Journal of Inclusive Education
Vol. 3, Issue 1, 2019, 97-110

Speech Language Therapy in Special Schools of Punjab: A Study of Auditory Profiles of Children with Hearing Impairment

Hina Noor[1]
Nasim Akhter Raja[2]

Abstract

Speech therapy services are targeted to develop auditory skills in children with hearing impairment (HIC) that may reflect their verbal communication potentials. The study aimed at exploring the current provisions to speech language therapists (SLTs), speech therapy practices and auditory profiles of HIC through a survey of public special education institutions of the Punjab. Cluster sampling was used to collect data from SLTs working in the special education institutions of all divisions of Punjab, with the help of a self-developed questionnaire (Cronbach alpha, 0.8). Data revealed that the majority of hearing aid user HIC were not comfortable with their hearing aids. The majority of HIC in junior classes were provided with speech therapy with the frequency of 1-2 sessions per week only. They were at detection and discrimination level of speech perception. The provision of equipment and material to SLTs and their professional practices need improvement. The majority of SLTs recommended reducing the workload and increasing collaboration among rehabilitation professionals and parents. It was concluded that HIC were not getting maximum benefits from available provisions as reflected by their auditory profiles. The study recommended that improvement and monitoring of speech therapy practices may improve verbal communication potentials of HIC.

Keywords: Children with hearing impairment, auditory skill development, special education, speech language therapy, hearing aid

[1] Lecturer, Department of Special Education, Allama Iqbal Open University, Islamabad, hina.noor@aiou.edu.pk
[2] Dean Faculty of Social Sciences, Foundation University Islamabad, nasimakhtarraja@hotmail.com

Introduction

Hearing impairment is considered to be the most frequently occurring sensory organ deficit in the human population. World Health Organization (2011) estimated that the impairment has increased from 42 million to about 360 million since 1985.Generally the hearing impairment affects the interpersonal communication, psychosocial well-being, quality of life and economic independence of all affected individuals regardless of the ages of those individuals. The extent of damage in both children and the elders with hearing impairment is found to be greatest in the regions of the Asian Pacific, Southern Asia and Sub-Saharan Africa (Olusanya, Neumannb & Saundersc, 2014). The greatest extent of damage is found in the area of speech and language development. Empirical evidence demonstrates that early diagnosis and amplification can dramatically boost the communication skill-building of a child with hearing loss (HIC). Even some studies have concluded that if hearing loss is identified and appropriate intervention is provided at the age 6 months, the ability to use language for communication can be on par with hearing peers. It can be concluded that proper and timely habilitation efforts may bring impressive improvements in the social, emotional, psychological and physical well-being of persons with varying degrees of hearing loss (Kochkin, 2005).

Once the hearing loss has been identified, it is imperative to provide information about all the available habilitation/rehabilitation options targeting the improvement in an individual's communication skills. One should be cautious that amplification devices are not the "cure-all" for hearing loss. Any improvement in communication abilities is the result of a long term rehabilitation process. The provision of amplification devices is only a starting point of this process. The individual with hearing loss should be counseled about having realistic expectations from the aid and making him or her realize that only wearing the aid doesn't guarantee of success in this long process. The success rate depends on the attention, concentration and interest level of the individual as well. Without these elements, listening speech becomes so tiring that typically people with impaired hearing give up and just "turn off" the amplification device.

Aural rehabilitation for hearing-impaired listeners aims at compensating for degradation in the auditory signal from the damaged auditory system to minimize difficulties from the hearing disability and thus, ultimately enhancing communication ability in everyday life.

Improving communication skills of children with hearing impairment (HIC) is the main goal of rehabilitation. For effective communication, improvement in speech perception skill development of HIC and active listening is a pre-requisite. The impact of hearing loss on an individual depends on the extent to which speech perception is affected. Speech Perception is making inferences about language patterns e.g. Phonemes, words, phrases, and sentences used by the speeker (Boothroyd, 1993). Boothroyd (1988) considered the improvement in speech perception as the primary goal of management. Once hearing aids are fitted, it is imperative that the child's listening skills are re-sharpened. This is done through the auditory training of that person. The training is a means by which children with significant hearing loss are taught how to hear, how to listen, how to understand the language of normally hearing persons and how to effectively speak the same language. As a result, the deaf child is no longer relegated to a world of silence and illiteracy.

Audiologists and Speech-Language Therapists (SLTs) work together to help aural rehabilitation client as shown in the following figure 1.

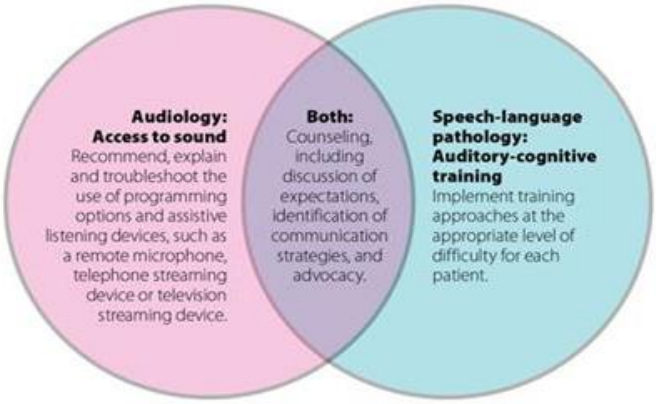

Figure 1: Areas of working of Audiologists and Speech Therapists (Ray, 2017)

Speech-language therapists/pathologists work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults. Speech therapy services mainly cover the training of hearing impaired for auditory skill development reflected through their verbal communication potentials. To obtain insight into the current speech therapy provisions and practices and auditory profiles of HIC, a survey was conducted in public special education institutions of Punjab. The survey was designed

to analyze the effectiveness of the current provisions in special education centers/ schools/ institutions.

Objectives

The main objectives of the study were:

1. To explore the current speech therapy practices and provisions for auditory skill development of HIC.
2. To overview the auditory profiles of HIC as an output of speech therapy services.

Methodology

Design: The study was descriptive in nature. It was a survey with the following research design.

Participants: SLTs working under Punjab Directorate of Special Education and the children provided with speech language therapy were the target population of the study. Cluster sampling was used to select the sample institions from one hundred and sixty-one Punjab government special education schools and centers for children with hearing impairment. Twenty-seven special education schools and centers were randomly selected from all nine divisions of the Punjab and three degree-colleges for HIC located in Punjab were also included in the sample, thus making a total of thirty sample institutions. SLTs working in the selected sample institutions were contacted to provide the data about their practices and the HIC getting speech language therapy from SLTs.

Instrument: A self-developed questionnaire was used to collect the information about:

- Demographic of SLTs
- Currently available provisions to the SLTs
- Current professional practices of SLTs for aural rehabilitation of HIC
- Listening skill development of HIC
- Problems faced by the SLTs and their recommendations

A pilot testing was carried out in the National Special Education Centre for HIC Islamabad before mailing the questionnaires to thirty randomly selected special education institutions. The questionnaire's reliability via Cronbach alpha was found to be 0.80.

Results

Out of thirty, only twelve questionnaires were received back due to the shortage of professionals in the department. Seats of SLT's were allocated only in the centers of the Punjab government and in the institutes previously run by the Federal Government. Many seats of SLT's were vacant as reported by the Heads of the Institutes. So the response rate of the mailed questionnaires was 40% through which a valuable data about 192 HIC was also obtained.

Demographic Status of SLTs

It was found that the majority of the SLT's were young female graduates appointed on a regular basis and having 1-3 years' experience as shown in table 1 and 2 below.

Table 1
Age, Gender and Employment Status of the Speech Therapist

Age range and gender	%	Nature of employment	%
26-30	66.7	Contract	16.7
31-35	33.3	Regular	83.3
Male	16.7	employed as SLT	75
Female	83.3	Not as SLT	25

Table 2
Educational level and Experience of the Speech Therapist

Qualification	%	Experience	%
Masters	66.7	1-3 years	83.3
M. Phil	16.7	7-9 years	16.7
Ph. D	16.7		
Total	100	Total	100

Material and Equipment Provided to the SLTs

The majority of the SLTs had the material required for intervention services but not provided with the material needed for the assessment. They were provided with a speech therapy room equipped with appropriate furniture and Hearing Assessment Tools (HATs) to be used with HIC. One-third of the SLTs were also provided with a sound-treated test booth and recording equipment. However, the majority of the SLTs were not having personal computers for record-keeping**.** Data regarding

different facilities provided to the speech therapist are summarized in Figure 2 below.

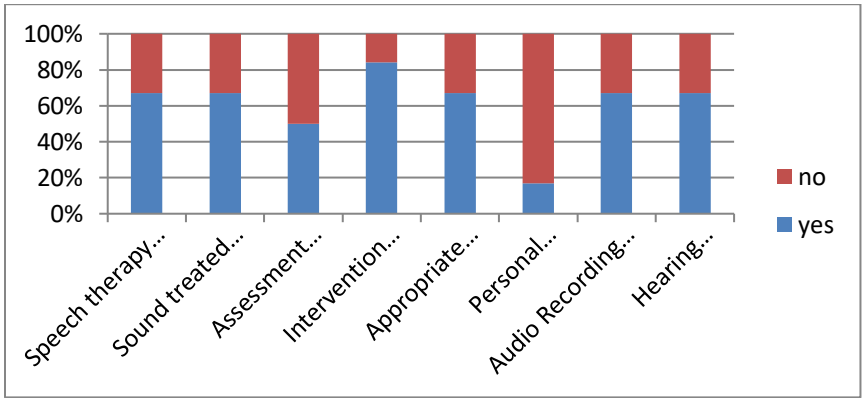

Figure 2: Available Provisions to the Speech Therapists

Current Professional Practices of SLTs for Aural Rehabilitation of HIC

The majority of SLTs were taking case histories and detailed speech and language assessments of HIC. Half of them were updating their assessment annually, bi-annually and maintaining a record of all current speech therapy targets. But only one-third of them were taking detailed auditory skill assessment of HIC and having a record of all previous therapy targets as depicted in table 3 and 4.

Table 3
Diagnosis of Speech, Language, and Listening Skills of the HIC

Assessment	%	Nature of Test	%
Annual	50	Case history	83.3
Bi-annually	50	Speech and language assessment	66.6
		Auditory assessment	
			33.31

Table 4
Record-Keeping by the Speech Therapist

Record keeping	%	Complete files	%
Current target	33.3	51-70%	16.7
Previous targets	33.3	71-90%	16.7
No response	16.7	Above 90%	33.3
		No response	33.3

Data Related to the Children with Hearing Impairment

It was found that the majority of the HIC receiving speech therapy was studying in junior grades from preschool to class 2 but the majority of such students were receiving only 1-2 therapy sessions per week. The summary of the demographics is given in figure 3 and 4 below.

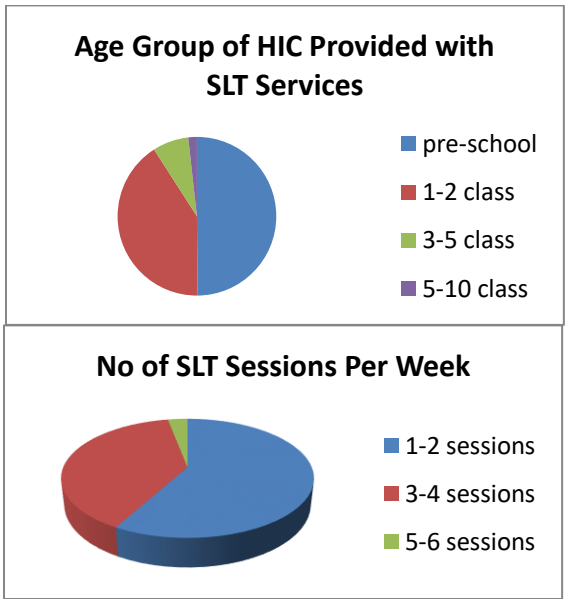

Figure 3: Age Group of the HIC provided with speech therapy in schools
Figure 4: Number of Speech Therapy Sessions per Week provided to the HIC in schools

It was found that the majority of HIC selected by SLT for therapy were provided with amplification devices and the majority were using the body-worn type of hearing aid. It was shocking that 86% of the hearing aid users were not regularly using their aids to get benefit from it as depicted in table 5. The reason behind the improper use of the aid was the discomfort arising while using hearing aids.

Table 5
Provision of the Hearing aid, Hearing Aid Type and Use of Aid by HIC

Provision and type of aid	%	Use of aid	%
Not provided	38.5	Regular	13.5
Provided	61.4	Not regular	86.4
Body Worn	55.9	Comfortable	16.9
B.T.E	44	Not comfortable	83

Auditory Skill Development of the Children with Hearing Impairment

As far as listening skill development when viewed as the output of the provisions and practices of SLTs is discussed, it is evident from table 6 that the majority of the HIC was able to detect environmental sounds as well as speech sounds. The majority was also able to localize the incoming loud sounds, but the majority of HIC could not monitor their hearing aid performance and also could not detect the source of music if present in the environment. The majority of the HIC neither could discriminate between loud and soft nor between the voices of two persons like teacher and student. Although 44% HIC could identify the body parts and their names when called, but only 18% could identify colors.

Table 6
The Listening Skills of the HIC

Listening task	f (can do)	%	f (can't do)	%
Detect environmental sound	104	54.1	88	45.8
Detect speech sound	116	60.4	76	39.5
Localize sound	121	63.0	71	36.9
Monitor aid	84	43.7	108	56.2
Detect the source of music	4	2.0	188	97.9
Discriminate between loud and soft sound	84	43.8	108	56.25
Discriminate two persons' voices	4	2.0	188	97.9
Identify the name	86	44.7	92	47.9
Identify body parts	86	44.7	92	47.9
Identify colors	36	18.7	92	47.9

Table 7 further revealed that 48% HIC could identify the stop sounds in words and 45% could identify the nasals. 53% HIC could repeat 1-2 words and 37.5% could repeat a four-word sentence.

Table 7
Identification of Speech Sounds and Comprehension of Connected Words by the HIC

Identify sounds	f	%	Comprehension	F	%
Stops	92	47.9	1-2	102	53.1
Nasals	86	44.8	3-4	4	2.1
No response	14	7.3	More than 4	72	37.5
			No response	14	7.3
Total	192	100	Total	192	100

Problems Faced by the SLTs and their Recommendations

Table 8 provides a consolidated view of the speech therapists' comments about the prevailing atmosphere in special schools and recommendations

Table 8

Analysis of the Prevailing Situation and Recommendations by SLTs about Future Needs

Item	Good	Average	Less	Required more
Collaboration with teachers	50	50	-	83
Communication with teachers	16	33	33	83
Parental guidance and support	16	33	33	83
Support from the administration	33	33	33	83
Teachers training facilities	16	33	33	67
Provision of hearing aid	16	-	67	83
Auditory training	16	16	33	83
SLT training	33	-	33	67
Workload	50	33	-	50

The majority of SLTs reported dissatisfaction with the current level of communication and collaboration with parents, teachers, support from administration, available teacher training and auditory training facilities and provision of hearing aids to HIC. Half of them reported having an excessive workload. The majority of SLTs recommended reducing the workload and increasing collaboration among professionals and parents.

Discussion

The most obvious consequence of pre-lingual hearing loss is a decrease in access to sounds. Without maximal audibility, the brain may receive speech signals devoid of important phonemic cues that contribute to speech understanding and language development. The development of spoken language for children with hearing loss requires the fitting of sensory devices, followed by a well-designed habilitation plan. The majority of severe to profound hearing impaired students in Pakistani special schools either are not provided with hearing aids and those who have it are not prone to use it for some reason as evident from the results.

The Pakistan Cochlear Implant Programme was started in the year 2000. Zakirullah, Mukhtar, Khan, Ahsan, and Shah (2008) evaluated auditory perception skill development in children over a period of twelve months following cochlear implantation. Results suggested that cochlear

implanted children develop speech recognition soon after implantation and these skills develop over a long period of time, highlighting the need for continued therapy to maximize listening and learning. A study by Naeimeh, Pedram, Nasrin, Farin, & Roshanak (2009) concluded that the key to intervention with deaf children is to establish a communication system for the child and the parents. Aural rehabilitation is feasible and effective in enhancing activity and participation for the hearing impaired in a developing country. The study by Naeimehet. al. further emphasized that the oral communication development of severe to profound HIC in Iran is achievable if integrated public services in aural rehabilitation and speech therapy is provided on regular basis.

Sininger, Grimes & Christensen (2010) analyzed the factors influencing auditory based communication outcomes in children with hearing loss and reported that degree of hearing loss, the intensity of oral education and even the use of cochlear implant were not having such an impact on communication skills as the age when the aid was fitted. It was further added that delay of every month in the fitting of aid would delay the desired outcome by ¾ of a month approximately. Similarly, Lertsukprasert, Kasemkosin, Cheewareungroj & Kasemsuwan (2010) evaluated the listening and speaking skills of twenty-seven profound deaf children who attended the preschool aural rehabilitation program and concluded that irrespective to the age of enrollment in the program, listening experiences alone has a positive relationship with the length of speech and vocabulary development. The same results have been obtained as depicted through the auditory profile of HIC studying in special schools of Punjab.

A study of Gaeth and Lounsbury (1966) showed that about half of the children's hearing aids were in poor working condition. A recent study by Gustafson, Davis, Hornsby, & Bess (2015) also found the same working condition of hearing aids and concluded that without consistent use, many children would not get maximum benefit from their aids. Similar results revealed by the present study that 86% HIC were not using their aid regularly and 83% of the children with hearing impairment were not comfortable with their hearing aids. The consequences of irregular use were evident from the auditory profiles of HIC, where the majority of HIC were at the level of detection and discrimination level of speech sound. Pots and Greenwood mentioned by French and Lovenin Hearing Review (2000) reported that school-age children's instruments often malfunction and found out the results similar to the present study that if a child is to realize the maximum auditory

potential, his/her amplification device must provide reliable auditory input.

The observed varied SLTs' practices support the survey results of French and Loven (2000) that individual caseload and years of practice of speech language pathologists (SLPs) affect their intervening decisions. The results of present study are also consistent with Farrugia-Bernard (2016) and Barkimer's (2009) survey of SLTs working in schools who reported a lack of parental involvement, high caseload, lack of support from administration and staff and limited resources. These results are also in line with the survey of speech language pathologists of Ohio working in the school setting concluding that collaboration, and evidence-based practice are considered as hindrances in practicing, according to the values of SLPs (Jolly; 2009).

SLTs' demand for more support from the administrator reflects the point of view of Stokowski and Zagaiski (2003) that when administrators understand the goals of the team, they are more likely to give the SLP and their team more support in reaching their goals. French and Loven (2000) reported that 69% of SLPs felt that their course work and clinical practicum were inadequate in the area of hearing instruments. These SLPs' recommendations are consistent with the results of current research, i.e. 81% SLTs considered the in-service training as a requirement. Professionals' recommendations to increase collaboration with other team members are consistent with the findings of Stokowski and Zagaiski (2003) who ranked collaboration of team members as a vital contributor to the success. Although they further added that the successful literacy team consists of special education teachers, SLPs, literacy coaches, parents, social workers, principals, and trained volunteers.

Conclusions and Recommendations

Listening is no doubt a major force in the development of a child's personal, social and academic life. The current study was an attempt to explore the numerous factors associated with speech language therapy practices that may affect the auditory skill development of HIC. As reflected by their auditory profiles, HIC were not getting maximum benefits from their hearing aid and SLT services provided in Special Schools of Punjab for auditory skill development. Speech and language therapy practices, equipment and material need improvement in supply and services. Provision and maintenance of amplification devices,

increasing the collaboration among professionals and parents, reduction in SLTs' workload and monitoring of speech therapy practices may bring change in the verbal communication potentials of HIC.

Acknowledgment

The study is part of the author's Ph.D from Foundation University Islamabad, sponsored by the Pakistan Higher Education Commission, Government of Pakistan under Indigenous Scholarship Scheme (085-10471-SS5-234).

References

Barkimer, J. (2009). Speech-Language Pathology in the Schools: A Study of Variables Impacting Personnel Shortages in Urban Schools. [Senior Honors Thesis], The Ohio State University. Retrieved from https://kb.osu.edu/bitstream/handle/1811/37281/jennifer_barkimer_thesis.pdf

Boothroyd, A. (1988). *Hearing Instruments & Young Children*. Washington, D.C.: A. G. Bell Association for the Deaf. (previously published in 1982 by Prentice-Hall, Eaglewood Cliff, NJ.

Boothroyd, A. (1993). Speech perception, sensorineural hearing loss, and hearing aid. In Studebaker, G., and Hochberg, I. CEd. *Acoustic Factors Affecting Hearing Aid Performance.* Boston, MA. Allyn and Bacon.

Farrugia-Bernard, A.M. (2016). You are coming with me": A phenomenological exploration of urban speech-language pathologists. [Master's Theses and Doctoral Dissertations].Eastern Michigan University. Retrieved from

https://pdfs.semanticscholar.org/a91c/050970c690e5a96bd9704623f8bfbf588dd1.pdf

French, K., &Loven, F. (2000). Opportunities in schools: improving amplification through multi-skilling. *Hearing Review, 7*(12), 36-45.

Gaeth J. H., &Lounsbury E. (1966). Hearing aids and children in elementary schools. *Journal of Speech and Hearing Disorders, 31*, 283–289.

Gustafson S. J., Davis H., Hornsby B. W., & Bess F. H. (2015). Factors influencing hearing aid use in the classroom: A pilot study. *American Journal of Audiology, 24*, 563–568

Jolly, B. (2009). *Knowledge and Values of School Speech-Language Pathologists*. [Senior Honors Thesis] The Ohio State University. Retrieved from https://kb.osu.edu/bitstream/handle/1811/37099/4893_001.pdf?sequence=1&isAllowed=y

Kochkin, S. (2005).The Impact of Treated Hearing Loss on Quality of Life. Better Hearing Institute. Washington DC. Retrieved from http://www.betterhearing.org/aural_education_and_counseling/articles_tip_sheets_and_ guides/hearing_loss_treatment/quality_of_life.cfm

Lertsukprasert, K., Kasemkosin, N., Cheewareungroj, W., & Kasemsuwan, L. (2010). Listening and speaking ability of Thai deaf children in a preschool aural rehabilitation program. *Medical journal of the Medical Association of Thailand*, *93*(4), 474.

Naeimeh, D., Pedram, B., Nasrin, Y., Farin, S., & Roshanak, V. (2009). Oral communication development in severe to profound hearing impaired children after receiving aural habilitation. *Acta Medica Iranica*, *47*(5), 363-367.

Olusanya, B. O., Neumann K. J., & Saunders, J. E. (2014).The global burden of disabling hearing impairment: a call to action. *Bulletin of the World Health Organization*, *92*, 367-373.

Ray, C. (2017). Team hearing. *The ASHA Leader*, *22*(8), 36-38. Retrieved from https://leader.pubs.asha.org/doi/full/10.1044/leader.AE.22082017.36

Schow, R. L., Balsara, N. R., Smedley, T. C. & Whitcomb, C. J. (1993). Aural rehabilitation by ASHA audiologists: 1980-1990. *American Journal of Audiology*, *2*(3), 28-37.

Sininger, Y. S., Grimes, A., & Christensen, E. (2010). Auditory development in early amplified children: Factors influencing auditory-based communication outcomes in children with hearing loss. *Ear and Hearing*, *31*(2), 166.

Staskowski, M., &Zagaiski, K. (2003).Reaching for the stars: SLPs shine on literacy teams. In *Seminars in Speech and Language,24*(3), 199-213.

World Health Organization.(2011). *World report on disability 2011*. Geneva. Retrieved from http://whqlibdoc.who.int/ publications/2011/9789240685215_eng.pdf,

Zakirullah, Mukhtar, N., Khan, M. I. J., Ahsan, M., Shah, S. A. (2008).Evaluation of Auditory Perception Skills Development in Profoundly Deaf Children Following Cochlear Implantation. *Journal of Ayub Medical College*, *20*(1), 94-97 Retrieved from http://www.ayubmed.edu.pk/JAMC/PAST/20-1/Zakirullah.pdf

Citation of the Article:
Noor, H., & Raja, N. A. (2019). Speech language therapy in special schools of punjab: A study of auditory profiles of children with hearing impairment. *Journal of Inclusive Education*, *3*(1), 97-110.

Received on: 23 Jun, 2019
Revised on: 4 Nov, 2019
Accepted on: 14 Nov, 2019