

BRIEF REPORTS

**IDENTIFYING CHILDREN AT – RISK FOR SPEECH AND
HEARING DISORDERS – A PRELIMINARY SURVEY
REPORT FROM HYDERABAD, INDIA**

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ABSTRACT

The objectives of the study were : to identify children at risk for hearing loss and speech and language problems; to train internees in identifying children at risk in regular schools and to provide awareness to school teachers about the risk factors. The school teachers were given an orientation to use the questionnaire to elicit information on features considered as risk factors, for speech and hearing problems and other disabilities. 6591 children were screened using the questionnaire developed for the study. The results of the study show the percentage of children identified at-risk for hearing loss was 15.96%, for speech and language problems it was 1.89 % and for other disabilities it was 0.76%

INTRODUCTION

The incidence / prevalence of hearing loss in school - age population is about 11.3% (1). Accurate estimates of incidence and prevalence are difficult to establish because of differences among investigators about the definitions applied, the population sampled, test methods used and way in which the data were analysed.

The National Sample Survey Organisation (NSSO), Government of India, 1991 report shows that in rural India 2.7 % are children with hearing impairment in the age group 0 to 14 years. In the same age group, the urban statistics are 3.0 % and for speech disability it is 8.9% and 8.3% of the rural and urban areas respectively (2).

The cause of the hearing loss may be due to impacted wax; ear infections; growths in the ear; noise induced hearing loss; progressive or late onset genetic hearing loss; injury; viral infections such as mumps, measles; bacterial meningitis; ototoxicity; trauma; auto immune disease (3); sudden deafness of unknown etiology.

The practice of screening school – age children has been in existence for more than 50 years in the west. In India, school screening programmes have been conducted since 1965 as per reports available (4,5,6,7). However, hearing health has not been given due importance by a majority of the school authorities. The importance of hearing screening is to identify the children at- risk, which may hamper their scholastic performance, and to refer them for detailed investigation and intervention.

With a severe financial crunch being faced by several programmes, it is not economical to mass screen all children in the schools. It is desirable that a target population be identified using trained volunteers.

Most school screening programmes concentrate their annual screening efforts on children from nursery school - age through grade 3. Above grade 3, the screening is normally conducted at an interval of about 3 or 4 years.

As reported by Bess and Humes (8) the following groups of children require more attention than what routine screening provides –

1. Children with pre-existing hearing loss.
2. Children enrolled in special education programmes.
3. Children with multiple handicaps.
4. Children with frequent colds or ear infections.
5. Children with delayed language or defective speech.
6. Children returning to school after a serious illness.
7. Children who experience school failure that exhibits a sudden change in academic performance.
8. Children referred by the class room teacher.
9. Children who are new to school.

Screening is usually conducted using audiometry and immittance tests. With advancement in technology, the Oto Acoustic Emission (OAE) has also been a recommended method.

Recognising that hearing loss can occur at any time and can have a consequence on scholastic performance, the present study was carried out.

OBJECTIVES

1. To identify children at risk for hearing loss and speech and language problems.
2. To train interneers in identifying children at risk in regular schools.
3. To provide awareness training programmes to school teachers about the risk factors.

METHODOLOGY

Selection of the schools

Fifty one schools across five mandals of Hyderabad district were selected for the study. These schools are special regular schools, providing opportunity for working children to continue their education. There are about 212 such schools in Hyderabad district. For the present study, the schools in the following Mandals were taken for the study - Amberpet, Khairatabad, Marredpally, Musheerabad, Secunderabad, Tirumalgiri. The total number of children studying in the schools selected for the study from classes' 1st to 4th standard was 6591.

MATERIAL

A questionnaire was prepared for screening the children in the selected schools. The questionnaire consisted of nine questions, eight of which were 'close-ended' questions. Each question is a statement of a particular symptom, seen amongst children, to be identified by the teacher. The ninth question is an 'open-ended' one which deals with gathering information on any other associated problem (other than those mentioned) seen in the children.

The questionnaire was originally prepared in English and later, it was translated into the local languages. The instructions given in the questionnaire were brief, self-explanatory and unambiguous. The language of the questionnaire was tested for simplicity before its actual application. The first eight questions related to 1) Oro-facial deformity like – Atresia, Microtia, cleft lip and palate, or any abnormality of the head and neck; 2) the most common and prevalent infections of the ear (middle ear); 3) any kind of possible problem in the child's ear due to the persistent behaviour of putting objects into the ear; 4) and 5) symptoms of conductive hearing loss (loss because of the problem in the ear canal or middle ear or both) and sensory-neural hearing loss (loss because of the problem in the inner ear); 6) problems of poor attention or inability to follow instructions; 7) unilateral hearing problems, manifested by directing one ear (the better ear) towards the speaker; 8) speech problems such as misarticulations in speech, stuttering or stammering and delayed speech and language development. The last question was an open-ended question to identify any other kind of problem or disability such as mental retardation, cerebral palsy, visual disability, physical disability and others.

RESULTS

The data were analysed using descriptive statistics, shown in the following tables.

Table 1. Showing the type of symptoms (pointing towards hearing loss) identified Mandal-wise

		No. of children identified with various symptoms considered as at risk - through questions 1 - 7							% of children at risk
<i>Mandals</i>	No. of Children	No. of With Risk	Q1	Q2	Q3	Q4 & Q5	Q6	Q7	
Amberpet	296	32	0	8	0	7	5	3	10.00%
Khairatabad	4220	406	15	139	16	96	39	23	9.62%
Marredpally	500	60	6	9	5	16	7	3	12.00%
Musheerabad	454	46	3	17	4	5	5	2	10.13%
Secunderabad	659	25	0	5	0	4	2	6	3.79%
Tirumalgiri	462	19	1	5	2	3	2	1	4.11%
Total	6591	588	25	183	27	131	60	38	

Key: -

Q1. Number of children identified with oro-facial anomalies

Q2. Number of children identified with ear discharge/aches

Q3. Putting objects in the ear

Q4 & Q5. Number of children speaking with abnormally soft/loud voice

Q6. Inattentive in the class and unable to follow instruction

Q7. Directing ear towards the speaker.

The analysis of question - 8 that was targeted to identify speech and language problems was tabulated and is shown in Table 2.

Table 2. Percentage-wise distribution of various speech and language problems

Type of Speech Problems	No. of Children with Problem	Percentage
Misarticulations	27	0.39 %
Stuttering	60	0.91 %
DSL	38	0.57 %
Total	125	1.89 %

Table 3: Percentage of children identified with other disabilities

Types of Problems	No. of Children with Problems	Percentage
Other Physical Disabilities	50	0.76 %

Table 4: Percentage of children reported with ear infection

Types of Problems	No. of Children with Problems	Percentage
Ear Discharge/Ear ache	183	2.78 %

DISCUSSION

Out of 6591 children screened who were studying from class I to class IV, it was possible to segregate the at-risk children through the questionnaire used for the purpose of the survey. Though it is not possible to give details of age and gender wise distribution, the overall percentage of children with risk indicators for hearing loss was 15.96 %. In addition, 1.89 % had at-risk factors for speech and language problems, 2.78% reported ear infection, and 0.76% had other additional problems.

Literature shows that the problem of ear discharge decreases with age and it is attributed to the cephalo – caudal development of the face. This process changes the shape of the eustachian tube from a horizontal to an inclined position, thereby reducing the direct access of the infection to the middle ear, via the eustachian tube. Thus, a percentage as low as 2.78 % of children with ear infection may be seen in this study.

The school- wise distribution shows that the percentage was highest in Marredpally (12%) followed by Musheerabad, Amberpet and Khairatabad showing 10.13%, 10% and 9.62% respectively. However, it was 4.11% and 3.79% in Tirumalgiri and Secunderabad respectively. The reduction in the percentage of disability in Secunderabad may be attributed to their prompt treatment, as they may be taking advantage of the available services at Ali Yavar Jung National Institute for the Hearing Handicapped (AYJNIHH), Regional Centre which is situated at Secunderabad and the other rehabilitation centers. As cited by Bess et al (1) 11.30% of the school going population has hearing loss. In this study, 9.62% to 12.0 % of the school going children are said to be at - risk for hearing loss and 1.89 % for speech and language problems which supports the usually referred statistics that about 10% of the School going children may have some degree of hearing loss.

The school screening report (7) showed that 14.55% of the children in the age group of 10-13 years had ear problems and 50% of these children who came for a diagnostic follow-up test showed that 66% had confirmed ear problems such as impacted wax, dull tympanic membrane and upper respiratory tract infection. Thus, the present study shows that the identification of hearing problems using the questionnaire method and by training of functionaries has proved worthwhile, as the statistics are fairly comparable with the earlier school screening data.

Mild hearing loss whether conductive or sensorineural, can result in distorted or diminished speech sound perception. According to the American Academy of Audiology (9), unilateral or asymmetrical hearing loss can disrupt critical binaural auditory processing skills.

Behaviour problems have also been found in pre - school and adolescent children with conductive hearing loss. Behaviour problems such as irritability, lack of responsiveness, withdrawn behaviour have been reported (10).

A proper referral can help the hearing to be restored. It is the child's right not to be disabled at birth, or later. Prevention of impairment and disability are of primary importance (11).

As the main objective of this study was to train internees in Educational Audiology, it was possible to provide them with the experience of preparing the questionnaire, translating the material and field-testing the questionnaire for ambiguity. It provided them an opportunity to conduct a pre-survey training programme for the teachers. The training programme oriented

the teachers about hearing impairment, causes, and symptoms in particular and it also touched upon topics such as speech and language problems and additional problems too. The teachers are now aware on the subject of providing appropriate referral for the children identified as at-risk for speech and hearing problems. The survey also provided a platform for the trainees to analyse the questionnaire results and inform the school authorities of the survey results.

In India, provision of services is made difficult due to the distance and lack of adequate number of professionals to provide all the intervention needed. Thus, training of other functionaries such as school teachers may be a worthwhile effort. There is a great need for media to act as partners to disseminate material on prevention and rehabilitation.

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