District Health Centers	Secondary	600
Specialist Offers	Tertiary	350/120*

\*: which have facilities for early diagnosis and rehabilitation

## **SERVICES OFFERED BY OTOLARYNGOLOGISTS, OTOLOGIST'S & OTONEUROLOGISTS**

Otolaryngologists in India offer a wide range of ear-care services and also diagnosis and treatment for otologic disorders such as acute and chronic ear infections, otosclerosis, congenital abnormalities, trauma and tumors. Some specialists also have the expertise to deal with vestibular disorders. In many specialist centers there are facilities for microsurgery and a very few centers have temporal bone laboratories.

Many Otologists and Otoneurologists are performing advanced surgical techniques such as vestibular nerve section, acoustic neuroma surgery, total decompression of facial nerve, skull base surgery and cochlear implant surgery. There are about 40 cochlear implant centers in India.

A few of the private Otolaryngology centers have become popular throughout Southeast Asia attracting patients from many Middle East and African countries.

## **AUDIOLOGICAL SERVICES**

Audiological services in India include: hearing assessment, selection and fitting of hearing aids, and aural rehabilitation. Some of the centers have successful cochlear implantation programs, however, the services in some of the specialized audiology areas like vestibular assessment and rehabilitation, assessment and management of auditory processing disorder, and tinnitus rehabilitation are limited.

It is important to note that most audiological facilities are based in urban areas making it difficult for people in rural areas to access such services. A few public sector organizations and non-governmental organizations (NGOs) work to extend audiological services to rural and remote areas by conducting residential camps and appointing public health workers to facilitate identification of hearing disorders and appropriate referral. However, general awareness of hearing healthcare in rural areas is still poor. Hence, although there is a great need, demand for

audiological services in rural areas is limited and patients generally tend to travel to urban areas to use the available services.

Services offered in the public sector are either paid or subsidized by the government. However, the patients generally pay services offered by the private facilities, although in some instances various NGOs and charities may pay for them especially for children.

Public sector facilities with audiology services are mostly district level hospitals, educational institutes and district health rehabilitation centers, funded by Departments of Health and State government. The services provided are free or at concessionary rates. Since 1996, there has been provision for free body level hearing aids through the scheme 'Assistance to Disabled Persons for Purchase (ADIP)' funded by the Ministry of Social Justice and Empowerment. Along with the hearing aid there is also a provision for delivering solar driven rechargeable batteries since 2004. There is also a progress towards the provision of fully subsidized BTE hearing aids for pediatric population under the National program on prevention and control of deafness (NPPCD). The public sector is also working to extend audiological services to remote and rural areas by conducting residential and rural camps, and appointing public workers to identify and refer those who are in need of services. More manpower is needed to ensure the smooth running of several of these government projects.

Audiologists in the private sector are greater in number than those in the public sector. These are generally equipped with all the necessary diagnostic instruments and their work is mainly focused in hearing aid dispensing. The patient has to pay for private sector service. There are also some well-known private cochlear implant centers across south Asia, which attract patients from other countries. Generally, these clinics or institutes are not easily accessible to people living in rural settings as most of them are based in urban locations. In addition, a concern in relation to private sector provision is that there is that the practice of hearing aid dispensing is not well regulated, although some regulations from Rehabilitation Council of India (RCI) exist.

## **PROFESSIONALS**

As discussed earlier, generally, audiologists and otolaryngologists mainly offer specialist audiological services in India. A few numbers of Otologists and Otoneurologists are practicing exclusively in their specialty. However, various professionals, including, general medical practitioners, teachers of the deaf, health workers and community volunteers at various levels offer some of the services. Table 3 indicates the approximate number of professionals offering ear and hearing healthcare services and its ratio to the general population. These are an approximate numbers and the population ratio was calculated using a population of 1.14 billion (2008) and the data on professionals was based on the report produced by the WHO Regional Office for the South East in 2007 (World Health Organization, 2007). The number of audiologists double if we include those who are trained as both audiologists and speech-language pathologists (SLPs) and working as SLPs. These data clearly indicate that the Indian

population is under served in terms of ear and hearing healthcare due to the general shortage of qualified professionals and infrastructure. These personnel are not equally distributed over the country with a massive shortage of such professionals in rural areas.

**Table 3:** Ear and hearing care professionals in India

<b>Professionals</b>	<b>Approximate number</b>	<b>Ratio to the population</b>
Audiologists	1200	1:950000
Otolaryngologists	8000	1:142500
Micro-ear surgeons	4000	1:285000
Teachers of the deaf	4039	1:282248
Physicians	500000	1:2280

More recent estimates suggest that more than 6,000 to 7,000 audiology professionals currently practicing in India. The majority are employed in India, however, many of them have found employment in the USA, Australia, UK, New Zealand and the Gulf countries. In recent years, there has been an increase in the global demand for Audiologists due to the modernization of audiology especially in western countries. This has resulted in a major drain of skilled audiologist to western countries and resulted in a shortage of qualified audiology professionals in India.

## RESEARCH IN AUDIOLOGY

Research on hearing healthcare published in international peer-reviewed journals has been limited considering the long history of the profession and the number of educational institutes. Most of the research conducted has been from educational institutes through various student projects (typically masters and doctoral thesis work), which is accessible only through the institute library. However, there has been substantial increase in international publications especially with efforts from faculty in educational institutes.

There are two indexed speech and hearing journals being published from India with contributions from Indian academicians - Journal of the Indian Speech and Hearing Association (<http://www.jisha.org/>); and The Journal of All India Institute of Speech and Hearing (<http://aiish.ac.in/journal-of-aiish.html>). Both journals promote homegrown research activities.

Despite this there is a great need for research to better understand the incidence/prevalence, outcome of hearing rehabilitation and to develop rehabilitative programs that consider the local culture, educational, and socio economic variables. Research should also focus on specialist areas such as tinnitus, vestibular sciences and auditory processing disorders. Moreover, substantial efforts are needed to develop community-based rehabilitation (CBR) programs to cater hearing healthcare services to financially challenge and underserved areas.

## CURRENT MAJOR PROJECTS

One of the major audiology projects is the development of an indigenous cochlear implant by a group in the Defense Research and Development Organization (DRDO). This project aims to develop a low-priced cochlear implant which could bring down the cost of implants to one sixth. Unpublished reports indicate that the device is currently being tested on animals.

Another major project is the National Program on Prevention and Control of Deafness (NPPCD), which is funded by the Ministry of Family and Welfare, Government of India. This project aims to prevent avoidable hearing problems by; identification, diagnosis and treatment of ear problems; providing medical rehabilitation for people suffering with hearing impairment; to improve the existing inter-sectoral linkages for continuity of the rehabilitation program and to develop institutional capacity for ear care services. A pilot project was conducted in 25 districts during 2006-2008. The proposed Government five-year plan aims to implement this to all districts of the country by 2012.

In recent years, many charities and organizations have been actively working to improve hearing health care services in India. The 'Project Deaf India' is a good example. The long-term vision of this project is to reduce the incidences of deafness in the world and to improve the social status of deaf and hard of hearing young adults. Also, SWANIRMAN – Graham Bell Project India funded by the National Deaf Children's Society (NDCS) is another example of NGO's effort. This project aims to challenging social attitudes, which prevent deaf children from reaching their true potential and to empower families to achieve the best outcomes for their deaf child.

There are also various neonatal hearing screenings, school hearing screenings, and community-based hearing rehabilitation (CBHR) programs being piloted and adopted by a variety of institutions and hospitals across India. Some institutes also run regular residential and rural camps to identify and support people with hearing related problems.

## **PROFESSIONAL AND REGULATORY BODIES**

The Indian Speech and Hearing Association (ISHA) is the professional and scientific association with over 2,500 members, while the Rehabilitation Council of India (RCI) is the regulatory body that regulates training and professional practice.

The Indian Speech and Hearing Association (ISHA) was formed in 1967. It is a professional and scientific association for Audiologists and Speech and Language Pathologists in India with over 2,500 registered members. Its role is the promotion of excellence in the Speech, Language and Hearing profession and rehabilitation services through advocacy, leadership, and continued education. It is also working to develop an ethical framework, to monitor professionals, encourage, networking and support research.

The Rehabilitation Council of India (RCI) was set up as a registered society in 1986. In 1992 the Government of India implemented action to regulate the curriculum, training and practice of rehabilitation courses under the Rehabilitation Council of India act (Sivaprasad, 2009). Apart from monitoring the curriculum, RCI has also laid down strict norms for practicing rehabilitation sciences. RCI also maintains a Central Rehabilitation Register (CRR) of all qualified professionals and personnel working in the field of rehabilitation and special education, which requires registration and periodic renewal. The RCI act mandates membership of CRR for practicing allied health professionals. The RCI also prescribes disciplinary action against unqualified persons delivering services to persons with disability, although such efforts have been limited.

## SCOPE OF PRACTICE AND LICENSING

Graduates with bachelor's degree in speech and hearing sciences can choose to practice in either speech pathology, audiology or dually. Generally, the patient population these graduates see depends on the place of work. For example, those working in specialist audiology clinics may only see patients with hearing loss, tinnitus and imbalance, whereas those running their own independent clinic practice dually seeing patients with all kinds of communication problems. The RCI has regulations and guidelines on scope of practice of audiologists and speech-language pathologists ([http://ishaindia.org.in/pdf/Scope-of-PracticeDocuments\\_Feb2016\\_nocvrpage.pdf](http://ishaindia.org.in/pdf/Scope-of-PracticeDocuments_Feb2016_nocvrpage.pdf)), although these regulations are not well enforced, resulting in many unqualified and underqualified people offering services to patients.

## AUDIOLOGY CHARITIES

In recent years many non-governmental organizations (NGOs) and charities have become very active and are working towards improving ear and hearing healthcare services/facilities in India. The following are some of the major non-governmental organizations/charities.

- Audiology India: [www.audiologyindia.org](http://www.audiologyindia.org)
- Aural Education for the Hearing Impaired (AURED): [www.aured.org](http://www.aured.org)
- Development Education Empowerment for the Disadvantaged in Society (DEEDS): [www.deeds-india.com](http://www.deeds-india.com)
- Hearing International – India: <http://hearinginternational.org/india/>
- I Hear Foundation: <http://www.ihearfoundation.org/>
- Nambikkai Foundation: <http://www.nambikkaifoundation.com/>
- Research Education & Audiological Development Society (READS): [www.readsindia.org/](http://www.readsindia.org/)
- Rotary Foundation (India): [www.rotaryfoundationindia.org/](http://www.rotaryfoundationindia.org/)

- Society to Aid the Hearing Impaired (SAHI): [www.sahiearcare.org/](http://www.sahiearcare.org/)

## CHALLENGES, OPPORTUNITIES AND NOTES

- Awareness and access to hearing health is still a major concern in the rural population, where the majority of the Indian population lives. Hence, there is a need to adopt a public health approach and community-based hearing rehabilitation. The complexity in terms of educational, religious and socioeconomic backgrounds of such a diverse population needs to be considered in this.
- Health literacy, superstitions, finance and local access to services are the major barriers to hearing healthcare.
- A developing middle class (middle income) population has created a new demand for hearing healthcare services.
- Ensuring even geographical distribution of audiology professionals and infrastructure; and improving accessibility to audiological services for people living in remote and rural settings.
- There is a great need for developing training and clinical services in areas including auditory processing disorders, vestibular disorders and tinnitus.
- There is a need to better define the scope of practice for audiologists with different training levels and to develop standardized procedures for practice, which may result in more uniform service provision.
- Developing standardized and uniform procedures and protocols for hearing health care services; improving and modernizing audiological services.
- The Defense Research and Development Organization (DRDO) is working towards the development of an indigenous cochlear implant. This could significantly bring the cost down, making it more affordable for low and middle-income families helping over a million children who suffer from profound hearing impairment.
- Although private sector practices have state of the art facilities, the practice is not well regulated (especially for hearing aid dispensing) resulting in many unqualified (or poorly trained) individuals practicing. Hence, much effort is needed from RCI and ISHA to enforce necessary practice regulations.
- Audiology practice in India is based on models from western countries. Considering that social and cultural aspects vary vastly in India compared to western countries, there is a great need to develop research in India, which should inform practice. Hence, there is a need for improving clinical and applied research, initially starting from epidemiological studies to better understand the extent and nature of hearing disorders.
- Many charities and NGOs have been working actively to improve hearing healthcare services, especially in rural areas.

- There is a need for establishment of patient organizations, which may provide a platform for people with hearing impairment and their family members to share ideas, concerns and better promote hearing healthcare.
- Reducing the brain drain, and increasing the manpower of hearing healthcare professionals.
- Raising funding for both clinical and research work through Government, various national and international charities and organizations.

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## USEFUL LINKS

- <http://ishaindia.org.in/>
- <http://www.rehabcouncil.nic.in/>
- <http://mohfw.nic.in/nppcd.htm>
- <http://www.projectdeafindia.org/>
- [www.audiologyindia.org](http://www.audiologyindia.org)

## AUTHOR INFORMATION

**Dr. Vinaya Manchaiah** (AuD, MBA, PhD, FAAA) currently holds the positions: *Director of Audiology, Jo Mayo Endowed Professor, Associate Professor of Audiology* at Department of Speech and Hearing Sciences, Lamar University, Beaumont, Texas, USA. He has worked in various clinical, educational, research and administrative roles over the last 10 years. He has published over 50 papers in various academic and professional journals. His area of research interest includes: audiological rehabilitation, eHealth, psychosocial aspects of hearing loss, hearing aid demographics, occupational and recreational hearing loss and hearing conservation.

He has research collaborations in more than 10 countries and has been part of many cross-cultural studies. He is keen to develop research in low- and middle-income countries and heading the project on measuring the outcome of community based hearing rehabilitation in India.

He has been very active in service roles. He served as the Board of Director for the British Academy of Audiology (BAA) during 2011-14. He is the co-founder of Audiology India (NGO – [www.audiologyindia.org](http://www.audiologyindia.org)) and served as the President during 2011-15 and currently serving as the Board of Director for Strategic Planning.

Outside work, Dr. Manchaiah likes travel and photography. He has visited 59 countries so far and aims to go around the globe.

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