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Original Research Article

A study on morbidity and nutritional status of deaf-mute children attending a special school of Hyderabad, Telangana

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ABSTRACT

Background: Hearing is necessary for the development of language, speech, and cognitive skills. Hearing loss effects a child's ability to learn, communicate, and to socialize. Hearing impairment often goes unnoticed which compromises a child's ability to speak and express their needs. If no rehabilitation is done child develops physical and mental issues. Deaf-mute children are neglected in these aspects hence present study aimed to assess their nutritional and morbidity status among them. The objective of this study was to assess the morbidity profile among Deaf mute children attending organizations in Hyderabad and to determine their nutritional status among them.
Methods: A cross-sectional study was conducted over for 2 months during May and June 2022 among 50 deaf-mute children attending a special school in Hyderabad. A pre-designed semi-structured questionnaire was used to interview subjects after taking permission from the principal and confidentiality was ensured. The collected data were analysed using MS Excel and Epi-Info software.
Results: The mean age was 13.4 years with the majority being female children (82%). The prevalence of undernutrition was 16% and the prevalence of overnutrition was 26%. The prevalence of undernutrition was more among boys and the prevalence of overnutrition was slightly more among girls. The morbidity pattern showed that 24 (47.5%) suffered from any disease during the past 3 months with the commonest morbidity being dental caries (74%).
Conclusions: The study showed a high proportion of deaf-mute children developing nutritional deficiencies and morbidities; hence an effective collaboration and coordination between these organizations and ICDS anganwadi centres are needed for the improvement of nutritional status.

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

INTRODUCTION

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.[1] 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.[2] 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.[2,3] Hearing is necessary for the development of language, speech, and cognitive skills. Deaf-mute child's ability to learn,

communicate, and to socialize. These children have an increased risk of injuries as a result of difficulties in identifying and responding to hazards in the environment.[4] Hearing impairment often goes unnoticed which compromises a child's ability to speak and express their needs. If no rehabilitation is done child develops physical and mental issues.[5,6]

Improved survival rates, more advanced medical care, and increased longevity contribute to the increased number of disabled individuals. The greatest challenge that peoples with disability have to face is a societal misconception, i. e.; that they are a 'breed apart'. Therefore, historically, they have been pitied, ignored, or even hidden away in institutions.[7] Discrimination continued to exist in certain important areas such as educational opportunities, health care services, etc. In recent decades, however, this situation has undergone some positive changes because of adjustments in legislation and public attitude. WHO developed a framework for measuring health and disability at both individual and population levels called the International Classification of Functioning, Disability, and Health (ICF).[8]

Many factors cause deafness in the neonatal period and early childhood. These comprise various antenatal, perinatal, and postnatal factors which are more common in a developing country like India. Mutism occurs secondary to the non-rehabilitation of deafness. This could be due to insufficient medical services in rural areas, illiteracy, poverty, old customs and beliefs, inadequate knowledge regarding hearing milestones, and low finances among many others. A little increase in the fund spent on the prevention of deafness and its rehabilitation can prevent this major burden of deaf-mutism in our society.[8,9] Deaf-mute children are also prone to many diseases due to micronutrient deficiencies, vitamin A deficiency, etc which indirectly effects their nutrition and end up being malnourished. Deaf-mute children are neglected in these aspects hence present study aimed to assess the nutritional and morbidity status among them.

Objectives

The objectives of this study was (a) to assess the morbidity profile among deaf mute children attending special school in Hyderabad; and (b) to determine the nutritional status among the study population.

METHODS

Study design

The study design was institutional based cross-sectional study.

Inclusion criteria

All deaf and dumb children attending a special school in Hyderabad, Telangana were included.

Exclusion criteria

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

Study duration

The study duration was 3 months (May to July 2022).

Sample size

50 deaf-mute children were selected using a convenient sampling technique.

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 (R c. No: IEC/GMC/2022/06/23). Permission from the Head of the special school was taken and informed consent from the parents of the children was also taken.

Data collection

Data collection was started from May 2022 to July 2022 after getting Institutional Ethical Clearance. 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

Among the total study population, 38 (n=76%) were both deaf and mute children, and the rest (n=12, 24%) were only

deaf children. The mean age of the study population was 13.4±2.4 years. The majority of the children were females (82%, n=41). About 86% belonged to Hindus, followed by Muslims 8% and Christians 6% respectively. The overall mean height of the study population was 138.23±13.48 cm, weight was 36.12±11.18 and BMI was 18.06±3.62 kg/m^2 respectively.

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 70% (constipation, heart burn, gastro esophageal reflux disease, irritable bowel syndrome). Respiratory diseases were found in more than two thirds (68%) including asthma, pneumonia. In thyroid disorders, majority had hypothyroidism and were on medications for that. Ear discharge and otitis media were found in slightly more than one fourth (28%). The morbidity pattern showed that 24 (47.5%) suffered from any disease during the past 3 months and 2 (3.3%) of them were hospitalized in the past 1 year (Table 1). Association between gender and dental caries found that higher proportions of female deaf-mute children had dental caries (78.4%) compared to 21.6% in males though it was not significant statistically (p=0.1) (Table 2). The prevalence of undernutrition among the study population was 16% (14% thinness and 2% severe thinness) and the prevalence of overnutrition (overweight and obese) was 26%. The prevalence of undernutrition and overnutrition among girls was 14.7% and 26.8% respectively whereas in boys it was 22.2%and 22.2% respectively and 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=0.8) (Table 3). The prevalence of stunting among study population was 7(14%) (18.5% were moderate stunting and 15.9% were having severe stunting). The prevalence of moderate stunting and severe stunting among girls was 7.4% and 4.8% respectively whereas in boys it was 11.1% and 11.1% respectively and the prevalence of stunting was more among boys but it was not found to be significant (Figure 1).

Table 1: Distribution of study population according to morbidity status.

Morbidity status during last 3 months	N	Percentage*
Nutritional deficiency	08	16%
Ear diseases	14	28%
Respiratory diseases	34	68%
Diseases of oral cavity	09	18%
Skin diseases	10	20%
Diseases of digestive system	35	70%
Disorders of thyroid gland	18	36%
Dental problems	37	74%
Cardiovascular diseases	08	16%
Others	04	8%

Note: *- Percentage exceeds 100% due to multiple responses.

Table 2: Association between gender and dental caries.

Gender	Dental caries N (%)		P value
	Present	Absent	
Males	8 (21.6)	1 (7.7)	0.1
Females	29 (78.4)	12 (92.3)	
Total	37	13	

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

BMI for age	N (%)		
	Boys	Girls	Total
Severe thin	0 (0)	1 (2.5)	1 (2)
Thin	2 (22.2)	5 (12.2)	7 (14)
Normal	5 (55.6)	24 (58.5)	29 (58)
Over weight	1 (11.1)	7 (17.1)	8 (16)
Obese	1 (11.1)	4 (9.7)	5 (10)
Total	9 (100)	41 (100)	50 (100)

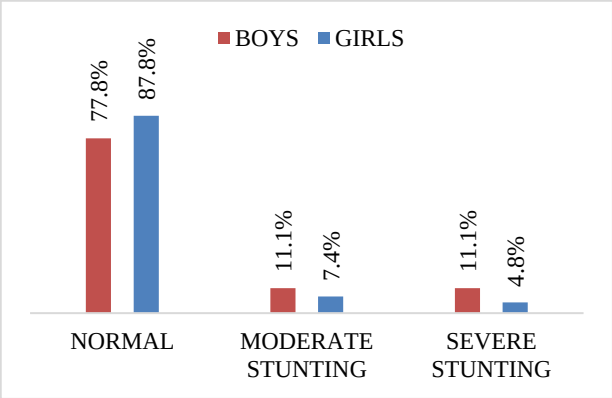

Figure 1: Distribution of study population according to height for age.

DISCUSSION

With regards to the nutritional health status of children in India, existing literature and surveys including National Family Health Survey (NFHS).[10] showed that nutrition indicators including stunting, wasting, and being underweight still pose a major public health issue though the burden of malnourished children coming down. Malnutrition and infections are a vicious cycle thereby affecting the health status and leading to increased morbidity. And the issue of morbidity and malnutrition will be an extremely worrisome situation, especially in deaf-mute children.

Henceforth, the present study was taken up among 50 deaf-mute children from one special school where the mean age was 13.4 years with female preponderance (82%) compared to the study by Singh et al from rural central India where 52% were females and 48% males.[11] A morbidity pattern was observed in almost half the proportion of deaf-mute children (47.5%) and

hospitalization in the past year was around 3.3%; where the majority of the cases were due to dental problems, diseases of the respiratory system and gastrointestinal system. This is in comparison to a study by Pawde et al where the most common health problems in deaf and mute children were pneumonia (10%), jaundice (10%), tonsillitis, exanthematous fever, and refractive errors.[12]

A high proportion of children in the present study had dental caries (74%) compared to the study by Goud et al where the prevalence of dental caries was 49.3%.[13] But in contrast, Tefera et al found the prevalence of dental caries at 38.6%.[14] This difference might be due to different demographic factors and habits pertaining there into.

And gender-wise distribution of the prevalence of dental caries was shown high among female deaf-mute children (78.4%) compared to males (21.6%) which was similar to the study conducted by Rawlani et al where they also found the prevalence of dental caries to be high among females than males.[7]

With regards to nutritional status, the prevalence of undernutrition and overnutrition was 16% and 26% respectively. Undernutrition was more among boys and overnutrition was slightly more in girls. Stunting was seen in 14% of deaf-mute children which was more among boys. These findings are comparable to findings by Kwotua, Apungu from Ghana where the prevalence of thinning was 7.1% among deaf students. About 7.9% of male students and 9.4% of female students were overweight or obese. The prevalence of stunting was 15.9% which was more among males (20.7%) compared to females (14.1%).[15]

Limitations

Due to the cross-sectional nature of the study, causal relationships cannot be established.

Since the study was done in only one special school and a small sample may limit the generalizability of the study.

CONCLUSION

Studies 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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