

# ASSESSMENT STRATEGIES FOR THE HEARING IMPAIRED CHILDREN

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## **Abstract**

*The focus of this paper is on assessment strategies with hearing impaired children in inclusive education. The paper identifies the strategies, discusses functions and how to use the strategies for early detection of hearing problems, it also discussed concept, symptoms, types and causes of hearing impairments. Measurement of hearing level, which a resource teacher can administer to identify those who may have childhood hearing difficulties, which could further be investigated was also discussed. Finally, recommendations were given on how parents, teachers, private organizations and governments could join hands and work for the successful educational management of hearing impaired children.*

## **INTRODUCTION**

Hearing plays a critical role in language development. The child with normal hearing progresses in all aspects of development while hearing impairment has some effects on the psychological, social and emotional development of the child. Vanderlem (1990) observes that severe hearing impairment in a child has serious implications for the development of its speech, language cognition and social behaviour, The human ear is an organ that is very useful in the world of sounds we live in. The ability to hear is a great protection in period of danger. It is not only the hearing impaired child or adolescent that suffers the consequences of deafness, but his parents and close relations as well. If assessment or medical diagnosis, home programs and educational remediation are not initiated early in such a child's life, hearing loss can be a great handicap to growth, development and learning. This calls for assessment and early intervention strategies for hearing impaired children. Assessment involves observing the child in a variety of activities in order to find out what he can and cannot do. Its purpose is to find out the weaknesses and strengths of the child. Early detection of hearing problems and treatment may or will prevent the handicap from worsening, and will prevent additional educational and emotional difficulties from arising.

## **Concept of Hearing Impairment**

Hearing impairment indicates some damage or malformation of the hearing mechanism. It is an abnormality of hearing, resulting in deafness or hardness of hearing. It is a sensory defect, which prevents a person from receiving the stimulus of sound in all or most of its forms. Loss of hearing even when it comes later in childhood or youth does create difficulties in

adjustment and the acquisition of knowledge. Hearing impairment is a disability that affects human personality, even when it occurs later in life.

Kirk (1962) stated that the "deaf" are those in whom the sense of hearing is non functional for the ordinary purpose of life. The "hard-of-hearing" were defined as those in whom the sense of hearing, although defective is functional with or without a hearing aid. This general group is made up of two distinct classes based on the time the loss of hearing occurred. These distinct classes include.

- a. The congenitally deaf, that is those who were born deaf.
- b. The adventitiously deaf, that is those who were born with normal hearing but in whom the sense of hearing became non-functional later through illness or accident.

Being deaf means that the person cannot hear and understand the spoken word through the sense of hearing. Deafness is thought of as living in perceptual silence, cut off from the world of people. Meadow (1968), stress that it is an indisputable fact that the absence of hearing has a great effect on the linguistic acquisition of the client.

The ability to communicate is our most humanistic characteristic, because when a person cannot communicate, isolation from family friends and society often occurs. Individuals with hearing impairment may encounter this isolation in social, emotional, educational and vocational areas.

Abang (1981) noted that a person who experiences difficulties in this area exhibits poor understanding of spoken symbols. This attests to the fact that hearing impairment causes communication problems, because it is through hearing that language impulses are perceived and learned. From the above explanation and definition, hearing impairment is so destructive, that it interferes with the child's education, social, emotional and personality adjustment.

### **Symptoms of Possible Hearing Impairment**

Deafness is a hidden disability and one can only know that a person is deaf when that person shows clearly by his inability to answer correctly to a simple question. Impaired hearing may be suspected if the following symptoms are observed. If the child is not responding when called from a distance. The child sits close to the television or radio and turns the volume so loud that it is uncomfortable to others. Frowning or bending forward in order to hear or understand what is said to him. Avoiding situations that may require him to listen or talk. Complaining of discharge from the ears. Complaining of a ringing or bushing sound in the ear. Misarticulating simple words. Gazing at the lips of a person speaking to him instead of the person's eyes etc. If these preceding symptoms are observed over a period of time by parents and teachers, there is need to take the child to the hospital for medical examination and or an audiological test.

## **Types Of Hearing Loss**

**Hearing impairments can be divided into two major categories:**

- 1) **Conductive hearing loss** which shows that the inner ear is normal and the breakdown lies in either the outer or middle ear. The problem is with the conduction of sound to the inner ear. Causes of conductive hearing loss include: excessive accumulation of ear wax in the external auditory canal, improper Eustachian functioning, middle-ear-infection, and perforations of the eardrum.
- 2) **Sensory-neural hearing loss** which shows that the outer and middle ears are normal, and the breakdown is in the cochlea sense organ itself or in the auditory nerve. The problem is with the perception of sound in the inner ear. Causes of sensory-neural hearing loss include congenital factors, such as genetic defects, and maternal rubella contracted during pregnancy, trauma, oxygen deprivation at birth, childhood diseases such as mumps, measles, infections and certain drugs etc. (see appendix 3).

## **Definition of Terms**

Technical terms used in this paper are given for clarity of usage as thus:

<b>Otolaryngologist =</b>	is a doctor that deals with ear, nose and throat.
<b>Audiologist =</b>	is a specialist in testing or measuring the levels of hearing.
<b>Pediatrician =</b>	is a specialist doctor for the care of children.
<b>Psychologist =</b>	is a specialist that finds causes of emotional and social circumstances and gives remediation.
<b>Audiogram =</b>	it is a graphical representation of one's hearing.
<b>Audiometre =</b>	is the electrical instrument that is designated for measuring and testing of hearing loss.
<b>Pure tone =</b>	is the particular test tone that is singly produce from the audiometer into the ear without environmental sound.
<b>Ambient sound =</b>	is a sound from the environment.
<b>Air conduction =</b>	means introducing pure tone into the ear through air conduction by the use of earphone.
<b>Bone conduction =</b>	means mastoid bone is made to vibrate sound into the inner ear without involving outer and middle ear.
<b>Hearing threshold =</b>	Is the level at which sound is barely heard.

## **Forms of Assessment**

Assessment of pre-school child with hearing problem could be formal or informal, usually carried out by a team that includes the otolaryngologist, audiologist, pediatrician and psychologist. A child suspected of a hearing impairment may be given a number of informal assessments by his parent, teacher and medical doctor. In order to obtain valid hearing test results, there must be some control over conditions under which the testing is performed.

Ideally, all testing should be performed in sound isolated room in which ambient noise is at a minimum.

**An informal assessments which can be easily administered include:**

1. **Watch test** -To give this test one of the child 's ears is blocked with cotton or something that can prevent hearing through that ear; a watch is held close to the other ear, and then it is slowly moved away until the child is no longer able to hear the tick. The point at which the child is no longer able to hear is noted. The watch may be brought back to the ear slowly so that the child's hearing threshold is established. If the child ceases to hear the tick from a distance of 10 inches, when another child with normal hearing can hear it from a distance of 25 inches, then the hearing loss of the hearing -impaired child is expressed as 10/25.

2. **The whisper test** -In a whisper test is made to the child who is being tested as he stands about 12-18 inches away from the person administering the test with his back towards the latter. If the child cannot repeat what is said to him then the person moves nearer to the child until the latter can repeat correctly what has been said. The distance at which he is able to do this. is compared with the distance a child with normal hearing can hear the whisper.

3. **Turning fork test** - The tester holds a vibrating turning fork near the ear of the hearing-impaired child and notes the latter's reaction. The turning forks may be of different sizes to produce sounds of varying pitch or frequencies. Thus, they may be employed to establish the types and seat of hearing loss (New by, 1972).

**Formal Assessments**

In order to have proper assessment and appropriate educational placement for the hearing impaired children, there must be audiological assessment to ascertain levels of hearing loss by a competent audiologist using an audiometer. There are various methods of assessing hearing levels depending on the age of the child, how co-operative the child is and the availability of instruments for various testing techniques. These include such basic techniques like distraction method for children under 18 months and pure tone audiometry which could be carried out on children over 3 years. Investigation of a hearing loss should be carried out by a competent audiologist using an audiometer.

**The Distraction Test**

According to Ewing (1956), The distraction assessment starts when a child is 2 - 18 months.

The presentation for this test involves four people e.g.

- a. The tester (Audiologist)
- b. The helper (distractor)



- c. The patient (child)
- d. The comforter (parent).

### **Procedure for Distraction Assessment**

The child sits on the lap of the mother in such a way that no part of the body touches the mother's breast. The child should face the distractor who plays with the child. The distractor should ensure that he does not use any sound similar to that of the tester. The audiologist should use these stimuli test e.g.

- High frequency sounds e.g. t, s, k, and
- Low frequency sound e.g b, m.

Drums (low frequency sound).

Bells (high frequency sound).

- Cup & Spoon, to show the child that akamu is ready. How to use it is by calling the name of the child e.g. Ben, Julie etc. The responses to look for during the distraction assessment are: eye blinking, change of facial expression, smiling, crying, frowning, sharp and brisk turning of the head towards the source of the sound.

### **Pure Tone Audiometry Test**

Pure tone audiometer is an instrument used to make pure tone measurement which produces a series of tones at different frequencies or (pitch) at 250, 500, 1,000; 2000 and 4,000 up to 8,000 cycles per second. The intensity of volume of sound can be varied and is measured in decibels from -10 to 100 or 110. On this scale, 0 is the point at which a normal young adult would just begin to hear. A series of tones varying in frequency (pitch) and intensity (loudness) is presented to the person being tested through earphones over his ears. He is required to indicate when he hears. The results are plotted on a graph (audiogram), to show his hearing acuity in terms of the various frequency and intensity-levels. In examining hearing, the audiologist tests both ears by both air and bone conduction. The air-conduction testing is accomplished through ear phones, whereas bone conduction is tested by pressing the outer and middle ears and testing directly with a bone vibrator placed at some point on the skull through the mastoid vibrator. The results obtained from this testing are expressed as an audiogram such as that shown in appendix 2. The upper horizontal lines (along the abscissa) represents normal hearing at each frequency levels that were being tested. The horizontal lines below it (along the ordinate) show intensity (loudness) levels of the test tones as expressed in decibels. The clients hearing loss in each ear is charted across this grid in terms of both air conduction and bone conduction. By inspecting this audiogram we can determine how much of a hearing loss the clients shows for each of the frequencies being tested.

## **Speech Audiometry**

Although the pure tone audiometer can provide a fairly accurate evaluation of hearing loss, the hearing handicapped individual's problem lies in his comprehension of speech. Speech audiometers and testing procedures have been devised to determine how loud simple speech must be before the person can understand it. There are two tests which are almost universally used for this purpose. These are the speech reception threshold tests (SRT) which employ spondee words and speech discrimination tests which use lists of single syllable words spoken in isolation. (see appendix 4)

### **Speech Reception Threshold**

The speech reception threshold (SRT) is the faintest intensity at which the patient identifies 50 percent of the words and repeats them correctly. Since the speech frequencies are mainly from 500 - 2000Hz, then the SRT should correspond quite closely to the average pure tone air conduction threshold at these three frequencies i.e. 500, 1000 and 2000Hz. Thus, one function of SRT in the audiological test battery is to serve on the reliability of pure tone responses. SRT can be presented by using live voice which is the use of a microphone and the tester's own voice, or with the use of pre-recorded materials on records or tapes. The major advantages of using pre-recorded materials is that each test is presented exactly the same, making for more comparable results between patients. Live voice SRT can be reliable as long as the words are spoken with equivalent volume to the microphone. (see appendix 5 & 6)


### **Speech Discrimination**


It is very important to find the faintest level at which a person hears speech and how accurately he hears it. Thus, a test for speech discrimination has been established in which one syllable words are presented at this most comfortable level. The information obtained from a speech discrimination test allows predictions to be made, with regard to the severity of a communication deficit and the outcome of rehabilitation efforts, as well as aiding in differential diagnoses. There are many discrimination tests, which provide the clinician with a variety from which to choose. Certain variables, however, influence speech discrimination. For example the recordings, the familiarity of word, the dialect of the talker, as well as the listener, the presentation level, etc. all affect the test results (New by 1972). (see appendix 5 & 7)


### **Symbols used in recording pure tone**

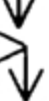
RED is used for the right ear	-	R/E
BLUE is used for the right left ear	-	L/E
O (RED) -means response in the right ear	-	R/E – A/C
X (BLUE) -means response in the left ear	-	L/E –A/C
< (BLUE) means response in the left ear	-	L/E – B/C
> (RED) Means response in the right ear	-	R/E – B/C

**Note:** -An arrow in audiology means no response (N/R)

 (RED) - No response in the right ear R/E - Air conduction -A/C

 (BLUE) -No response in the left ear L/E - Air conduction -A/C

 (RED) - No response in the right ear B/C - Bone conduction - B/C.

 (BLUE) - No response in the left ear L/E - Bone conduction B/C.

## **ACADEMIC ASSESSMENT**

Academic Assessment means finding out the weaknesses and strengths of a child's achievement in his subject areas and learning styles. The basic aim of assessing the hearing impaired child in his academic performance by the specialists, is to help him and his parent, teachers and all those related to him in some ways. The examination may be needed for admission into a certain school, class, or facility. He may be failing in his school work, or he may be having emotional problems with his peers.

Assessment of a hearing-impaired child may provide a more complete understanding of the individual by their teachers through the child's academic performance. Peter (1965) stated that a final requirement of special teaching is assessment of the individual learner. This requires assessment of his general development as a person, of his abilities and present levels of attainment, and in cases where learning is very difficult, a more detailed examination of strength and weaknesses. \*

At times, the results of psychological and other examinations are available but whether these are available or not, the observations of the teacher are basic to assessment. It can be related to the knowledge of what is normal for the children's age or stage of development and are also considered along with other information about the child's home circumstances, medical record and previous school history. In some schools, the observations of several people who know the child are discussed at a case conference and conclusions reached about the different kinds of experience and teaching required. This prescriptive teaching in which all information is utilized for devising teaching produces to yield desirable changes in the child's academic progress, emotional condition and social adjustment.

Finally, the results from all the assessment discussed so far by the auduologists, will help him to determine appropriate placement and method of educational instruction for the hearing impaired child in the inclusive educational setting.

## **RECOMMENDATIONS**

Based on the issues discussed in this paper and for sound improvement and appropriate educational placement of hearing impaired children, the following are some recommendations:

- Children with hearing problems should be taken to the hospital by

their parents as soon as the problems are noticed.

- Classroom teachers should be able to refer parents to the appropriate persons for help.
- Early audiological assessment should be carried out as soon as sign of hearing problem is suspected by the parents or teachers.
- Teachers should plan their works in such a way that it will meet the needs of each child group of children and help each child develop the compensating skills he needs because of his situation.
- Government should initiate public awareness programme for parents who have hearing impaired children that require early childhood audiological assessment.
- Intensive health education to prevent deafness must be carried out by both the private organisations and government.
- Talks, over radio and television, to discuss the problem of the hearing impaired and where they can get help must be arranged.
- Social workers should visit homes of young mothers whose children are born deaf or at a risk of being deaf. This may encourage early detection.
- More audiology centre must be created and with qualified specialists.
- There is need to train more specialists in the field of audiology.
- Federal and State government should try to provide adequate funds for hearing problems.
- Audiological services should be extended to public schools.

## CONCLUSION

Communication and language play very important roles in the development of a child. While the child with normal hearing progresses in all aspects of development, a hearing impaired child is likely to show some signs of retardation in the development of other areas. Language also plays an important role in the socialization of children. For learning to be pleasurable, to avoid failure experiences, to reduce problems of lack of early language development on the over all development of the hearing impaired child and for appropriate school placement, an assessment for the hearing impaired has become necessary.

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