

ORIGINAL RESEARCH ARTICLE

PREVALENCE OF HEARING IMPAIRMENT IN CHILDREN (AGED 6-17 YRS)
IN A SCHOOL OF VILLAGE DASAULI, LUCKNOW (U.P.) INDIA

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ABSTRACT:

Background: Hearing loss in school going children causes behavioral complications and also it causes impact on childrens' academic achievement. It largely remains undetected; the aim of this study is to ascertain the percentage of hearing impaired children in a school in village Dasauli of Lucknow district.

Methods: A Cross-sectional study was conducted to calculate the prevalence of hearing impairment in school children aged 6 years to 17 years in Techno school of village Dasauli in district Lucknow during month of July 2017 to December 2017. The students' aural examination and audiological tests were performed by qualified Otolaryngologist and Audiologist respectively.

Results: This study was conducted among 597 school children of age group of 6 to 17 years. 95(15.9%) children were suffering from hearing impairment. Maximum 67 (70.5%) individuals had Wax, followed by 20 (21.0%) individuals had Chronic Otitis media, 7 (8.2%) individuals had Serous Otitis media and minimum number of individuals belongs to Post operative case of MRM (Modified Radical Mastoidectomy).

Conclusions: The hearing loss could lead to delay in the development in speech and language which leads to learning problems which in turn leads to poor academic achievements. As inference drawn from the present study that school screening is the most effective method of diagnosing deafness in school age children, this program should be extended to all school in all the areas to know the disease burden in society and early measure can be taken to avoid any disability.

Key words: Hearing impairment, Audiometry, Prevalence, Cross-sectional study.

INTRODUCTION:

Hearing is one of the important part of five basic senses and it helps in Communication with others. Hearing impairment effects child's ability to normally acquire the spoken language. Hearing loss of even 15dB can create hearing disability in children and consequently impairment in their mental growth^{1,2,3}. These disabilities can cause behavioral complications in six functional areas: mental maturity, perception, speech, cognition and general intelligence, academic achievement and interpersonal behavior^{4,5}. Most of the time unilateral hearing loss remains undetected but it also cause impact on children's academic achievement, it was found that 30% of children with unilateral hearing loss lag at least 1.2yrs behind their normal peers in terms of academic

achievement⁶. Adequate hearing acuity is of paramount importance and prerequisite in the personality development of a child. Hearing impairment especially during early age has serious ill effects on child's psycholinguistic skills and school performance. There is convincing evidence to suggest

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that for optimum development of speech and language the auditory pathway must be stimulated from very early age to allow it and higher centers to mature properly. The purpose of this study is to determine the prevalence and type of hearing loss amongst school going children and to evaluate the etiological factors of hearing loss and their distribution pattern.

MATERIAL AND METHOD:-

A cross sectional study was conducted to estimate the prevalence of hearing impairment in school children aged 6 yrs to 17 yrs in Techno school of village dasauli , tehsil Baksika talab, district Lucknow, UP. Study was conducted during month of July 2017 to December 2017 , aged 6 yrs to 17 yrs were included in this study. Ear ,nose and throat examination of all students were done. The students having any ear disease were checked for hearing loss by doing Tuning fork test and in those student who were having abnormal tuning fork test, audiometry test was performed and if needed tympanometry test was done to check middle ear compliance and pressure. These two tests were performed in department of ENT, Integral institute of medical sciences and research, Lucknow.

RESULT:

Total of 597 individuals were studied in different age groups, with minimum age 6 years and maximum age 17 years (Mean age 11.50 ± 36.60). Maximum numbers of individuals were at the age of 15 years and 17 years i.e. 76 (12.7%), followed by 65 (10.9%) individuals in the age of 13 years, 61 (10.2%) individuals in the age of 14 years, 53 (8.9%) individuals in the age of 16 years and 47 (7.7%) individuals in the age of 11 years (Table 1).

Table-1- Percent distribution number of children with respect to age.

Age (Years)	Frequency (Number of Children)	Percent (%) Distribution
6	25	4.2
7	31	5.3
8	34	5.7
9	40	6.7
10	45	7.5
11	46	7.7
12	45	7.5
13	65	10.9
14	61	10.2
15	76	12.7
16	53	8.9
17	76	12.7

There were 390 (65.3%) males and 207 (34.7%) females in the study population (Table 2).

Table-2- Percent distribution number of children with respect to gender.

Gender	Frequency (Number of Children)	Percent (%) Distribution
Male	390	65.3
Female	207	34.7

Among 597 individuals, 502 (84.0%) individuals having no hearing loss. Hearing loss was present in 95 (15.9%) individuals, out of which it is in right ear in 36 (6.0%) individuals and in left ear in 17 (2.8%) individuals and in both ears in 42 (7.2%) individuals. So the prevalence of hearing loss was found to be 15.9% (Table 3).

Table-3-- Percent distribution number of children with respect to hearing loss (N=597).

Hearing Loss	Frequency (Number of Children)	Percent (%) Distribution
No Hearing loss	502	84.0
Right Ear	36	6.0
Left Ear	17	2.8
Both Ear	42	7.2

Out of 95 (15.9) individuals with hearing loss, maximum were in the age of 10 and 12 years ie (15.8%) individuals, followed by 12 (12.7%) individuals in the age of 9 years, 11 (11.5%) individuals in the age of 16 years, 9 (9.4%) individuals in the age of 14 years and 8 (8.4%) individuals in the age of 13 years and 15 years.

Table-4- Percent distribution number of children with hearing impairment (N=95)

Age (Years)	Frequency (Number of Children)	Percent (%) Distribution
6	4	4.2
7	2	2.2
8	3	3.1
9	12	12.7
10	15	15.8
11	3	3.1
12	15	15.8
13	8	8.4
14	9	9.4
15	8	8.4
16	11	11.5
17	5	5.4

Out of 95 individuals with hearing loss, 55 (57.9%) individuals were male and 40 (42.1%) individuals were female (Table 5).

Table-5- Percent distribution number of children of hearing impairment with respect to gender (N=95)

Gender	Frequency (Number of Children)	Percent (%) Distribution
Male	55	57.9
Female	40	42.1

Out of 95 individuals with hearing loss, maximum 93 (97.9%) individuals had Conductive hearing loss, only 2 (2.1%) individuals had mixed hearing loss (Table 6).

Table-6- Percent distribution number of children with respect to Types of Hearing Loss (N=95)

Types of Hearing Loss	Frequency (Number of Children)	Percent (%) Distribution
Conductive hearing loss	93	97.9
Mixed hearing loss	2	2.1

Out of 95 individuals with Hearing Loss, maximum 67 (70.5%) individuals had Wax, Followed by 20 (21.0%) individuals had Chronic Otitis media, 7 (8.2%) individuals had Serous Otitis media and minimum number of individuals belongs to Post operative case of MRM (Modified Radical Mastoidectomy) (Table 7).

Table-7- Percent distribution number of children with respect to Etiology of Hearing Loss (N=95)

Etiology of Hearing Loss	Frequency (Number of Children)	Percent (%) Distribution
Wax	67	70.5
Serous Otitis media	7	7.4
Chronic Otitis media	20	21.0
Post operative case of MRM (Modified Radical Mastoidectomy)	1	1.1

DISCUSSION:-

In our study a prevalence rate of as much as 15.9% was found in otherwise apparently normal school children. Prevalence of hearing loss in this study was found higher as compared to some previous studies like Mishra et al⁷ and Tulli et al⁸ who found a prevalence rate of 11.7% and 12.5%

respectively. This was because of rural population who are having poor standard of living and ignorant about hearing loss in otherwise healthy children.

Conductive hearing was more prevalent having a prevalence rate of 97.9% as compared to mixed hearing loss which had a prevalence rate of only 2.1%, no case was found having sensorineural hearing loss. These results are similar to those of kalpana et al⁹ who found a prevalence rate of conductive hearing loss of 96.22%.

Cerumen was the most common cause of hearing loss with prevalence of 67% followed by chronic suppurative otitis media 23.5% and serous otitis media 8.2%. all these are reversible causes which can be cured by giving some awareness to the parents.

Awareness of this problem amongst parents and school teachers is of utmost importance to detect this disability at an early age to provide the child the benefit of proper medical attention before the disability reaches serious proportions.

Since hearing loss is more prevalent in rural areas regular school health checkups and assistance of some voluntary organization for screening programmes will reduce hearing handicap. Since conductive hearing loss is the commonest cause and it can be corrected by doing early intervention by trained medical staff.

CONCLUSION:-

The hearing loss could lead to delay in the development in speech and language which leads to learning problems which in turn leads to poor academic achievements.

Hence simple measure like regular screening for ear diseases and hearing assessment done at the school level can prevent hearing loss. Health education must be given to school children about the problems of hearing loss.

The early detection of ear diseases is essential as they are associated with hearing loss and these children are at increased risk. The parents must be made aware about the dangers of undetected hearing loss in school children during parents teachers meetings.

Otosopic and audiological workup remains the main stay of detecting hearing impairment in school age children.

As inference drawn from the present study that school screening is the most effective method of diagnosing deafness in school age children, this program should be extended to all school in all the areas to know the disease burden in society and early measure can be taken to avoid any disability.

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DISCLOSURES:

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- (b) Sponsorships – None
- (c) Funding - None
- (d) Written consent of patient- taken
- (e) Animal rights- Not applicable

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