

# Evaluation of Hearing Impairment in Children of School Going Age

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## ABSTRACT

**Objective:** The timely identification of severity of hearing loss in school age children will decrease the morbidity and this morbidity can be corrected by timely treatment.

**Study Design:** Community-base cohort study.

**Place and Duration of Study:** This study was conducted in ENT department of Abbasi Shaheed Hospital, KMC, Karachi from January 2011 to Jan 2012.

**Materials and Methods:** The suspected cases were referred to the ENT department of Abbasi Shaheed Hospital adjoining schools and suspected cases of hearing difficulty noticed by the parents. After taking informed consent from both sexes and age ranges from 6-16 years were included in the study.

**Results:** This study shows male were slight more 54 patients. Highest number of patients was found in 13 years of age 16 patients i.e 16%. In 53 patients risk factor was present. Maximum number of children had moderate hearing loss 26 children (26%).

**Conclusion:** Early school going child with mild to moderate hearing loss is difficult to detect during routine examination. Audiological screening is necessary for detection of hearing loss in early school going child.

**Key Words:** Deafness, hearing loss, decrease hearing

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## INTRODUCTION

Hearing impairment in school going children is the major problem in all around the world, because it causes marked disability and handicap<sup>1,2,3</sup>. By taking proper management and preventive measures the incidence of hearing loss in children can be reduced<sup>4</sup>. For the development of normal language and I.Q. (Intelligence quotient) child should hear normally because language development depends on hearing<sup>6</sup>. Usually in third world countries there is no facilities for screening of hearing in routine clinical examination and school health authorities don't have any audiological assessment facilities also. Audiometric assessment plays a important role in detection of hearing loss in early age child Children with moderately severe, bilateral hearing loss, profound hearing loss are detected early before schooling, they develop more receptive skill as compare to expressive skills<sup>7,8</sup>. Screening programme of hearing at the time of school entrance should be started for mild to moderated hearing loss which is helpful in early detection of hearing loss and manage accordingly<sup>9, 10</sup>. The effect of hearing loss depends on age of onset, severity of hearing loss, location of lesion in auditory system and cause of hearing loss.

P.T.A. (Pure tone audiometry) is the basic of hearing threshold which threshold of hearing is measured. Pure tone audiometry is defined as "lowest intensity at which given stimulus can elicit a response". It gives information of the listener's sensitivity to stimuli. Audiometry is inexpensive and simple screening devices and can be used in public health programs. If Hearing defect in early childhood is identified it reduced the community disability by taking proper measures.

The auditory pathway is sensitive to assault and also damage from disease, extreme environmental conditions (i.e. noise), trauma genetic imperfection, and also due to age. These may result in conductive hearing loss, sensory or (neural) retrocochlear hearing loss. The objective of this study is to evaluate the degree of hearing impairment. Early detection of hearing impairment will reduce the morbidity.

## MATERIALS AND METHODS

Study was conducted in ear, nose and throat department of Abbasi Shaheed Hospital. Abbasi Shaheed Hospital is the tertiary care hospital which cover large population. This study was done between January 2011 to Jan 2012. In this study, 100 hearing impaired children selected after taking informed consent.

**Inclusion criteria:** Both sexes. 6-years and above and 16 years below  
Hearing impaired.

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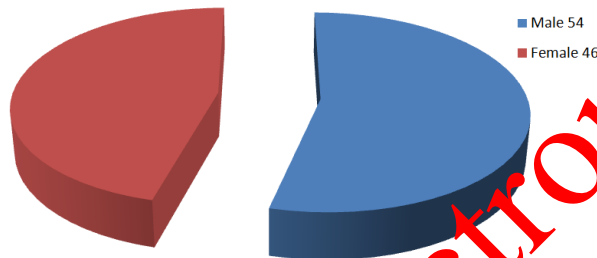
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**Exclusion criteria:** Previous history of ear surgery. Other medical problem like diabetes, hepatitis, craniofacial abnormality, glomerulonephritis. Otolological examination and audiometry assessment was done. If foreign body or impacted wax was found during examination it was removed. Calibrated Pure tone audiometer with TDH-39 was used for audiological assessment. Average pure tone are 0.5, 1, 2 KHZ was used to assess hearing loss. Categories are: slight hearing loss (16-25 db), mild hearing loss (26- 40 db), moderate hearing loss (41-55 db), moderately severe hearing loss (56-70 db), severe hearing loss (71-90 db) and profound hearing loss (>90db)

**RESULTS**

100 Patients (n=100) were selected in this study in which 54 were boys and 46 were girls. Male female ratio was 1.17. The highest incidence of age was 13 years which was 16 patients (16%) followed by 10 years 14 patients (14%) which shown in table 1. In table 2, 53 children (53%) had risk factors of hearing loss. In bar chart shows degree of hearing loss in which shows mostly children had moderate hearing loss which was 26 patients (26%) followed by slight hearing loss, 19 children (19%). 18 children (16%) had moderately severe hearing loss.



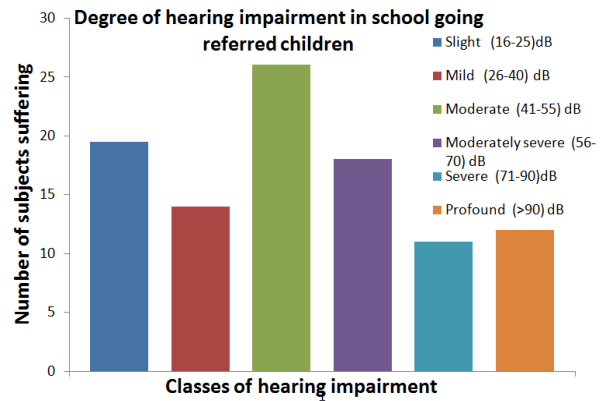
**Pie Chart: Male female ratio**

**Table No.1: Age Incidence**

Age	No. of patients	%age
6	7	7%
7	7	7%
8	6	6%
9	1	1%
10	14	14%
11	10	10%
12	13	13%
13	16	16%
14	9	9%
15	9	9%
16	8	8%

**Table No.2: Presence of Risk Factor**

Yes	53	53%
No	47	47%



**Bar Chart**

**DISCUSSION**

Hearing loss in children is a very common problem<sup>4</sup> ranging from one to three per 1000 individuals; this may be increased if risk factors are present<sup>11,12</sup>. Hearing impaired child shows significant deficiency in educational activities. Actually most of the time children spend their day in learning activity (receptive vocabulary)<sup>13</sup>. Usually schools don't have screening programme as a routine examination audiological assessment. At time of school entry hearing screening programme has to be started for early detection of hearing problem and start rehabilitation programme especially in developing countries<sup>6,7</sup>. Early detection will minimize the damaging impact on the development of language and listening skill as well as learning process caused by hearing loss<sup>14,15</sup>.

In this study evaluate the hearing loss in school going children. Male children predominance as compare to female; male were 54 (54%) while female were 46 (46%); male female ratio was 1.17. The highest number of hearing impaired patients was noted at 13 years of age which was 16 patients (16%) followed by 10 years of age 14 children (14%). In 53 cases (53%) children had risk factors present while 47 children (47%) had no risk factors. Le Roux study shows 51.1% children had a positive risk factor in childhood hearing loss<sup>16</sup>. The mild to moderate degree hearing loss found more in this study. Most of the children had moderate hearing loss 26 children 26%. Slight hearing loss and moderately severe hearing loss were 19 children (19%) and 18 children (18%) respectively. Previous study also correlates with this study<sup>8,9,10</sup>. Children with moderate to severe hearing loss and severe to profound hearing loss identified earlier as compare to mild to moderate hearing loss.<sup>11,12</sup>. Hearing impaired child has more difficulty in learning grammar, vocabulary and verbal commands as compare to normal hearing child<sup>13</sup>. Thousands of children in ordinary schools are mild degree hearing loss and this hearing is un-noticed by the patients or by teacher/parents but most cases are treatable<sup>17</sup>. One study shows that children with minimal hearing has poor performance in comprehensive task as

compare to normal hearing<sup>18</sup>. The American Speech-Language Hearing Association made a comprehensive list in which suggest responsibilities of audiologist in education include educational, amplification, training, and rehabilitation. Educational audiologist has important role in screening programme if audiological services are not present in school. Various technologies are available now a days to screen new born babies for hearing impairment<sup>19,20</sup>. Hearing evaluation in very important in early life, we can get information about nature and extend of the hearing impairment and also get information about implication or surgical management is beneficial or not. If implication is beneficial should referred for hearing aid.

## CONCLUSION

Mild to moderate hearing loss in school going child is difficult to diagnose in routine clinical examination. For this purpose specific audiological screening programme should be started because mild to moderate hearing loss is treatable if early diagnosis is made and proper treatment will start.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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