

# Understanding Hearing Loss And Strategies For Prevention And Intervention of Hearing Impairment

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## **Abstract:**

The ability to perceive sound is called 'hearing'. This is possible when the ear senses the vibrations of sound in solid, liquid and gaseous substances. The ear helps us to recognize various kinds of sounds. The child starts hearing soon after birth. These sounds get imprinted on his mind and brain. These imprinted sounds become the basis of the child's knowledge of language. The child communicates through language only. Communication is an important basis for the growth of knowledge. If the child's hearing ability is normal, then his development in speech, language, communication and other areas takes place normally. But if the child has difficulty in hearing, and there is no early identification and intervention, then his development in speech, language, communication and other areas is limited in comparison to a hearing child of the same age group. Therefore, early identification and intervention of hearing impairment is absolutely necessary. Many stages have to be passed in the process of early identification and intervention. This article discusses sequentially the aspects related to understanding hearing loss, prevention of hearing impairment, and intervention.

**Index Terms:** Hearing, Deaf, Language, Speech, Communication, Impairment, Auditory, Hearing, Listening, Identification, Prevention, Intervention, Special, Inclusive, Education, training, Rehabilitation, Strategies.

## **INTRODUCTION**

There are five major sense organs in our body. These sense organs are eyes, ears, nose, mouth and skin. We know sense organs as visual, auditory, olfactory, taste and tactile respectively. Sense organs are the way to acquire knowledge through which we get information about the subject matter of the outside world. All our five sense organs play an important role in the learning process. Among these sense organs, ears are an important sense organ of our body. Ears help us to recognize different types of sounds. A child starts hearing soon after birth. These sounds get imprinted on his mind and brain. These imprinted sounds become the basis of the child's language knowledge. The child communicates through language knowledge only. Communication is an important basis for the growth of knowledge. Rosenblum and his colleagues found in their research that after visual sense, we acquire the most knowledge through auditory sense. Therefore, for the normal development of a child, it is very important for the hearing sense to function normally. But due to some reasons, hearing loss can occur in children as a side effect. Therefore, for the all-round development of children, it is very important for everyone to have proper knowledge of the hearing process, hearing loss, prevention and intervention methods of hearing impairment.

## **Auditory Process and Difference between Listening and Hearing -**

The process of hearing is a complex process. The ear has three parts - outer ear, middle ear and inner ear. Each part has an important role in hearing. The sound waves coming from outside the ear are picked up by the pinna and sent to the ear canal. The sound that enters our 'outer ear' first creates vibrations in the tympanic membrane of the ear. This vibration passes through the middle part of the ear through three small bones,

middle ear, hammer, anvil and stirrup and reaches the cochlea of the inner ear. This results in motion in the fluids of the cochlea. There are sensitive cells inside the cochlea, which note these motions and initiate neural activity, which is transmitted to the 'brain' through the auditory nerve. This is how we hear. The ability to perceive sound is called 'hearing'. This is possible by the ears sensing the vibrations of sound in solid, liquid and gaseous substances. But 'Listening Process' and 'Hearing Process' are not the same processes. There is a difference between these two processes. The purpose of the listening process is to extract meaning or to receive words with the purpose of giving meaning to words. This mainly includes the process of understanding. In comparison, the hearing process is a physical process. That is, by what process a sound reaches the brain from our ears, and in what order does this process occur at the physical level. This process of hearing is studied under the subject of Audiology. In this way, whatever we listen to through the Hearing Process, we understand it and express it through speech for communication through language.

### **Meant by Hearing and Hearing Impairment -**

Hearing impairment is an invisible impairment. A close observation is required to identify the hearing impairment of a person or a child. Hearing impairment at birth and in infancy has a negative impact on the overall development of the child. The impact of hearing impairment varies depending on the starting age, form, grade etc. When a person is found unable to hear normal sounds, we call this condition of his hearing impairment. The prevalence of hearing impairment is increasing day by day. The World Health Organization (WHO) estimates that 466 million people were living with disabling hearing loss in 2018 and this is estimated to increase to 630 million by 2030 and over 900 million by 2050. However, these estimates are based on hearing loss classifications that do not fully reflect the provisions of the International Classification of Functioning, Disability and Health for assessing all forms of functional impairment. The World Health Organization (1980) also classified hearing ability into several range. The range of normal hearing is 0 dB to 25 dB, the range of slight hearing loss is 16 dB to 25 dB, the range of mild hearing loss is 26 dB to 40 dB, the range of moderate hearing loss is 41 dB to 55 dB, the range of moderately severe hearing loss is 56 dB to 70 dB HL, the range of severe hearing loss is 71 dB HL to 90 dB HL and the range of profound hearing loss is 91 dB and above. According to National Sample Survey Organization (1991), "A person is called hearing impaired who is incapable of hearing normal sounds normally." According to Rights of Persons with Disabilities Act (2016), "Deaf" means persons having 70 dB hearing loss in speech frequencies in both ears. "Hard of Hearing" means person having 60 dB to 70 dB hearing loss in speech frequencies in both ears. According to the Indian Rehabilitation Council Act (1992), "hearing impairment of 70 dB and above, in better ear or total loss of hearing in both ears." And the act also states that "when the deafness is up to 55 decibels, it should be used for education and when it is 70 decibels, it should be used for professional use."

### **Problems Caused by Hearing Impairment -**

Due to good hearing, a child is able to understand the subtle difference in sounds. The process of listening and speaking occurs naturally in a child. They learn to speak by listening. Hearing skills are the main basis for the development of other linguistic skills. If the child's hearing ability is normal, then the development of speech, language, communication and other areas will be normal. But if the child has difficulty in hearing, and there is no early identification and intervention, then the development of speech, language, communication and other areas in him is limited in comparison to a hearing child of the same age group. Also, hearing impairment has a negative impact on many areas of the child's motor development, educational achievement, intellectual development, memory, personality, social development, psychosocial development, emotional development, vocational development etc. Therefore, early identification and intervention of hearing impairment is absolutely necessary. The child has to go through many stages in the process of early identification and intervention.

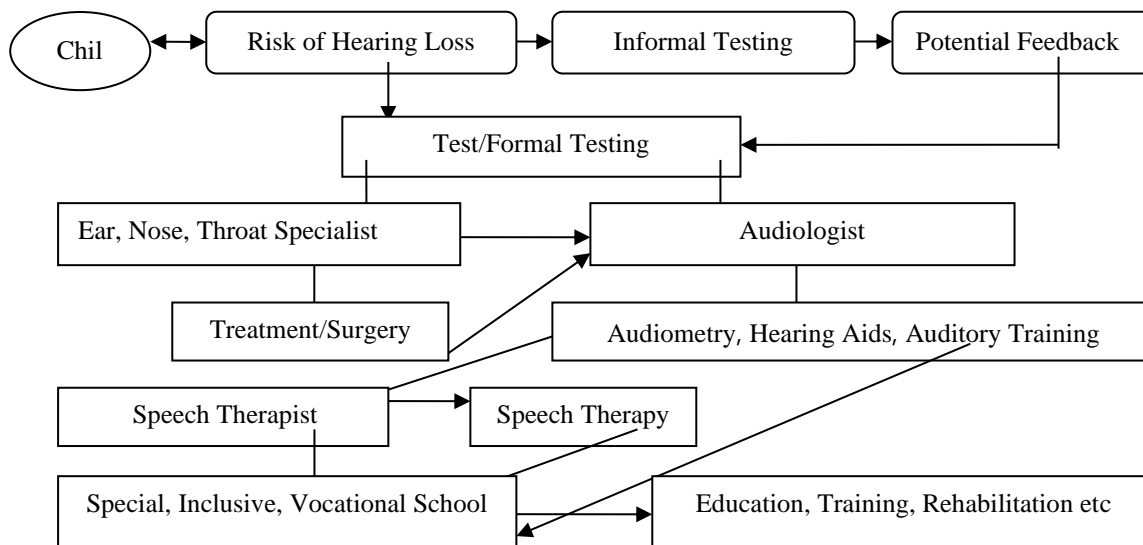
### **Prevention of Hearing Impairment -**

Prevention means any action taken to keep people healthy and fit, and to prevent or avoid the risk of poor health, disease, injury and premature severe loss. Researchers and health experts talk about three main

categories of prevention of hearing loss. These include primary, secondary and tertiary prevention. The aim of primary prevention is to prevent disease or injury. At this stage, the possible causes of hearing impairment are identified and efforts are made to remove those causes at the primary level itself by various measures. The aim of secondary prevention is to reduce the effect of a disease or injury, which has already occurred. This is done by detecting and treating the disease or injury as early as possible to stop or slow its progress. At this stage, efforts are made to remove or reduce the hearing impairment by various measures such as medicine, treatment etc. The aim of tertiary prevention is to soften the effect of an ongoing disease or injury, whose effect is permanent. That is, in tertiary prevention, efforts are made to reduce the symptoms of disease or injury and improve the quality of life. At this level, efforts are made to reduce or improve the effect of hearing impairment through various measures such as devices, education, training, etc.

**Intervention Strategies for Hearing Impairment -**

Intervention is the mediation between a person and his environment. It helps him to perceive, organize, understand and process the information he receives from the world around him in a better way. Early intervention services are designed for the age group from birth to 6 years. All infants and children aged 0-6 years that have developmental delay in one or more areas or one or more disabilities should be provided early intervention services. This includes children who are at risk of developing developmental delay later on or have other special needs, whether present or not. The main objectives of early intervention are- to ensure optimal development of children; to prevent or reduce the impact of secondary disabilities on children; to provide medical and paramedical or additional support to children; to provide support and guidance to the parents of children etc. A wide range of intervention strategies are involved in the treatment of hearing impairment. The aim is to reduce health risks. The intervention strategies can be understood from the flowchart given below –



To prevent possible hearing loss before the birth of the child, preventive measures like medicines, health and nutrition, hereditary reasons etc. are adopted. After the birth of the child, if there is a possibility of hearing loss in him, then that child is directly taken to the ear, nose, throat specialist or after being assured of hearing loss through informal tests like sounds of drums, dhapli, whistle, clapping, plate, sound producing toys etc., then he is taken to the ear, nose, throat specialist. In treatable conditions, the ear, nose, throat specialist treats or corrects the hearing loss through surgery. After correcting the hearing loss of the child, he sends him to the audiologist. The audiologist tests the hearing of that child. In case the hearing aid is not useful, he sends him directly to a special school. In case the hearing aid is useful, he fits the hearing aid to him and after the hearing aid is fitted, he gives him hearing training. After success in hearing training, he sends the child to a speech therapist. The speech therapist develops and improves his speech. After speech development and improvement, he sends the child for admission in an inclusive school. The school in which the child gets

admission, whether special or inclusive, as per the child's hearing loss, leads the child through teaching for the process of training and rehabilitation.

## CONCLUSION

A child starts hearing sounds immediately after birth. If the child's hearing ability is normal, then his development in all areas will be normal. But if the child has difficulty in hearing, and there is no early identification and intervention, then his hearing loss has a negative effect on many areas of the child's speech, language, communication, motor development, educational achievement, intellectual development, memory, personality, social development, psychosocial development, emotional development, professional development, etc. Therefore, early identification and intervention of hearing impairment is absolutely necessary. Many stages have to be passed in the process of early identification and intervention. The sequence of intervention comes under a simple and straightforward process which is usually adopted as part of the diagnostic and therapeutic process of hearing impaired children. But, at present, on formal confirmation of hearing loss, cochlear implant is done in the child in the early years itself, the percentage of which is quite good compared to the success of other hearing aids. Due to which the development of speech, language and communication and other areas becomes easy in the child. In the present situation its popularity has increased very rapidly.

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