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Research Highlights



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ARTICULATORY PROBLEMS OF CHILDREN WITH HEARING IMPAIRMENT

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Abstract

Speech is one of the primary methods of communicating with others. An impairment in speech can significantly affect the ability to communicate. Speech impairments in childhood can have a negative influence on social development. Speech impairments at all stages of life can lead to social isolation, embarrassment and shame.

Children with hearing impairment commonly present with articulation deficits. Articulation and fluency disorders represent the major categories of communication problems. Early identification and management are critical for remediation of articulation disorders.

This study investigated the identification of the articulatory problems of children with hearing impairment at primary level.

Introduction

Communication is a process, not an entity, it consists the information from a receiver. However human beings used speech as the fastest mode for

communication. In order to produce speech, various systems in the human body has to work together.

At the same time children should grow and develop in an environment where language and communication interactions are required for the purpose of speech acquisition. In that conclusion it is clearly evident that the early development of communication skill is very critical for young children. Anjali Kaur (2006) stated that the child must have normal neuromotor development, intellectual skills, sensory-perceptual abilities, adequate physical and emotional health and an enriching, stimulating environment needed for the development of speech. If any deficiencies/inadequacies is happened in the prerequisites of speech development there will be delay in the acquisition of speech and language.

Hearing loss in infants is silent and hidden. Great emphasis is placed on the importance of early detection, reliable diagnosis and timely intervention. Children with hearing loss frequently experience speech-language deficits, articulatory

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problems and exhibit lower academic achievement and poorer social-emotional development than their peers with normal hearing.

Articulation problems may also be due to identified physical or organic causes such as cerebral palsy, cleft palate and hearing impairment. The small number of these disorders may fall under the rubric of 'developmental dysarthria' (Bowen, 2001). Dysarthric speech is characterized primarily by sound distortions and omissions which are consistent across speaking tasks. Consonants are affected more than vowels and are imprecise with similar production impairments in all positions. Other aspects of speech are also affected including prosody and rate.

Articulation problems

- Articulation errors are characterized by the omission, distortion, substitution, addition and/or incorrect sequencing of speech sounds. Such motorically-based errors are usually consistent. Since the sounds produced are notably different from normative productions, errors are described as 'phonetic' in nature (Bauman-Waengler, 2000).
- Articulation impairments may be functional or organic in etiology. Functional articulation disorders exist in the absence of any apparent cause and are related to deficiencies in the relatively peripheral motor processes (Bauman-Waengler, 2000).

An articulation problem is a speech sound disorder that affects the phonetic level. Children with this defect will have difficulty in saying certain vowels and consonants. It is common in children with hearing impairment and often are not permanent conditions. It can be caused by hearing loss, allergies or anatomical problems and are typically detected in children who are between the ages of five and eight. If, the articulatory problems of children with hearing impairment at primary level are corrected it will be enhancing their speech and communication skills. The result of the study will contribute to identification of the articulatory problems of children with hearing impairment at primary level especially in the specific areas of place and manner of articulation.

Significance of the study

Hearing loss is assumed to have a crucial implication in speech and language development of children with hearing impairment. It is obvious that during the early childhood period the child can develop speech only by their auditory perception, speech reading and speech of others.

- But children with hearing impairment due to retardation in hearing face more difficulties in perceiving the speech of others.
- During the production of speech some of the articulations of phonemes are invisible in nature so the child is unable to develop speech reading.

- Due to loss of hearing children are unable to enhance their auditory perception.

For the above mentioned reasons only hearing impaired children face articulatory problems during speech development. Hence, the present study is undertaken with the following objectives to :

- Find the articulatory problems of children with hearing impairment in

special and inclusive schools with variation in age at primary level and

- Identify the articulatory problems of children with hearing impairment in special and inclusive schools with regard to gender at primary level.

Pena-Brooks, et al., (2000) developed a speech chart to find out the articulation and phonological disorders of children with hearing impairment (Table 1).

Table 1. Speech Development Chart

By Age	Children should be able to say the following sounds						
3 yrs	H	W	M	N	B	P	F
4 yrs	D	T	K	G	Y	NG	
	L	V	SH	CH	J		
6 yrs	At this age a child may still have errors on the r, s, z and the sounds, but they should be developing.						
	A child should be able to say ALL sounds correctly including:						
8-9 yrs	R	S	Z	th (thin)	th (that)		

Bennett (2001) conducted a study related to Articulation training of two 4 yr - old hearing-impaired girls who were trained to articulate correctly /f/ and /sh/ phonemes in the initial position of words in response to pictures. They were first trained to imitate and then to respond on demand of "what's this?" As a result, both girls generalized correct articulation to words requiring both phonemes in the initial and final positions.

Mispronunciations are normal among preschool children. Consonant blends and digraphs may be mispronounced. Basket may be pronounced "busketti" and then may be pronounced "ven" or "den". The amount, type and duration of mispronunciations over time determines whether there should be a serious concern for a child's articulation.

Methodology

The schools selected for the present study were two special schools and two inclusive schools with hearing impaired children in Coimbatore district. The purposive sampling technique was adopted to select the sample enrolled in special and inclusive schools. The sample selected for the study consisted of 18 hearing impaired children both boys (9) and girls (9) in the age group of 6 and 7 years.

A survey technique was followed to ascertain the articulatory problems of children with hearing impairment at primary level. Data was collected from the children enrolled in special school and inclusive school. The study was designed on the basis of levels of students.

Construction of the Tool

At the age of 6 and 7 years a child can produce nearly 500 words. So the investigator selected the words based on class level / Standard, Picture oriented, Easy to understand the word, Visible letter during production and Syllabication of words. The word list was prepared and it was administered to 40 students selected from government primary school, Pollachi. Initially the tool consisted of 73 words which were administered to the

selected 40 sample following systematic procedure. The selected samples were able to produce only 32 words among 73 words. The words are selected on the basis of children's correct production of sounds only. Finally, total number of words selected for the study is 32 on the basis of 14 phonemes essential for production of speech in Tamil language. The phonemes are concerned with vowels and consonants and it is classified on the basis of place and manner of articulation. The final tool consisted of 32 words concerned with vowels அ, இ, உ, எ, ஒ and consonants ப, ம, வ, த, ந, ல, க, ச, ர. The words used for the tool based on 14 phonemes which are used for speech development at the age of 6 and 7 years.

Administration of the Tool

The tool was administered to the selected 18 hearing impaired sample. The investigator prepared an album depicting pictures with word format. The investigator administered the tool to the sample and the words misarticulated by the sample were noted.

Results and Discussion

The results of the study embraces the articulatory problems of the hearing impaired in special and inclusive schools with variations in age and gender. The data pertaining to the identification of

articulatory problems of selected sample were analyzed with the use of quantitative and qualitative techniques. The results of the study are discussed under the following heads :

Articulatory Problems

Data presented in Table 2 and Figure 1 indicate the articulatory problems of hearing impaired children in special and inclusive schools.

Table 2. Articulatory Problems of Children with Hearing Impairment (CWHI)

Areas	Phonemes	R	Percent	NR	Percent
Consonants Bilabial	ப	15	83.33	3	16.66
	ம	4	22.22	14	77.77
Labiodental	வ	11	61.11	7	38.88
Alveolar	த	15	83.33	3	16.66
	ந	8	44.44	10	55.55
	ல	11	61.11	7	38.88
Velar	க	11	61.11	7	38.88
Fricative	ச	4	22.22	14	77.77
Trill	ர	4	22.22	14	77.77
Vowels Unrounded	அ	13	72.22	5	27.77
	இ	11	61.11	7	38.88
	எ	11	61.11	7	38.88
Rounded	உ	8	44.44	10	55.55
	ஊ	13	72.22	5	27.77

R = Responding

NR = Not Responding

It could be noted that the hearing impaired children faced SODA (Substitution, Omission, Distortion, Addition) problems in production of nasal and invisible sounds. Majority of them were not responding for the production of Bilabial ம (77.77%), Alveolar ந (55.55%),

Fricative ச (77.77%), Trill ர (77.77%) and Vowel எ (55.55%). The phoneme ம, ந are nasal sound and phoneme ச, ர, எ are invisible in nature, during their production. So the hearing impaired child may misarticulate nasal and invisible phoneme during the production of word.

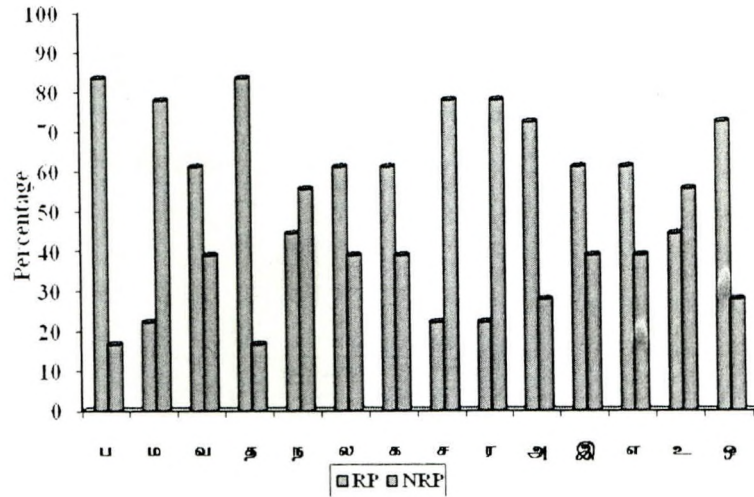


Figure 1. Articulatory Problems of Hearing Impaired Children

RP = Responding percent; NRP = Not Responding percent

Consonants			Vowels		
Bilabial	-	ப ம	Unrounded	-	அ இ எ
Labiodental	-	வ	Rounded	-	உ ஓ
Velar	-	க			
Fricative	-	ச			
Trill	-	ர			

Age

At the age of 6 years the children with hearing impairment may still have problems in production of speech sounds due to lack of auditory perception and awareness of articulation. The details of articulatory

problems of children with hearing impairment in special and inclusive schools with variation in age at primary level is depicted in Table 3 and Figure 2 (Special School) Table 4 and Figure 3 (Inclusive School).

Table 3. Articulatory Problems of CWHI in Special School - Agewise

Age	Responding score	Mean	S.D	Responding %	Not Responding score	Mean	S.D	Not Responding %
6 yrs (5)	28	5.6	3.93	40	42	8.4	3.93	60
7 yrs (4)	36	9	5.33	64	20	5	5.33	36

The performance scores of hearing impaired children of 7 years was 64 per cent whereas 6 years scored only 40 per cent. It is noted that 7 years of hearing impaired children are better than 6 years

of hearing impaired children in production of speech phonemes in special school setup. So, it is concluded that the age may be the important factor for production of phonemes used for speech production.

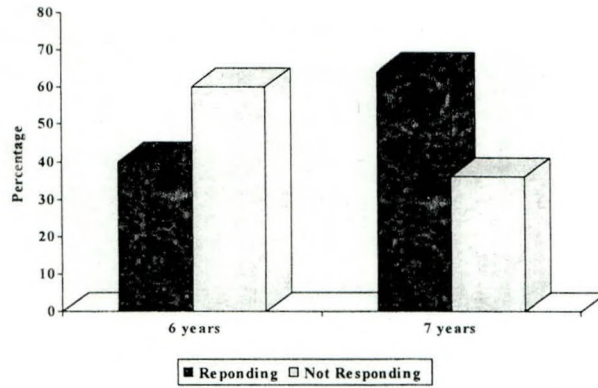


Figure 2. Articulatory Problems Among CWHI in Special School - Agewise

Table 4. Articulatory Problems of CWHI in Inclusive School - Agewise

Age	Responding score	Mean	S.D	Responding %	Not Responding score	Mean	S.D	Not Responding %
6 yrs (5)	36	9	1.87	64	20	5	1.87	36
7 yrs (4)	38	7.6	3.26	54	32	6.4	3.56	46

In the inclusive school, 6 years of hearing impaired children scored 64 per cent compared to 7 years who scored 54 per cent for their performance. In an inclusive set up the child may get more opportunity to mingle with normal peer for their speech development. So they can easily

develop their speech in the early stage (especially at the age of 6). Later on, they avoid their opportunity due to so many reasons. So, it can be stated that age may be the important factor for production of phonemes which are used for speech production.

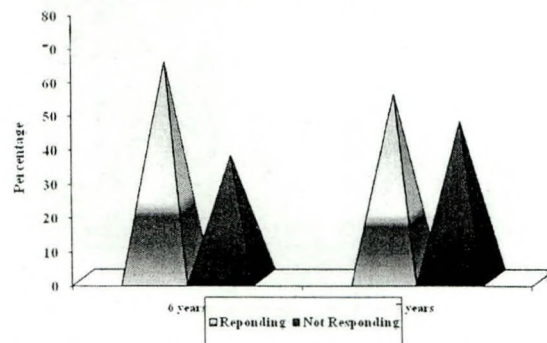


Figure 3. Articulatory Problems of CWHI in Inclusive School - Agewise

Gender

In general girls are more active than boys in reserved and protective

environment. Table 5 and Figure 4 & Table 6 and Figure 5 present the data of gender wise performance in articulatory problems.

Table 5. Articulatory Problems of CWHI in Special School - Genderwise

Gender	Responding score	Mean	S.D	Responding %	Not Responding score	Mean	S.D	Not Responding %
Boys	28	7	2.42	50	28	7	2.42	50
Girls	36	7.2	2.21	51.4	34	6.8	2.24	48.5

From the above Table it is clear that girls scored (51.4%) higher in their performance than boys (50%) in the special

school setup. Hence it is found that the girls were more actively participated than boys in special school setup.

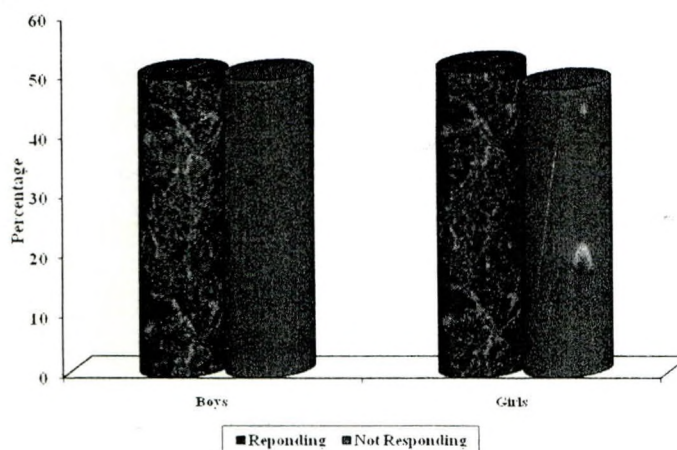


Figure 4. Articulatory Problems of CWHI in Special School - Genderwise

Table 6. Articulatory Problems of CWHI in Inclusive School - Genderwise

Gender	Responding score	Mean	S.D	Responding %	Not Responding score	Mean	S.D	Not Responding %
Boys	43	8.6	1.46	61.4	27	5.4	1.46	38.6
Girls	31	7.75	1.023	55.4	25	6.25	1.16	44.6

It is observed that the scores of performance of boys were higher (61.4%) than girls (55.47) in inclusive school setup.

Hence it is found out that the boys were more active and participatory than girls in inclusive setup.

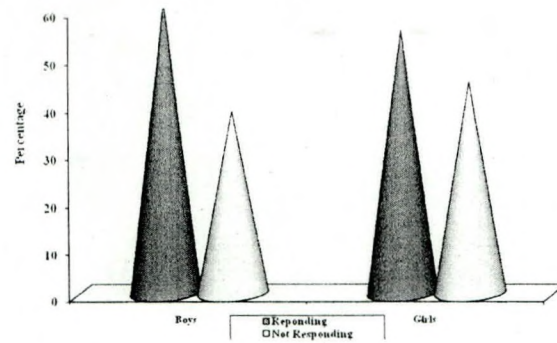


Figure 5. Articulation Problems of CWHL in Inclusive School - Genderwise

Conclusion

Correct articulation is essential for the development of speech. Production of phoneme will be helpful for the production of letters and sentences correctly. Teachers should give additional attention to the child's articulation which would be helpful

for their independent development of speech in future. Articulatory problems are common with hearing impaired children so, it should be identified earlier and training need to be provided as early as possible to avoid the articulation errors.

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Web Links

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http://mylanguages.org/tamil_verbs.php

<http://suffolk.libguides.com/LitReview>

<http://writingcenter.unc.edu/handouts/literature-reviews>

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