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Original Research Article

Observational Research Assessing the Morbidity Profile and Nutritional Status among Deaf Mute Children

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Abstract

Aim: The aim of the present study was to assess the morbidity profile among Deaf mute children attending organizations in Bihar and to determine their nutritional status among them.

Methods: The study design was institutional based cross-sectional study and 50 deaf-mute children were selected using a convenient sampling technique.

Results: Most common morbidity that deaf mute children facing was dental problems (76%) including dental caries and yellowing of teeth followed by diseases of digestive system 72% (constipation, heart burn, gastro esophageal reflux disease, irritable bowel syndrome). Respiratory diseases were found in more than two thirds (70%) including asthma, pneumonia. In thyroid disorders, majority had hypothyroidism and was on medications for that. Ear discharge and otitis media were found in slightly more than one fourth (26%). Association between gender and dental caries found that higher proportions of female deaf- mute children had dental caries 26 females compared to 9 in males though it was not significant statistically (p=0.1). The prevalence of undernutrition among the study population was 14% and the prevalence of overnutrition (overweight and obese) was 24%. The prevalence of undernutrition was more among boys and the prevalence of overnutrition was slightly more among girls though it was not statistically significant (p=0.7).

Conclusion: The present study showed a high proportion of deaf-mute children developing nutritional deficiencies and morbidities; hence an effective collaboration and coordination between these organizations and integrated child development services (ICDS) Anganwadi centres is required for the improvement of Nutritional status. Regular health check- ups and proper treatment need to be ensured along with appropriate measures of health education for the children and caregivers.

Keywords: Deaf-mute children, Nutritional status, Special schools, Morbidities.

Introduction

Hearing is necessary for the development of language, speech, and cognitive skills. Effects of hearing loss on the development of a child's ability to learn, to communicate, and to socialize can be devastating. Hearing impairment is an invisible handicap and hence its effects are not visible to others, so deafness in a child often goes unnoticed. Since exposure to a normal acoustic environment is required for maturation of peripheral and central auditory pathways, a significant reduction of sensory input induces both anatomical and physiological alterations of auditory pathways. [1,2] If no auditory rehabilitation is done by perilingual period, the child develops permanent speech problems.

The World Health Organization (WHO) definition of “deafness” refers to the complete loss of hearing ability in one or two ears. The cases included in this category will be those having hearing loss more than 90 dB in the better ear or total loss of hearing in both the ears. The WHO definition of “hearing impairment” refers to both complete and partial loss of ability to hear. [3,4] There are numerous factors leading to deafness in the neonatal period and early childhood, which are more common in a developing country like India. These comprise of various antenatal, perinatal, and postnatal factors. Mutism occurs secondary to non-rehabilitation of deafness. [5-7] This could be due to inadequate medical services that are overstretched or absent in rural areas, illiteracy, poverty, old customs and beliefs, decreased doctor–patient ratio, lack of knowledge regarding hearing milestones, and scarce finances among many others. [8] Little money spent on prevention

of deafness and its rehabilitation, can prevent this major burden of handicap in our society.

Overall prevalence of congenital hearing disorder is 1-3 per 1000 newborns. As per WHO estimates in India, there are approximately 63 million people who are suffering from significant hearing impairment; this places the estimated prevalence at 6.3% in Indian population. [9] In developing countries the technology of early diagnosis, effective hearing aids, cochlear implants, education in special schools & other rehabilitative measures are not adequately distributed. This leads to delayed diagnosis of congenital hearing losses. In India this problem has started to be addressed just now with advent of National Programme for prevention and control of deafness according to operational 12th five year plan. However it is not effectively implemented throughout India till date. [10]

The aim of the present study was to assess the morbidity profile among Deaf mute children attending organizations in Bihar and to determine their nutritional status among them.

Materials and Methods

The study design was institutional based cross-sectional study and 50 deaf-mute children were selected using a convenient sampling technique.

Inclusion Criteria

All deaf and dumb children attending a special school in Bihar state were included.

Exclusion Criteria

The Children who were not available at special schools during the scheduled day of the present study were excluded.

Study Tools

Pre-designed and semi-structured questionnaire which was standardized by conducting the pilot study, weighing machine, measuring tape, Stadiometer, torch, and WHO Anthroplus 2007 software.

Ethical Considerations

Ethical clearance was taken from the institutional ethics committee before the start of the study. Permission from the Head of the special school was taken and informed consent from the parents of the children was also taken.

Data Collection

The data was collected by using a standardized questionnaire in the local language after taking informed consent from parents. The data tool consisted of demographic details, a Morbidity profile, Anthropometric measurements, a head-to-toe physical examination, and their nutritional Status which was assessed by measuring height, weight, and WHO Anthropometric indicators such as height/age, and BMI/age.

Data Analysis

Data entry, processing, and analysis were done by using the Micro-soft excel software to explore the distribution of several categorical and quantitative variables. Categorical Variables were summarized with percentages or numbers, while quantitative variables were summarized by mean±standard deviation. Appropriate statistical applications were done by using Epi-info 7.1 version software. The Chi square test or Mid p test was used to assess the significance with p value less than 0.05 considered to be statistically significant.

Results

Table 1: Distribution of study population according to morbidity status

Morbidity status duringlast 3 months	N	Percentage
Nutritional deficiency	9	18
Ear diseases	13	26
Respiratory diseases	35	70
Diseases of oral cavity	10	20
Skin diseases	11	22
Diseases of digestivesystem	36	72
Disorders of thyroid gland	19	38
Dental problems	38	76
Cardiovascular diseases	9	18
Others	5	10

Most common morbidity that deaf mute children facing was dental problems (76%) including dental caries and yellowing of teeth followed by diseases of digestive system 72% (constipation, heart burn, gastro esophageal reflux disease, irritable bowel syndrome). Respiratory diseases were found in more than two thirds (70%) including asthma, pneumonia. In thyroid disorders, majority had hypothyroidism and was on medications for that. Ear discharge and otitis media were found in slightly more than one fourth (26%).

Table 2: Association between gender and dental problems

Gender	Dental problems N		P value
	Present	Absent	
Males	9	2	
Females	26	13	0.1
Total	35	15	

Association between gender and dental caries found that higher proportions of female deaf- mute children had dental caries 26 females compared to 9 in males though it was not significant statistically (p=0.1).

Table 3: Distribution of study population according to body mass index (BMI) for age

BMI for age	N		
	Boys	Girls	Total
Severe thin	0	2	2 (4)
Thin	1	5	6 (12)
Normal	6	24	30 (60)
Over weight	1	6	7 (14)
Obese	2	3	5 (10)
Total	10	40	50 (100)

The prevalence of undernutrition among the study population was 14% and the prevalence of overnutrition (overweight and obese) was 24%. The prevalence of undernutrition was more among boys and the prevalence of overnutrition was slightly more among girls though it was not statistically significant (p=0.7).

Discussion

World Health Organisation (WHO) estimates in India, there are approximately 63 million people, who are suffering from significant auditory impairment; this places the estimated prevalence at 6.3% in the Indian population. The disabled form a substantial part of the community. [11] All over the world, there are an estimated 500 million people with disabilities. WHO definition of 'deafness' refers to the complete loss of hearing ability in one or two ears. The cases included in this category will be those having hearing loss of more than 90 dB in the better ear or total loss of hearing in both ears. [7] Deaf-mute is a term referred to identify a person who is deaf using a sign language or both deaf and could not speak. These people communicate by using sign language. There is an overall 2.4 million Deaf and mute population in India, which holds the world's 20% of the deaf and dumb population. Hearing loss is the most common sensory deficit in humans today. [3,7]

Most common morbidity that deaf mute children facing was dental problems (76%) including dental caries and yellowing of teeth followed by diseases of digestive system 72% (constipation, heart burn, gastro esophageal reflux disease, irritable bowel syndrome). Respiratory diseases were found in more than two thirds (70%) including asthma, pneumonia. In thyroid disorders, majority had hypothyroidism and was on medications for that. Ear discharge and otitis media were found in slightly more than one fourth (26%). Association between gender and dental caries found that higher proportions of female deaf- mute children had dental caries 26 females compared to 9 in males though it was not significant statistically (p=0.1) compared to the study by Singh et al[12] from rural central India where 52% were females and 48% males.. The prevalence of undernutrition among the study population was 14% and the prevalence of overnutrition (overweight and obese) was 24%. The prevalence of undernutrition was more among boys and the prevalence of overnutrition was slightly more among girls though it was not statistically significant (p=0.7). [12]

Hearing loss in children constitutes a considerable handicap because it is an invisible disability and compromises the optimal and personal achievement of a child. If the diagnosis is delayed by 24 to 36 months of age, which is common in the rural and illiterate population, after this age even rehabilitation procedures (like hearing aids, cochlear implant, speech therapy, psychological intervention on the family) are unable to ensure complete development of speech, thus preventing the full participation of a deaf child in social living. Outcomes in various domains of children like communication skills, education, behavior, family interaction, psychological health and quality of life can be improved if intervention is done in the first 6 months of life for the ones with moderate or greater permanent bilateral hearing loss. [13] Moreover, patients who managed with a cochlear implant at a younger age (<3 years) had a significantly better result than those treated later. [14] Pediatric HL is a major concern in India due to the high incidence of HL in this age, high birth rate, lack of facilities, and awareness for early diagnosis. According to the National Commission on Population 2010, over 25,000 children are born

deaf every year in India. In about 30% of these children, parents are not aware of deafness. [15-17] According to a study by Suniti Chakrabarti et al [18] the estimated prevalence of profound sensorineural loss is 0.58 per 1000 children.

Conclusion

The present study showed a high proportion of deaf-mute children developing nutritional deficiencies and morbidities; hence an effective collaboration and coordination between these organizations and integrated child development services (ICDS) Anganwadi centres is required for the improvement of Nutritional status. Regular health check- ups and proper treatment need to be ensured along with appropriate measures of health education for the children and caregivers.

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