

## **Chapter 41**

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# **MULTIDISCIPLINARY APPROACH TO SERVICE DELIVERY IN AUDIOLOGY**

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### **Introduction**

Hearing is a very important asset of man. Loss of it creates a lot of psychological and emotional problems. Hence the practice of audiology helps in solving many of the problems encountered by persons with hearing impairment. According to Pollack (2000) audiology service is very capable of reducing many of the communication problems that commonly accompany hearing impairments. Audiology is a true means of rehabilitating and habilitating those with hearing impairments. It further helps in the development of speech and fitting of hearing aids to enhance communication, because incidences and prevalence of hearing impairments cannot be controlled without the involvement of audiological service.

Despite the little awareness of the need for audiological service and its importance to the hearing impaired persons a systematic evaluation of audiological service being carried out for hearing impaired children have proved adequate, for there are insufficient hearing diagnosis equipments and the professional audiologists such as clinical and educational audiologists, are few.

### **CONCEPT OF AUDIOLOGY**

Audiology is the study of hearing disorder and the rehabilitation of hearing problem. It also involves the identification and measurement or diagnosis of hearing problems as well as the study of remediation procedure to

overcome the defect of hearing loss of an individual. Similarly, audiology can be seen as the means of measurement, testing appraisal, prediction, consultation, counseling instruction and research related to hearing and disorders of hearing for the purpose of modifying communication disorder involving speech, language, auditory behaviour or other aberrant behaviour related to hearing loss. (James 1999).

Audiology is better described as a body of knowledge that relates to hearing treatment and management of hearing disorders. Bakare (1992) refers to audiology as the science of hearing and the study of the auditory process. In other words, audiology is concerned with both normal and impaired hearing with emphasis on impaired hearing.

Supporting this view Newby (1999), explain that the concept of audiology is the study of hearing and hearing disorders. The importance of hearing cannot be over emphasized because communication is facilitated through the medium of hearing. Audiology also embraces a broad field involving different specialists and professionals with varied knowledge and status. The quality of professionals affects the quality of audiological service. Certification is desirable in the practice of audiology to preclude incompetence. Professional audiologists are concerned with the identification, measurement of hearing loss and the rehabilitation of individuals with hearing impairments.

Pollack (2000), asserts that the word audiology as a field of study came into existence after the Second World War. The interdependence nature of specialist of speech pathology and otology demands cooperation of these two fields through joint efforts. This underlines the emergence of audiology carried from two different fields. (otology and speech pathology). Therefore audiology is an offspring of the two disciplines.

Audiology is not essentially medical but so wise in the sense that most qualified audiologists are graduates of the departments of audiology in universities and not graduates of medical colleges.

In the same view, audiology is the determinant of the range, nature and degree of hearing loss including referral for medical or other professional attention for the habilitation of hearing (Newby 1999).

## **Significance of Audiological Service**

Audiological service is very important because it involves physical examination of the ear canal, such as determining whether or not there is a problem or problems affecting either the physical condition of the ear or the functional status of the ear (hearing). It also involves medical treatment and rehabilitation of individuals with hearing problems including referral for educational placement, vocational placement, social integration, psychological adjustment intervention, family counseling, hearing aids assessment and fitting, and helps prevent the occurrence of future deafness in children. The service delivery system includes: identification, assessment of hearing loss, prescription of appropriate hearing aids, provision of educational facilities to the hearing impaired and appropriate educational placement. The provision of these services are aimed at efforts directed towards providing the hearing impaired children with the necessary skills and ability for effective communication and language development with which to live in a hearing world. Provision of audiological services to hearing impaired persons makes them become society conscious by interacting freely with the hearing peers and enhances moving closer to the hearing community through social interaction.

The provision of audiological services will prevent the hearing impaired from becoming social nuisance. It will also remove his deafness stigma for the audiologist will provide him with useful information that will make him feel belonging and be socially adjusted.

With adequate audiological service, the hearing impaired person could acquire a natural and desirable use of language just as a hearing person. The end results of effective rehabilitation through provision of audiological service will be a greater and stronger ability to communicate, a keener interest in talking and being talked to, an increasing ability to make use of their residual hearing and a greater resort for pleasure and self improvement. Additionally, the audiologist, is in position of placing the deaf individual in the correct or appropriate educational placement that is unique and benefit his special needs, thereby making education more meaningful to him. With the correct hearing aids prescribed to the deaf individual he/she earns a good job and become a tax payer instead of tax eaters, thereby contributing to the community and nation's development. Therefore, it is paramount that hearing impaired persons in any society

should not be neglected but be provided with opportunities to make them useful, not only to themselves but to the society.

### **Audiological Service Delivery System**

The audiological service delivery to the hearing impaired persons are as follows:

#### **a. Identification**

One of the importances of audiological service is the identification of hearing impaired persons in order to facilitate rehabilitation. The process of identification is done through screening, either through observation by parents before and or after the child has gained an admission into the school or by the teacher and the school administrators. The aim of identification is to find out the hearing condition of person for on-ward remediation, prevention or improvement. The result or outcome of identification give rise to either medical or educational intervention.

#### **b. Hearing conservation**

Audiological service helps design a programme (hearing conservation) that educates people on how to care and protect their ear from noise, for excessive noise could lead to deafness.

The hearing loss awareness education program is conducted and tips for prevention are recommended. This can be done through in-service training programmes for teachers, television and radio programmes for the public, enlightening them on the dangers and prevention of loud noise.

#### **c. Assessment of hearing loss**

The importance of audiological service here is that a comprehensive audiological evaluation of hearing impaired persons are carried out and this include the assessment of puretone, freefield, distraction and central auditory functioning. This type of assessment helps in discovering other related problems which might limit the ability of the person to learn. The results of the assessment are also used to make appropriate referrals.

#### **d. Application and use of other assistive technology**

In modern audiological practice, dispensing of hearing aids is one of the major audiological service provided. However, its importance is to

ensure that all hearing aids and other assistive devices are available and are in good working condition. The hearing aids help to bridge the communication gap between the hearing impaired and the hearing. It also helps to improve hearing and facilitates language development.

***e. Educational planning and support***

Audiological services are important in providing educational support and planning in the school setting. The result of audiological evaluation is used to recommend appropriate educational placement for hearing impaired persons. It gathers statistical records of those with hearing impairment by age, sex, and location. Additional support is provided to school teachers and administrators dealing with hearing impaired persons to make their tasks easier and faster.

***f. Direct rehabilitation and habilitation services***

Audiological services provide rehabilitative services to hearing impaired persons. These services include, speech reading, communication strategies, use and care of amplification, listening skills and audiology training. Without doubt, these skills would help the hearing impaired persons in both academic and social adjustment activities.

***g. Family support***

It is generally believed that the education of the child starts with the family at home. It is advisable then that, the parents should be fully educated on audiological services so that parents and the teachers can liaise to design and plan educational programmes (s) for their hearing impaired child. The parents of the child would be useful in giving a detailed case history of the child and all his activities so that the child can be fully assisted in the school based on the information given by the parents. When provided with some form of rehabilitation measures it will also go a long way in reducing psychological problems that most families do encounter.

**Multidisciplinary team Approach to Service Delivery in Audiology**

In providing audiological services for persons with hearing impairments the audiologist needs to liaise with different professionals in other fields to enhance appropriate educational placement and for effective management of persons with hearing impairments.

***The multidisciplinary team include the following:***

\* **Parents/Teacher:** Parents or teachers are the first persons to detect or notice the hearing problems of the child thereby referring him to the nearest hospital for necessary actions. This is done by providing case history information of the deafness to the audiologist.

\* **Psychologist:** Is one who deals with the emotional problem of the hearing impaired children. His/her feelings towards society are put into consideration so that the impairments will have lesser emotional effects on the hearing impaired individual. He is a supportive personnel and non-medical specialist in the field of audiology.

\* **Audiologist:** Is a trained professionals in the field of audiology whose primary assignment is in the identification, diagnosis and measurement of hearing loss, prescription of appropriate hearing aids, and rehabilitation of those with hearing impairment. This is usually done by conduction of various hearing test within the aid of an audiometer. (Electronic machine specifically design to measure hearing levels).

• **Speech pathologist:** Is concerned with the diagnosis and treatment of individual with speech disorder or oral language defects which hinder fluent communication. This medical specialist corrects the speech defect of hearing impaired persons in audiology clinic. This is done through speech training and the client is expose to varieties of sound and frequency words through the machine.

• **Otologist:** Is concerned with the diagnosis and treatment of individuals who have ear diseases or disorders of hearing mechanisms.

• **Educational Audiologist:** Is a specialist who practices the profession of audiology in the school setting. He is in charge of clinic in the school, give useful suggestion on how to manage the hearing impaired children in the class/school, recommend appropriate educational placement, auditory rehabilitation, sign language and counseling.

• **Otolaryngologist:** Is a medical doctor that is responsible for diagnosis and treatment of ear, nose and throat (ENT). Even though this specialist may not be in audiology clinic, he performs a complimentary role (surgical operation on the ear, nose and throat), in a recognized or reputable hospital. The hearing impaired is also given appropriate medication depending on the nature and degree of disability of hearing-

impaired child.

\* **The teacher of the deaf:** At the end of audiological tests and evaluation, the audiologist plans educational programmes with the teacher for the deaf child. The teacher can be taught how to manage the deaf child in class, if he is not a specialist in the field.

### **Management of Audiology Clinic/Audiologist's Preparedness**

Audiology is not just an academic discipline, it is a full profession and there are rules and regulations governing the practitioners. Furthermore, like the legal or medical professions to cite a few, the practice of audiology is controlled by some professional bodies. That is to say that in addition to the academic qualifications of first, second and doctoral degree, the audiologist must possess professional qualification and be licensed to be able to practice as a professional audiologist.

#### ***The role of the professionals bodies include the following:***

1. Setting of standards, rules and regulations governing the practice of audiology
2. Accreditation and supervision of audiology clinics
3. Issuance of professional certificate and license to qualified members.

In Nigeria, the Nigerian speech and hearing association (NISHA) is in charge of professional matters affecting the practice of audiology and speech pathology. The association (NISHA) was formed in 1987 by a group of practicing audiologists and speech pathologists, with professor C.A Bakare as the first president. The association holds its meetings at the department of Surgery, E.N.T. Unit, College of Medicine, Idi Araba, P.M.B. 12003 Lagos. It is of course a registered association.

#### ***The objectives of the association include the following:***

1. To set up standard for the practice of speech pathology and audiology in the country.
2. to liaise with universities and update the curricular on speech pathology and audiology from time to time.
3. To examine and award professional certificates and license to qualified and competent members.

4. To bring together audiologists and speech pathologists for the improvement of the profession and care of people with speech and hearing problems in the country.

Since inception, the Nigerian Speech and Hearing Association (NISHA) has been gathering momentum. Members have been coming together from time to time in pursuing the laid down objectives. Some members have been awarded certificate of clinical competence (C.C.C). Similarly, some audiology and speech clinics have been inspected and approved for private practices. Because of the observed shortcomings in the academic curricular for the training of audiologist in the universities, the association has started the review and updating of the university programmes with a view to bringing them to meet the present challenges in the field. When completed, the programme will make provisions for graduands to observe one year internship in either an approved clinic or a hospital setting. It is also expected that the final degree for a graduand is the doctor in audiology (AUD). This is to bring the training of audiologists in Nigeria in line with what operates internationally. In the United State of America, for instance, the doctoral degree in audiology (AUD) has replaced the doctor of philosophy (Ph.D) in audiology.

The Implication of this change is that the curricular also has undergone some amendments right from the undergraduate level. The focus is not on the production of a complete audiologist. When the Nigerian Speech and Hearing Association (NISHA) completes the curricular development, audiological training in Nigeria will be based in either college of medicine or in a separate department referred to as communication disorder or department of speech pathology or audiology.

Membership of the Nigeria Speech and Hearing Association (NISHA) is open to full time certified audiologists and speech pathologists. Others are people with allied and related training as well as students pursuing courses in audiology and speech pathology. Membership is classified according to the level of qualification; thus:

1. Students membership – students who are pursuing course in audiology and/or speech pathology
2. Associate membership – people with Bachelor Degree, Certificate or Diploma in Audiology and/or speech pathology.

3. Full membership –people with the Master Degree and above in Audiology and/or Speech Pathology.

Furthermore, the possession of the requirement required by the established body (NISIA) controlling the practice of Audiology, one can establish his audiology clinic with the issuance of Certificate of Practice Timothy (2000).

### **Equipment Necessary for the Establishment of An Audiology Clinic**

For a professional to establish an audiology clinic the following necessary equipment are needed:

1. ***Sound Treated Room***

A sound treated room is an important requirement in setting up an audiology clinic because audiologic tests are carried out in a sound treated room. When audiologic tests are carried out in a noisy environment, the results are usually invalid, therefore with the sound treated room the level of the noise will be controlled which in turn provides a valid result. The room is acoustically treated to avoid noise or a commercially built sound room is purchased.

2. ***An Audiometer:***

Is special equipment required for the operation of an audiology clinic. Audiometers are of various types and should be purchased based on the functions and purpose of the clinic. It is used for the testing of hearing.

The different types of audiometer are as follows:

- a. *Screening audiometer* – Which is used for testing the air conduction (A/C) threshold only and it has a limited frequency/intensity range.
- b. *Diagnostic audiometer* – It is used for air conduction and bone conduction (A/C, B/C) testing and has a facility for masking.
- c. *Clinical and research audiometer* – Is very versatile and can be used for many or all the different tests. This test includes, pure tone, bone conduction, freefield audiometry, and distraction test. These tests are made for both adult and children alike to determine hearing threshold and degrees of hearing loss.

3. ***Otoscope***

It is a device, which is used in examining and detecting the disease of the middle ear.

#### 4. *Impedance Bridge And The X – Y Plotter*

It is an equipment used to assess the status of the middle ear. It is also of two types, screening and clinical diagnostic type.

#### **Recommendation**

The following recommendations were made based on the discussion above.

1. There should be public awareness programme to enlighten illiterate and literate people on the importance of audiology service to persons with hearing impairments.
2. Parents of the hearing impaired children should endeavour to take their children to hospital immediately when any hearing problems are noticed.
3. Regular workshops, seminars, training/retraining program should be organized for professionals as a refresher course and work out modalities on improving the qualities of services available.
4. Government should exempt audiological equipment from custom duties due to the high cost of equipments imported. This will go a long way in subsidizing the cost of services thereby giving access to the less privileged to acquire the services easily.
5. Provision of audiology unit by the government in every hospital and school is essential. This will go a long way in helping the less privilege and reduce the occurrence of hearing impairments.

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