RESEARCH PAPER — FOOD SCIENCE RESEARCH JOURNAL

e ISSN-2230-9403 ■ Visit us : *www.researchjournal.co.in*
Volume 8 | Issue 2 | October, 2017 | 219-222
DOI : 10.15740/HAS/FSRJ/8.2/219-222

A pilot study of the nutritional status of disabled and non-disabled children living in Rajkot, Gujarat

RINA RENSIYA AND HEMANGI D. MEHTA

It is recognized that disabled children living in poverty are among the most deprived in the world. However, there is limited data regarding their nutritional status. Feeding difficulties contributing to poor nutrition have been reported among disabled children living in more affluent environments. Studies in developing countries are complicated by widespread malnutrition among the general population and by a lack of appropriate means of assessing nutritional status. United National guidelines for anthropometric assessment of nutritional status do not provide sufficient information to enable health workers to identify malnutrition among disabled children in the community. The present study found no evidence to suggest that the disabled child may be an additional drain on scarce family resources. Height-for-age was significantly lower in disabled than non-disabled children. It is difficult to determine accurate height among physically impaired children and thus, the present study may have over-estimated the prevalence of stunting among disabled children. The study clearly shows a lack of variety in the diet.

Key Words : Disabled children, Nutritional status, Non-disabled childrenn, Nutritional status

How to cite this article : Rensiya, Rina and Mehta, Hemangi D. (2017). A pilot study of the nutritional status of disabled and non-disabled children living in Rajkot, Gujarat. *Food Sci. Res. J.*, **8**(2): 219-222, **DOI : 10.15740/HAS/FSRJ/8.2/219-222**.

INTRODUCTION

There is increasing international interest in the links between malnutrition and disability: both are major global public health problems All children, including children with disabilities, have the right to adequate nutrition, as stated in the Convention on the Rights of the Child (CRC). Moreover, the Convention on the Rights of Persons with Disabilities (CRPD) highlights the duty of States Parties to prevent discriminatory denial of health services or food and fluids on the basis of disability. Nutrition and disability are intimately related: both are global development priorities; and both can only be addressed by also tackling issues of poverty, ensuring equity and guaranteeing human rights.

Children and adults with disabilities often do not benefit from the same level of services, as the non-disabled population (Helander, 1993). This is due to a variety of reasons, including inaccessible premises and professionals that are not able to communicate adequately with persons with disabilities (Tompsett *et al.*, 1999). In situations of limited resources, the exclusion of children with disabilities may be based on the incorrect belief that preserving the health and welfare (and even life) of children with disabilities is a lower priority than preserving those of a non-disabled child (Socrates *et al.*, 1999).

It is recognized that disabled children living in poverty are among the most deprived in the world. However, there is limited data regarding their nutritional status. Feeding difficulties contributing to poor nutrition have been reported among disabled children living in more affluent

MEMBERS OF RESEARCH FORUM

Author for correspondence :
HEMANGI D. MEHTA, Krishi Vigyan Kendra (J.A.U.), MORBI (GUJARAT) INDIA
Email : hemangidmehta@gmail.com

Associate Authors' :
RINA RENSIYA, Saurashtra University, RAJKOT (GUJARAT) INDIA

environments. Studies in developing countries are complicated by widespread malnutrition among the general population and by a lack of appropriate means of assessing nutritional status. United National guidelines for anthropometric assessment of nutritional status do not provide sufficient information to enable health workers to identify malnutrition among disabled children in the community.

METHODOLOGY

A total of fifty families with disabled children agreed to participate. A further fifty families with non-disabled children agreed to participate as the control group. The children were then divided into three groups: Group I comprised disabled children, Group II comprised non-disabled children from the same neighborhood matched for age and sex with the disabled children (neighbor control group), Group III comprised siblings of either sex, nearest in age to the disabled child. Group III was included to investigate whether disability in the family affects the nutritional status of other siblings.

The disabled children were divided into 6 groups using the WHO classification of impairments: 13 had motor impairments (mainly due to post-polio syndrome); 12 had neurological impairments (mainly cerebral palsy); 9 had sensory impairments, (mainly hearing impairments); 7 had speech impairments, 5 had learning impairments and 2 had epilepsy. A diagnosis for two of the disabled children could not be determined.

Anthropometric measurements [heights, weights, and mid-upper arm circumferences (MUAC)], were carried out using standard methods (United Nations, 1986). Height was measured to the nearest 0.5 cm as this was found to be the most reliable for the measurer. Weight was measured to the nearest 0.1 kg on solar scales (Seca, UNICEF) and MUAC was measured to the nearest 0.1 cm (CMS Weighing Equipment Ltd., UK). Hemoglobin levels were assessed at the local municipal hospital. Information on the dietary intake of the children was collected using a semi-quantitative food frequency table. Three main Z scores assess nutritional status: weight-for-age is a measure of underweight, height-for-age is a measure of stunting and weight-for-height is a measure of wasting.

Data was entered into Epi-Info software (Version 6.04c) and Z scores for nutritional status were calculated by Epi-Nut (version 2.0) which uses the National Center for Health Statistics (NCHS) reference data. Analysis was completed on the statistical package for social sciences (Version 8.0).

Parental permission was obtained to assess the nutritional status for a total of 129 children.

OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Anthropometry :

A summary of the anthropometry results is shown in Table 1, with male and female children combined since the data did not indicate any sex differences. Children in

Table 1 : Anthropometry and hemoglobin results for the children who participated in the measuring component of the project

Parameter	Disabled	Siblings	Neighbor Control
Mean Age (y)	4.8(1.0)	4.6(1.8)	4.5(1.0)
#Males/#Females	22/25	21/20	18/22
WAZ (Z score)	–2.78(1.25)	–2.53(1.10)	–2.37(0.95)
HAZ (Z score)	–3.47(1.87)[a]	–2.50(1.66)[b]	–2.78(1.74)[b]
WHZ (Z score)	–1.20(1.26)	–1.46(1.30)	–1.05(0.84)
MUAC (cm)	12.8(1.6)	13.2(1.4)	13.0(1.3)
Hemoglobin (g/L)	103(1.4)	106(1.4)	106(1.7)

Mean (SD).

Values in row not followed by the same superscript are significantly different.

$p < 0.05$ by ANOVA and Duncan's multiple range test.

[1]Note with respect of missing data:

Z Scores: 1 disabled child, 2 siblings and 4 neighbors.

MUACs: 2 disabled children, 4 siblings and 4 neighbors

Hemoglobin: 1 disabled child, 3 siblings and 5 neighbors'

[2]Missing data is due to missing ages, parental refusal for blood testing and the occasional lack of co-operation encountered during the measuring procedure

Table 2 : A summary of the frequency of dietary intake among children in families with and without a disabled child

Frequency of intake	Fruit and vegetable consumption (%)		Meat, fish and dairy consumption (%)	
	Disability	No disability	Disability	No disability
Rare	20	18	25	14
1/week	24	22	38	41
3-5/week	41	48	28	33
6-7/week	12	9	6	9
2-3/day	3	3	3	3

all three groups were malnourished as compared to the NCHS reference population. Stunting was a larger problem than wasting. Of the total study population 71% were identified as being moderate-severely malnourished (WAZ<–2 SD), 66% were identified as being moderate-severely stunted (HAZ <–2 SD) and 21% were identified as being moderate-severely wasted (WHZ <–2 SD). No differences were found between the siblings and the neighbor controls.

Height-for-age was found to be the only statistically different result. The authors are aware there may have been room for a slight over-estimation of stunting in the disabled group (Group I). The largest impairment groups in the study were the motor and neurological groups, and in these children it was sometimes difficult to obtain an accurate measure of height due to kyphosis or scoliosis. However, the numbers of children in each impairment group were too small to permit a more in depth analysis.

Each group had a mean MUAC below 13.5 cm indicative of moderate and severe malnutrition (Trowbridge, 1979), and 63% of the total study population had low MUAC. The mean hemoglobin results for each group were below 110 g/L, the cutoff point indicative of anemia in children (WHO, 1972), and 57% of the total study population were found to be anemic.

Food frequency :

Semi-quantitative food frequency data was collected on all participating families. The daily eaten foods for the majority of children were cereals and pulses. Tea was also con-summed daily. Non-nutritional liquids (*e.g.*, rice and vegetable water) were rarely consumed.

Fruit and vegetables were consumed 3-5 times a week by most children in each type of family and were rarely eaten by approximately a fifth of children in each type of family (Table 2). Anecdotal evidence suggested that there was little variety in the fruit and vegetables consumed. Most children in both types of families (Table 2) consumed meat, fish and dairy products infrequently, about once a week. Children in families with disability more rarely consumed these items than children in families without disability. The lack of dairy products consumed, in particular yoghurt was unexpected. Anecdotal evidence suggested yoghurt was too expensive and not easily available.

When food items were analyzed separately, no statistical difference ($p < 0.05$) was seen in food consumption between the children in the two types of families except for in fish which was more frequently eaten in families with no disability. However, most families were still eating it only once a week, (36% of children in families without disability and 44% of children in families with disability).

Conclusion :

The anthropometry results show children to be malnourished at levels comparable to the overall prevalence rates of underweight for India. The present study identified more than half the population as anemic which is similar to the prevalence across India.

No differences were identified between the nutritional status of the sibling group and the neighbor controls. The present study found no evidence to suggest that the disabled child may be an additional drain on scarce family resources.

Height-for-age was significantly lower in disabled than non-disabled children. It is difficult to determine accurate height among physically impaired children and thus, the present study may have over-estimated the prevalence of stunting among disabled children. We found that half span (measured from the tip of the middle finger to the mid-sternal notch), could be used as an alternative to height for assessing nutritional status in young children.

The food frequency results show that for the majority of food group's intake was similar between the two types of families. However, meat and vegetables were eaten a

little more frequently among families without disabled children. The study clearly shows a lack of variety in the diet.

This data having assessed feeding difficulties of disabled children in poorer communities. A larger survey, using a randomly selected population, is required to investigate disabled children who may be at a greater risk of malnutrition including micronutrient deficiencies. Alter-native measurements to height must also be investigated. This is essential if health workers are not to miss cases of malnutrition among disabled children.

Acknowledgement:

Ihave duly acknowledged all the sources used by me in the preparation of this research paper.

LITERATURE CITED

Hals, J., Ek, J., Svalastog, A. and Nilson, H. (1996). Studies on nutrition in severely neurologically disabled children in an institution. *Acta Pediatr.*, **85**: 1469-1475.

Helander, E. (1993). Prejudice and Dignity: An Introduction to Community-Based Rehabilita-tion. United Nations Development Program, New York, pp. 20-24.

National Nutrition Monitoring Board Data (1988-1990). In: Child Malnutrition: Country Profiles. UNICEF, UN Children's Fund Statistics and Monitoring Section, 1993.

Socrates, C., Grantham-McGregor, S.M., Harknett, S.G. amd Seal A.J. (1999). Poor nutrition is a serious problem in children with cerebal palsy in Palawan, the Philippines. *Internat. J. Rehab. Res.*, **23**(3):177-84

Tompsett, J., Yousafzai, A.K. and Filteau, S.M. (1999). The nutritional status of disabled children in Nigeria: A cross-sectional survey. *Eur. J. Clin. Nutr.*, **53**: 915-919.

Trowbridge, F.L. (1979). Clinical and biochemical characteristics associated with anthropometric nutritional categories. *Am. J. Clin. Nutr.*, **321**: 758-766.

United Nations (1986). How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children in Household Surveys. UN Department of Technical Co-operation for Development and Statistical Office. New York.

WHO (1972). Nutritional Anemia. WHO Technical Report Series No.3, Geneva.

Received : *26.04.2017;* **Revised:** *03.08.2017;* **Accepted :** *19.08.2017*