



ORIGINAL ARTICLE

Result of consistent use of hearing aid in speech and language development.

Ayub Musani¹, Faheem Ahmed Khan², Shaista Naz³, Aqeel-ur-Rehman Hameed⁴, Asif-uddin Abbasi⁵, Farhat Jafri⁶

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ABSTRACT... Objective: To determine the benefits of proper guidance and proper use of hearing aid in language development age. **Study Design:** Descriptive Cross-sectional study. **Setting:** Department of ENT, Abbasi Shaheed Hospital and Karachi Medical and Dental College. **Period:** January 2022 to December 2023. **Methods:** In this study those cases were included which came with hearing loss. Both sexes were included in this study. After informed consent complete history and examination was done. Also relevant investigations were performed where required. **Results:** In this study, male were 72 (60%), male female ratio was 1.5:1. Highest number of patients were between the age of 6-8 years 60 (50%). Between 1.5 to 3 years, 51 children were properly guided and followed the proper instruction of use of hearing aid while 9 children were not properly guided and not properly used of hearing aid. 92 patients (76.6%) used hearing aid consistent with proper guidance, in which 79 (85.8%) children developed good speech and language. while 13 (14.1%) children were found poor in speech and language development while 28 (23.33%) children did not use hearing aid properly and all found poor in speech and language. **Conclusion:** Proper use of hearing aid which may be beneficial in improvement of word recognition and speech development in hearing impaired child under proper guidance and training from otologist and audiologist.

Key words: Amplification Device, Deafness, Hearing Aid, Hearing Loss.

INTRODUCTION

Hearing impairment is one of the major problems globally. Hearing impairment affects the quality of day to day life, behavioral, emotional employment status.¹ Communications plays important role in maintaining relationship with family and family. Hearing defect in children is a serious concern for families and children. According to WHO findings about 34 million children were presented with hearing impairment and most of the cases are treatable.² Hearing problem is the second most cause of disability.³ In Pakistan 13 per 1,000 live births compared to 4 per 1000 birth worldwide.⁴ Both vision and hearing senses have a vital in psychological growth and behavior. In third world countries, about 10 infants with decreased hearing in every 1000 birth.⁵ Hearing problem is one of the major problems of the third world countries.^{5,6} Hearing impaired child is at higher risk in speech – language development and weak in academic activities as compared to normal hearing child.⁷ Critical age in the development of speech and

language between 3-5 years. Poor hearing threads to develop poor speech and language which affects the normal quality of life in long term.⁸ Hearing impairment effects in academic, social and later in occupation.⁹ The hearing loss are of three types conductive, sensori-neural and mixed type. Conductive hearing may be due to loss due to pathology in outer or middle ear while in sensori-neural hearing loss may be due to damage hair cells (sensory receptors cells) or nerve.¹⁰ In mixed type both conductive and sensori-neural hearing loss present.

Most of the cases of hearing impaired are treatable if timely detect and early intervention. Proper newborn hearing screening procedure and early intervention may be helpful in language development. In this condition do subjective test and objective test. Subjective test depends upon the response of the patient and in objective test no need of patient response. Neonatal screening test are helpful in early detection of hearing

1. MBBS, DLO, FCPS, Professor ENT, KMDC /Abbasi Shaheed Hospital
2. MBBS, DLO, FCPS, Diploma Speech and Languages Pathology, Assistant Professor ENT, KMDC /Abbasi Shaheed Hospital
3. Ph.D Special Education, Assistant Professor Special Education, Karachi University
4. Master in Audiology and Speech Pathology, Audiologist ENT, Abbasi Shaheed Hospital
5. MBBS, DLO, MS, Consultant ENT, Abbasi Shaheed Hospital
6. MBBS, MPH, DPA, Professor Community, Karachi Medical and Dental College, Karachi.

Correspondence Address:
Dr. Faheem Ahmed Khan
KMDC/ASH.
fahimk1@hotmail.com

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loss in which include otoacoustic emission and BERA. If detect hearing problem, audiological rehabilitation consider one of the most effective way to improve hearing. Amplification device plays a vital role in aural rehabilitation. Residual hearing is required to use hearing aid. Now a day digital hearing aid is available to improve the quality of life.

Hearing Aid minimize this problem and useful in communication in daily life.¹¹ Hearing aid is a small electronic device that sounds louder so person can hear, listen and communicate in daily activities. Hearing aid consist of microphone, receiver, amplifier and battery. Microphone receives sound and convert into sound waves, this sound then change into electrical signals. Hearing aid shows better result in developing of speech especially in sensori-neural hearing loss.¹² Early advice and proper use of hearing aid shows better result in development of language.¹² But sometime child miss this opportunity due to lack of proper instruction to use hearing aid and language instruction, proper follow-up, lack of interest from family and inconsistent use of hearing aid, cost issues, poor infrastructure, logistic constraints, time consuming limited access to health care units.¹³

Data shows that tremendous increase in purchasing of hearing aids but no data available on outcome of it uses.¹⁴ Otologist, audiologist and speech therapist play important role in development of language and speech, but no study available in detail. Current study was to determine the outcome of consistent use of hearing aid in language development.

METHODS

This study was conducted in Otorhinolaryngology department of Abbasi Shaheed Hospital and Karachi Medical and Dental College. This study was conducted from January 2022 to December 2023. Approval for the study protocol was obtained from the institutional Ethics protocol was obtained from the institutional Ethics committee/ institutional review board with reference no: 052/19 dated 11/02/2020. After informed consent complete history was taken

in which included pre-natal, peri-natal and post natal problems. Complete examination was done in which include ENT examination and systemic examination. Relevant investigations were performed where required. Children came hearing loss were included in this study. History of previous ear surgery, age above 4.5 years, conductive hearing loss improved after treatment, profound hearing loss and mental retarded were excluded from this study. After fulfill the selection criteria, patients advised hearing amplification device. Patients called for follow-up and observe language development and compare the result of consistent use of hearing aid and inconsistent use of hearing aid.

Inclusion Criteria

Children with hearing loss.

Exclusion Criteria

Previous ear surgery
Above 4.5 years
Conductive hearing loss improve after treatment.
Profound hearing loss

RESULTS

Total number of patients selected for this study were 120 patients. Male were 72 (60%) and female were 48 (40%). Male female ratio was 1.5:1. Highest incidence was noted between 1.5 to 3 years of age 60 cases (50%) followed by 0-1.5 years 36 cases (30%). Between 1.5 to 3 years, 51 children were guided and followed the proper instructions of use of hearing aid while 9 children were not properly guided and not properly used of hearing aid. Between the age of 3-4.5 years, 23 patients were properly guided while 13 patients were not properly instructed regarding the use of hearing aid. 0-1.5 years of age, 23 patients used hearing aid properly while 13 patients did not use hearing aid properly. 92 (76.6%) used hearing aid properly and follow the proper guidance of doctor and audiologist, in which 79 (85.8%) developed good speech and language development while 13 (14.1%) children were found poor in speech and language. 28 children (23.3%) were not properly guided and were not using hearing aid properly. All in-consistent user of hearing aid found poor in speech and language development.

Gender

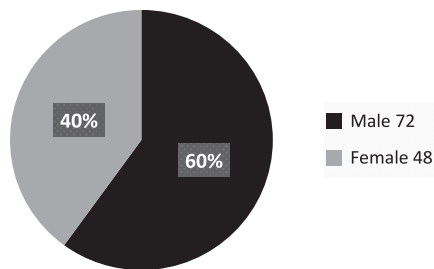


Figure-1. Gender

Age

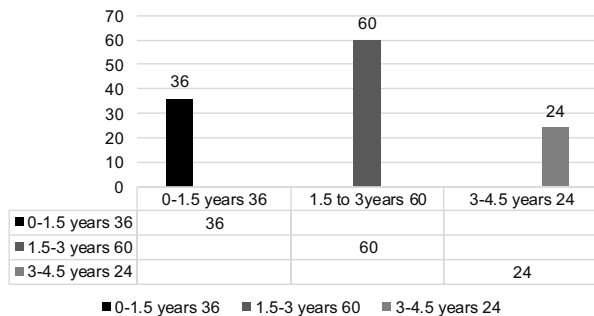


Figure-2. Age

Age	Properly instructed	Not properly guided
0-1.5 years	23	13
1.5-3 years	51	9
3-4.5 years	18	6

Table-I. No. of Patients=120

	Total No. of Patients	Good Effect in Language Development	Poor Effect in Language Development
Consistent use	92 (76.6%)	79 (85.5%)	13 (14.1%)
In-consistent use	28 (23.3%)	Nil	28 (100%)

Table-II. Outcome of Hearing AID

DISCUSSION

Hearing loss causes poor effects in the daily routine life.¹⁵ Hearing impairment in school going children is a common problem which usually ignores by general practitioner. This affects the ability in spoken language.^{16,17} Hearing Aid minimizes this problem and useful

in communication in daily life.^{18,19} Hearing aid is a small electronic device that sounds louder so person can hear, listen and communicate in daily activities. It wears in or behind the ear. Primary school children use behind the ear hearing aid while older children have the option behind of a behind the ear or custom hearing aid.²⁰ The amplifier increases the power of signals and send signals to the ear through speaker. Hearing aid is useful in hearing and speech comprehensive of hearing loss people.

This study tried to determine the role of Otolaryngologist and audiologist in proper use of hearing aid and get maximum benefits of hearing aid in development of speech and language in children. Boys affected more as compared to female with 1.5:1. Highest incidence was noted between 1.5 to 3 years of age 60 cases (50%) followed by 0-1.5 years 36 cases (30%). Between the age of 3-4.5 years, 23 patients were properly guided while 13 patients were not properly instructed. 0-1.5 years of age, 23 patients used hearing aid properly while 13 patients were not using hearing aid properly. Consistent use of hearing aid after proper guidance were noted more beneficial in speech and language as compared who did not use amplification device regularly. 92 (76.6%) patients used amplification device regularly and follow the proper instruction. They were informed benefits of proper use of hearing aid. In which 79 (85.8%) patients developed better speech and language and perform normal daily life activity. Main reason was proper instruction given from otologist and audiologist regarding use of hearing aid and they follow the proper instruction of otologist and audiologist. 13 (14%) patients had defects in speech and language. 28 (23.3%) patients did not use hearing aid properly and all have poor in speech and language development. They were not properly informed or not follow the proper instruction of Otolaryngologist and audiologist; they were poor in speech and language development and felt difficulty in routine daily life. Detailed history found parents and children were not informed about proper use of hearing aid device or not follow the proper instructions. They did not used hearing aid properly. Regular use of hearing aid device

showed good in word recognition and speech development as compared to those who were not using device regularly. All in-consistent use of hearing aid had poor speech and language. Gelfand found unaided significantly decrease in word recognition performance as compared to aided ear.²¹ Griamault study showed better results for prolongs use of hearing aid.²² Prolong use of hearing aid in children found greater improvement in word recognition and speech development as compared to unaided ear.²³ The main function of Hearing aid is to increase sound level above the patient hearing threshold.²⁴ The use of hearing aid develops better speech and language.²⁵ Study showed with time word recognition ability is declined in poor ear when no amplification device is used as compared who wore amplification device.²⁶

Otolaryngologist and audiologist play important role in advising hearing aid and development of speech. Otologist timely detect the hearing problem, counsel the parents as well benefits of proper use of hearing aid. Role of Audiologist has also a beneficial role, i) to find the type and severity of hearing loss ii) counseling about this problem because most of the parents are not accepted this problem iii) fitting of hearing aid properly. But unfortunately, most of the centers not properly guide the parents about the proper use of use aid and children show poor performance in language development. Whenever hearing impairment diagnose, responsibility of the otorhinolaryngologist and audiologist should be guided properly and inform the benefits of the use of hearing aid. On the other hand, it is also the responsibility of the parents to follow the proper instruction of otorhinolaryngologist and audiologist.

CONCLUSION

In conclusion, Otologist and audiologist play an important role in proper use of hearing aid which may be beneficial in improvement of word recognition and speech development in hearing impaired child. Most of the patients are not properly guided and not using hearing aid properly. They fail to develop proper speech and language.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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
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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Ayub Musani	Final approval, Conception, design, article review.	
2	Faheem Ahmed Khan	Collection of data, drafting of article conception & design.	
3	Shaista Naz	Final approval, Conception, design, article review.	
4	Aqeel-ur-Rehman Hameed	Analysis and interpretation of data.	
5	Asif-uddin Abbasi	Drafting of article & interpretation of data.	
6	Farhat Jafri	Interpretation of data, Revision.	