

Original Research Article

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A Study of Attributes of Hearing Impaired Children and Importance of Nutrition

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ABSTRACT

A present study was conducted to study attributes of hearing impaired children and importance of nutrition. For the study, based upon the nature of the research problem and objectives of the present study, action research design was selected. A total of fifteen hearing impaired children were selected. Questionnaire was developed for data collection. Mean score were used for data analysis. The results of the study were revealed that the majority of the hearing impaired children were male i.e. 60 % when compared to female 40%. More than half of the HI children i.e. 53% were belonged under the category of 10-11 years of age followed by almost an equal sample belonged to 8-9 years old (27%) and 6-7 years (20%). In case of class of study the majority of hearing impaired children was in 5th class i.e. 33%, followed by class 4th (27%). An equal sample i.e. 20% was belonging to class 1st and 3rd whereas none of them belonged to class 2nd. It was also found that respiratory problems among hearing impaired children was more prominent i.e. all the hearing impaired children were having respiratory problems followed by almost an equal sample of 80% were suffering from ear disorders and voice problems. Very few samples were having eyes problems (40%) whereas none of them was having tooth decay.

Keywords

Hearing impaired children, Nutrition, Mean score, Action research

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Introduction

The WHO definition of “hearing impairment” refers to both complete and partial loss of ability to hear. Hearing loss, also known as hearing impairment, is a partial or total inability to hear. A deaf person has little to no hearing. Hearing loss may occur in one or both ears. In children hearing problems can affect the ability to learn spoken language and

in adults it can cause work related difficulties. In some people, particularly older people, hearing loss can result in loneliness. Hearing loss can be temporary or permanent. The incidence of hearing impairment worldwide is 1 - 2 per 1,000 newborns (WHO, 2007).

According to WHO survey, In India, 63 million people (6.3%) suffer from significant auditory loss. Four in every 1000 children

suffer from severe to profound hearing loss. With over 100,000 babies that are born with hearing deficiency every year. The estimated prevalence of adult-onset deafness in India was found to be 7.6% and childhood onset deafness to be 2%. With the ageing of the world population these numbers are expected to double by 2030-2050. Hearing impairment is considered the most prevalent impairment worldwide.

Nutrition and hearing loss

Hearing loss is a public health problem or a disability that appears in early life which increases several-fold over the lifespan, and also affects all societies. Hearing loss has profound health, social, and economic consequences. Hearing impaired children are likely to experience speech, language, and cognitive delays and poor school performance. Social isolation accompanies daily life of the hearing impaired. Micronutrient deficiencies that often coexist with generalized undernutrition at critical stages of development have been linked to hearing impairment. Severe prenatal iodine deficiency is listed by the WHO as a nutritional cause of hearing loss. In high-income countries, large-population studies in adults have reported protective risk ratios against hearing loss with higher dietary intakes of fish, long-chain PUFAs, folate, b-carotene, and vitamins A, E, and C. Although findings across studies are inconsistent, animal evidence exists to support roles for each of these studied nutrients in regulating redox stress, protecting cochlear function, and enabling hearing.

Acute malnutrition raises children's susceptibility to infections, including in the ear. Repeated ear infections can lead to hearing loss (Hopkins, 2018). Acute undernutrition in early childhood, represented by a low BMI or thin arm circumference for age, was associated with both an ~2-fold

higher risk of hearing loss and a 1.4- to 1.8-fold increased risk of abnormal tympanometry. (Emmett *et al.*, 2018)

Kayalvizhi *et al.*, (2017) conducted a cross-sectional study to study the factors that can influence the consumption of fruits and vegetables among the selected sample of 500 school children between 13 to 15 years of age. The structured questionnaire was used for data collection. Results found that majority of boys had a positive attitude towards health and physical outcome expectancy than girls regarding consumption of fruits and vegetables. The study also indicated that boys and girls consumed less quantity of energy, carbohydrate, and protein when compared with RDA.

Bora and Kulshreshtha (2016) conducted a study of assessment of nutritional status of school going children age between 7-9 years and 100 children were selected randomly i.e. 50 boys and 50 girls. Nutritional status was assessed in terms of Dietary assessment which was done by 24 hours Dietary Recall method for 3 consecutive days. The results of the study revealed that consumption of foods like cereals, pulses, fruits, GLV's, milk and milk products, fats and oils, sugar and jaggery were inadequate in the diets of both boys and girls and nutrients like energy, fat, beta-carotene, B-complex vitamins, vitamin C, iron and calcium were found limiting in the diets of school children. Hence the results of the study can be of used for planning need-based supplementary nutrition programs by the policy-makers for the school children.

Curhan *et al.*, (2015) emphasizes the likely importance of micronutrient imbalance or deficiency as determinants of hearing loss. It is reported that higher intakes of b-carotene, b-cryptoxanthin, and folate to be protective against incident hearing loss. Oxidative stress and impaired homocysteine metabolism

appear to contribute to inner-ear dysfunction, effects that adequate carotenoid and folate nutriture may attenuate by postulated scavenging of free radicals and maintenance of antioxidant enzyme homeostasis (Martinez-Vega R *et al.*, 2015), respectively, although other mechanisms likely exist. While there are plausible mechanisms by which chronic protein and energy deprivation during development may interfere with ear formation and function in fetal and early postnatal stages (Rocinho *et al.*, 2001).

In low-income countries, where undernutrition remains widespread, limited research has identified micronutrient deficiencies (e.g., of vitamin A and zinc) as risk factors for otitis media, the leading acquired cause of childhood hearing loss. In one trial cohort, preschool vitamin A supplementation was shown to reduce hearing loss attributed to childhood purulent ear infection. (Schmitz *et al.*, 2012).

Materials and Methods

For the study, based upon the nature of the research problem and objectives of the present study, Action research design was selected.

The city Hyderabad was purposely selected for the present study because of the availability and easy accessibility of the Hearing-Impaired schools. One school was purposively selected namely –John Peter Memorial (J.P.M) Junior College for the Deaf. A total fifteen sample were randomly selected.

The respondents were from Hearing impaired school and variable like general profile like sex, age, gender, class of study, health problems, diet category and frequency of food consumption was studied. Questionnaire was developed for the study to gather the information from the respondents.

The mean scores, percentage and frequency were calculated to know the food consumption and ranking was given.

Results and Discussion

The results of the present study were presented below.

The majority of the children were non – vegetarian comprising of 60% followed by vegetarian (40%). In case of their food consumption pattern all the samples were taking cereals and spices on daily basis followed by other vegetables, sugars, pulses (93%), milk and milk products (87%), roots and tubers (73%), millets (60%), green leafy vegetables and fruits (53%). Very few of them were taking nuts and oil seeds (27%) and meat and egg (13%) on daily basis. More than half of the samples i.e. 53% were taking nuts and oil seeds on weekly basis followed by meat and egg (47%), fruits (40%), roots and tubers, green leafy vegetables (27%), millets (20%), milk and milk products (13%) and very few of them were taking other vegetables, pulses, sugars (7%). None of them were taking cereals and spices weekly. Most of the respondents were taking millets, green leafy vegetables, nuts and oil seeds (20%) occasionally while least of them were taking fruits occasionally (7%). Nearly half i.e. 40% were never taking non veg because they are vegetarian.

Food stuffs were ranked according to the mean score obtained for each of them. Milk were ranked 1st having mean score of 4.0 and non-veg were ranked 10th having least mean score i.e. 2.2 among them (Fig. 1-4).

General profile of the respondents

The study showed that 60% of the hearing impaired children were male while 40% of them were female. Shah *et al.*, (2017) pointed that hearing impairment is slightly more

common among boys than girls; the average male: female ratio is 1.24:1. The majority of the children (53%) were in the age group of 10-11 year as compared to the children in age group 8-9 years (27%) and in the age group of 6-7 years (20%). Hussain *et al.*, (2011) revealed that HI children between aged between 9-12 (42.5%) years was Hearing

Impaired compared to children aged between 13-15 years (31.3%) and 5-8 years (27.2%).

The majority of the hearing impaired children were studying in class 5th i.e. 33%, followed by 27% in class 4th, 20% in class 3rd and class 1st (Table 1-4).

Table.1 Frequency of food consumption

Food	Daily (4)		Weekly (3)		Occasionally (2)		Never (1)		Average score	Ranking
	F	%	F	%	F	%	F	%		
Cereals	15	100	-	-	-	-	-	-	4.0	1 st
Spices	15	100	-	-	-	-	-	-	4.0	1 st
Pulses	14	93	1	7	-	-	-	-	3.9	2 nd
Milk and milk products	13	87	2	13	-	-	-	-	3.9	2 nd
Other vegetables	14	93	1	7	-	-	-	-	3.9	2 nd
Sugars	14	93	1	7	-	-	-	-	3.9	2 nd
Roots and tubers	11	73	4	27	-	-	-	-	3.7	3 rd
Fruits	8	53	6	40	1	7	-	-	3.5	4 th
Millets	9	60	3	20	3	20	-	-	3.4	5 th
Green leafy vegetables	8	53	4	27	3	20	-	-	3.3	6 th
Nuts and oil seeds	4	27	8	53	3	20	-	-	3.1	7 th
Meat and egg	2	13	7	47	-	-	6	40	2.3	8 th

Table.2 Gender profile of hearing impaired children
n= 15

Respondents	Gender	F (%)
HI Children	Male	9 (60%)
	Female	6 (40%)

Table.3 Age group of HI children

n= 15

Hearing impaired children	
Age (yrs.)	F (%)
6- 7 yrs.	3 (20%)
8- 9 yrs.	4 (27%)
10- 11 yrs.	8 (53%)

Table.4 Class of study of hearing impaired children

n= 15

S. No.	Class of study	F (%)
1.	1 st	3 (20%)
2.	2 nd	0 (0%)
3.	3 rd	3 (20%)
4.	4 th	4 (27%)
5.	5 th	5 (33%)

Figure.1 Gender profile of hearing impaired children

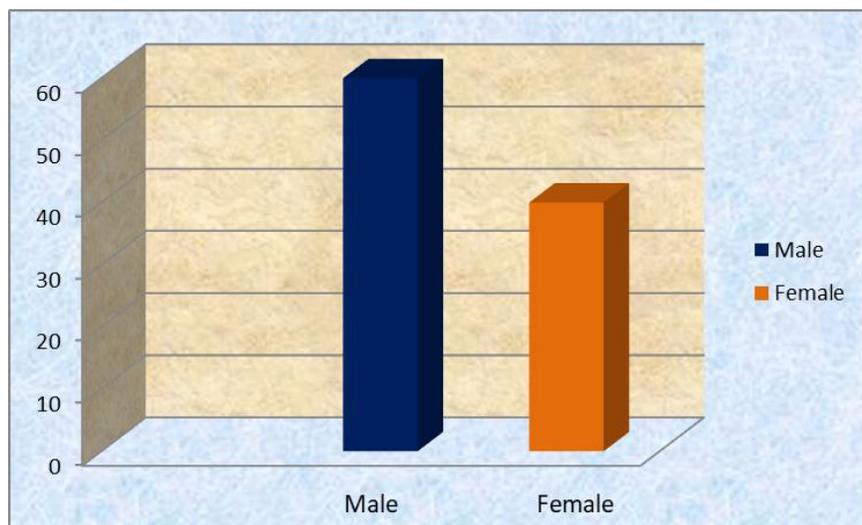


Figure.2 Age of hearing impaired children

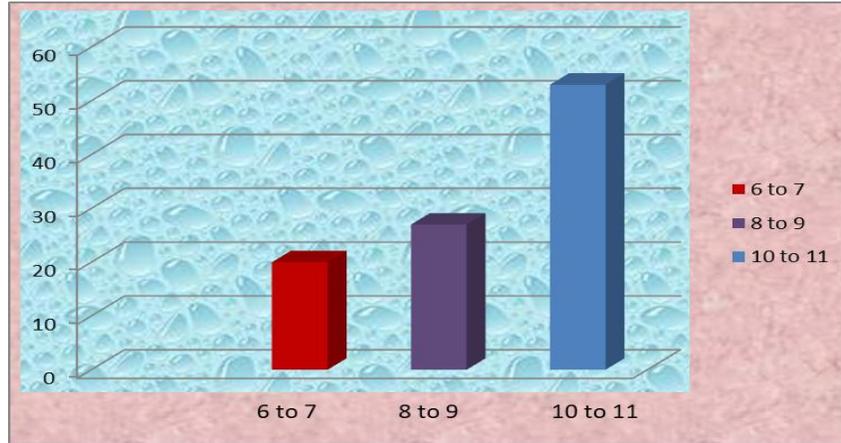


Figure.3 Class of study of hearing impaired children

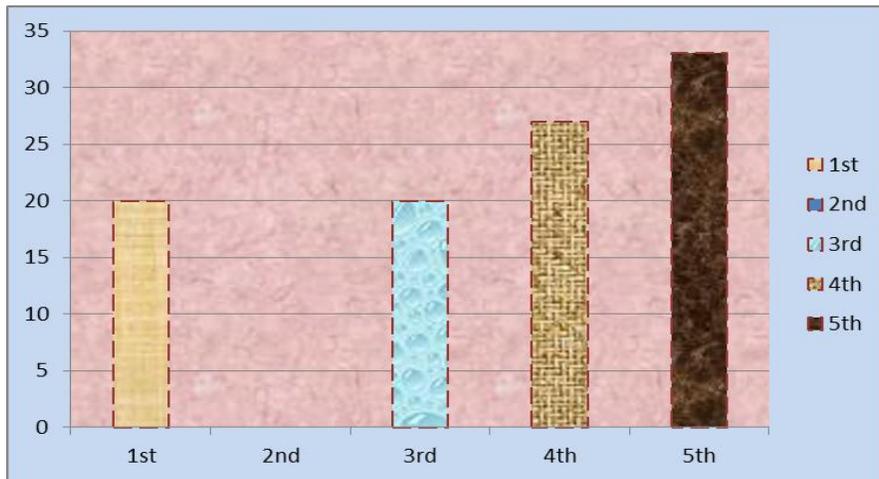
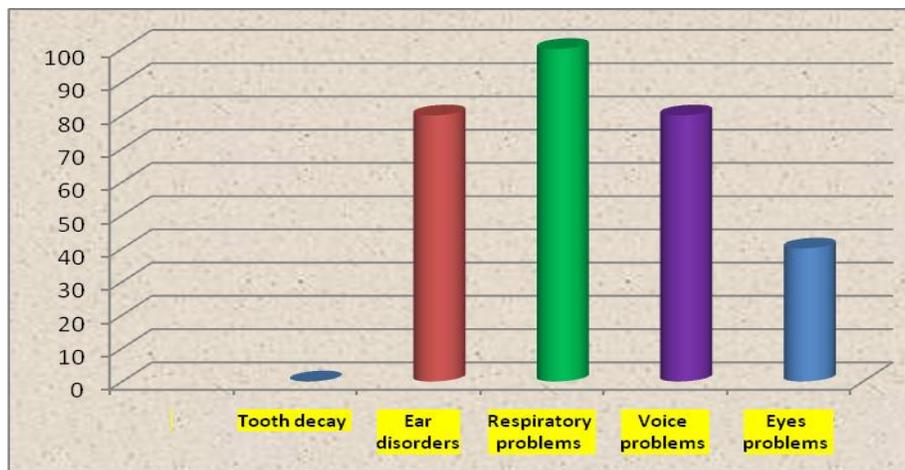


Figure.4 General health problems of hearing impaired children



All the hearing impaired children in the study were found to be suffering from respiratory problems, followed by (80%) children with ear disorders and voice problems, (40%) with eyes problems and none of them were found to have tooth decay problems. Susan and Satish (2018), found similar results which revealed that respiratory efficiency of Hearing Impaired was lower than the normal and it was due to the lack of the development of a verbal language in Hearing Impaired. Ostadimoghaddam *et al.*, (2015) revealed that the hearing impaired children have significantly more eye problems than normal children.

The study revealed that 95% of the hearing impaired children were born to the normal parents and all the children were having congenital hearing loss. The term congenital hearing loss means that hearing loss is present at birth. Congenital hearing loss can be caused by genetic or non-genetic (acquired) factors. Non-genetic factors that are known to cause congenital hearing loss are linked to pregnancy and birth delivery. National Deaf Children's Society (2015) stated that there is a wide variation in the causes of deafness and because of this 9 out of 10 deaf children are born to hearing parents and 1 out of 10 children born to deaf parents are also deaf.

From the study, it was concluded that. The majority of the hearing impaired children were male i.e. 60 % when compared to female 40%. More than half of the HI children i.e. 53% were belonged under the category of 10-11 years of age followed by almost an equal sample belonged to 8-9 years old (27%) and 6-7 years (20%). In case of class of study the majority of hearing impaired children was in 5th class i.e. 33%, followed by class 4th (27%). An equal sample i.e. 20% was belonging to class 1st and 3rd whereas none of them belonged to class 2nd.

The majority of the children were non – vegetarian comprising of 60% followed by vegetarian (40%). In case of their food consumption pattern all the samples were taking cereals and spices on daily basis followed by other vegetables, sugars, pulses (93%), milk and milk products (87%), roots and tubers (73%), millets (60%), green leafy vegetables and fruits (53%).

Food stuffs were ranked according to the mean score obtained for each of them. Milk were ranked 1st having mean score of 4.0 and non-veg were ranked 10th having least mean score i.e. 2.2 among them.

It was also found that respiratory problems among hearing impaired children was more prominent i.e. all the hearing impaired children were having respiratory problems followed by almost an equal sample of 80% were suffering from ear disorders and voice problems. Very few samples were having eyes problems (40%) whereas none of them was having tooth decay.

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