



NUTRITIONAL STATUS AMONG SCHOOL GOING CHILDREN IN RAJABARI VILLAGE, GUWAHATI, NORTHEAST INDIA.

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ABSTRACT

INTRODUCTION: Nutritional status is an important indicator of quality of life of the children. Malnutrition is one of the major problem in India. Poor nutrition causes nearly half (45%) of deaths in children under five- about 3.1 million children every year. As per National Family Health Survey (NFHS) 3 (2005-06) in India: 48% of children under age five years are stunted (height for age) which indicates that, half of the country's children are chronically malnourished. As per NFHS-3 in Assam (2005-06): 46.5% of children under age five years were stunted (height for age), 13.7% of under five children were wasted (weight for age), 4% of under five children were severely wasted (weight for height) and 36.4% of under five children were underweight (weight for age). So the aim of this study was to assess the nutritional status among school going children in Rajabari village, Guwahati, Northeast India.

MATERIAL AND METHODS: In this study, the research design adopted was cross-sectional survey design. The sample size was 147 school children by using non probability convenience sampling technique. The tool used for the research study was demographic performa and semi-structure interview schedule. Observational check list of anthropometry measurement was used.

RESULTS AND ANALYSIS: The result showed that majority of children 84(57.15%) were suffering malnutrition and only 63 (42.86%) were in normal status. According to IAP classification, it showed that 63 (42.86%) were normal, 34 (23.12%) mild-moderate malnutrition, 28(19.04%) moderate malnutrition, 15 (10.20%) severe malnutrition and 7(4.76%) very severe malnutrition. According to Agarwal BMI percentile, it seemed that 76 (51.02%) were underweight, 37 (25.17%) were normal, 13 (8.84%) overweight, and 1 (0.68%) were obesity. It also revealed that the prevalence of malnutrition was highest among the age of 5-10 years of children 60(40.82%) as compared to 24 (16.33%) in the age group of 11-15 years.

DISCUSSION AND CONCLUSION: Malnutrition is one of the major community health problem among children. Family, school, community and government should have a major role to alleviate this problem. Community based preventive measures should be taken to improvement of nutritional status.

KEYWORDS : Nutritional Status, IAP Classification, BMI, UMAC

INTRODUCTION

Nutritional status is an important indicator of quality of life of the children. Malnutrition is one of the major problem in India. NFHS-4 reported in Assam (2015-16): 36.4% of children under age five years are stunted (height for age), 17% of under five children are wasted (weight for age), 6.2% of under five children are severely wasted (weight for height) and 29.8% of under five children are underweight (weight for age).⁵

Nutritional status is an important index of quality of life of the children and also social status in a nation. The nutritional status of an individual is often the result of many inter related factors. It is influenced by the adequacy of food intake both in terms of quality and quantity and also by the physical health of the individual. The nutritional status of a community is the sum of the nutritional status of the individuals who form that community.¹

According to WHO (1997), malnutrition is synonymous with protein-energy malnutrition (PEM) signifying an imbalance between the supply of protein and energy and the body's demand for them to ensure optimal growth and function. This imbalance of protein and energy intake leads to malnutrition in the form of stunting, wasting and underweight.² The 2017 Global Hunger Index (GHI) Report ranked India 97th out of 118 countries with a serious hunger situation.³ According to UNICEF January 2017, nearly half of all deaths in children under 5 are attributable to under nutrition translating into the loss of about 3 million young lives a year.⁴ As per (National Family Health Survey) NFHS-4 in Assam (2015-16): 36.4% of children under age five years are stunted (height for age), 17% of under five children are wasted (weight for age), 6.2% of under five children are severely wasted (weight for height) and 29.8% of under five children are underweight (weight for age).⁵

Malnutrition is largely the by-product of poverty, ignorance, insufficient education, lack of knowledge regarding the nutritive value of foods, inadequate sanitary environment, large family size, etc. these factors bear most directly on the quality of life and are the true determinants of malnutrition in society.¹ It is one of the most devastating problems worldwide and is inextricably linked with poverty.⁵

Anthropometric assessment is widely used and often regarded as the best single measures for health and nutritional status in children. According to Jelliffe (1966) nutritional anthropometry is defined as measurements of variations of the physical dimensions and the gross composition of the human body at different age levels and degree of nutrition. The physical state and the gross composition of body are influenced by nutrition.⁷

The present study aimed to assess the nutritional status of children in urban community using anthropometric measurements such as weight, the mid upper arm circumference of the child and dietary history.

MATERIAL AND METHODS

A cross sectional school based study was carried out in the month of June, 2018. The researcher has undertaken one primary school of an urban community i.e Rajabari, an adopted village of Assam down town University, Guwahati. The school was informed well in advance and was provided with all the information about the study and consent was taken from the respective school headmasters and village President.

Data was collected from 147 students of Rajabari prathamic Bidyalaya using semi-structured interview schedule. And anthropometric measurement for the school children were performed by the help of trained B.Sc Nursing students of Sankar Madhab college of Nursing. Body weights were measured without shoes and with light clothing to the nearest 0.1 kg on a weight scale. Two readings with a 5-min interval were obtained, and the average constituted the final weight reading. Standing height was measured without shoes using a stadiometer to the nearest 0.1 cm. Mid upper arm circumference was assessed by using a measuring tape and measuring the mid-point between the tip of the shoulder i.e. the acromion process and the tip of the elbow i.e. olecranon process. The Indian Academy of Pediatrics (IAP) Classification of malnutrition and Mid Upper Arm Circumference (MUAC) Classification of malnutrition, and BMI classification (Agarwal BMI percentile) were used for determining the nutritional status of the children.

RESULTS AND DISCUSSION

Analysis of data showed that out of 147 no. of children, 74(50.34%) were male and 73(49.65%) were female children. Majority of children 118 (80.27%) were in the age group 5-10 years which is followed by 29(19.72%) in the age group of 11-15 years. In regards of dietary pattern, it showed that majority of children were non-vegetarian 117(79.55%) as compared to vegetarian 37(25.17%). 110(74.83%) of children had regular breakfast and 37(25.17%) had not regular breakfast. It was found that 99(67.34%) had daily intake of milk and 100(68.02%) of children had history of daily intake of vegetables. There was no history of de-worming in the last six months among all children.

The mean weight of the study population was found 22.8 ±9.6 kg ranging from 13kg to 49 kg, mean height was found 124±10.2 ranging from 99 cm to 159 cm, mean BMI 18.2 kg/mtr2 ranging from 11.2 kg/mtr2 to 32 kg/mtr2 and mean mid arm circumference of the study population 14.4 cm ranging from 11.9 cm to 20 cm.(Table-1)

As shown in Table-2, the anthropometric measurements such as weight and height were found to be more in boys in all age groups of 5-13 years except in the age group of 7 and 10 years which is comparable to a study where boys were taller and heavier in all age group of 6 years to 18 years. In present study, mean weight of the study population in both sex was less than IAP growth references for all age group. Mean height was also less than IAP references in all age group in both sex except at the age of 5 years.

Overall nutritional status among children revealed that majority of children 84(57.15%) were suffering malnutrition and only 63 (42.86%) were in normal status which will be a gross impact of overall development of children. This high prevalence rate of malnutrition is consistent with a recent study in Punjab where the prevalence of malnutrition was 87.4%⁸ and it is also higher than national level (35.7%) according to NFHS-4.⁵ Many previous studies reported remarkable high prevalence rates of malnutrition in different regions of India although these were lower than present study (Goyal et al.,⁹ Sunderam et al.,¹⁰ Dhingra et al.¹¹) These disparities in findings of different studies may be due to differences in study settings, sample size, assessment criteria. And it also notified that the prevalence rate is gradually increases as compared to previous studies in Assam by Singh J, Mondal N¹² (25.99%), and by Medhi et.al.¹³ (53.9%).

According to IAP classification, it showed that 63 (42.86%) were normal, 34 (23.12%) mild-moderate malnutrition, 28(19.04%) moderate malnutrition, 15 (10.20%) severe malnutrition and 7(4.76%) very severe malnutrition. This result is consistent by Saloi M. et al.¹⁴ conducted in urban slums of Guwahati city, Assam reported prevalence of low weight for age, i.e. undernutrition was found in 32% (122/380). Prevalence of moderate malnutrition was 22.6% (86/380) and severe malnutrition was 9.5% (36/180). The prevalence of low height for age i.e. stunting is 18% (68/380), moderate stunting 11.8(45/380) and severe stunting (6.1%).

According to **Mid upper arm circumference (MUAC)**, it seemed that 138(93.87%) were normal 9(6.12%) were in severe malnutrition. (Table-) which is higher than in a study conducted in West Bengal (severe-2.15%)¹⁵

According to **Agarwal BMI percentile**, it seemed that 76 (51.02%) were underweight, 37 (25.17%) were normal, 13 (8.84%) overweight, and 1 (0.68%) were obesity which is similar to a study in Rajasthan where prevalence of overweight and obesity was found 18.33% and 1.33% respectively.¹⁶(Table-2)

Present study showed that the prevalence of malnutrition was highest among the age of 5-10 years of children 60(40.82%) as compared to 24 (16.33%) in the age group of 11-15 years.(Table-3) Study also reported that equal prevalence rate 42 (28.57%) was found in both male and female children.(Table-4) It was supported by C Priya et al.¹⁷ in Tamilnadu that there were no significant difference in prevalence of under nutrition among children between male and female.

TABLE- 1: Anthropometric Measurement Of The Study Population

Anthropometric Indices	Minimum	Maximum	Mean	Std. Deviation
Weight (kg)	13	49	22.8	9.6
Height (cm)	99	156	124	10.2
BMI (kg/meter2)	11.5	32	18.2	4.6
Mid-arm	11.9	20	14.2	2.8

TABLE-2: Comparison of average height and weight of study population with IAP growth references

Age (years)	Mean Height (kg)				Mean Weight (cm)			
	Girl		Boy		Girl		Boy	
	Study population	IAP growth ref.	Study population	IAP growth ref.	Study population	IAP growth ref.	Study population	IAP growth ref.
5	110.8	109	108.8	108	18.8	18	16.6	17.2
6	118.6	115	117.1	113.5	18.4	19	18.2	18.8
7	104.5	120.5	118.6	119	19	22	20.2	21
8	115	126	113.1	125.5	20.2	25	18.4	24
9	122.7	131.5	118.1	131.5	21.1	27	20.3	27.2
10	124.5	137	127.9	137	23	31	25	31
11	141	142	140.7	143	30.5	34.5	30.9	35.5
12	138.7	148	134.7	148	31.6	39	28.2	40
13	149.5	158.5	135	152	35	43	32	43
14		127	154.5		35	46

TABLE-2: Nutritional status among children according to IAP Classification, mid arm circumference and BMI classification (Agarwal BMI percentile)

Classification	Categories	Frequency	Percentage (%)
IAP Classification	Normal	63	42.86
	Mild-moderate	34	23.12
	Moderate malnutrition	28	19.04
	Severe malnutrition	15	10.20
	Very severe malnutrition	7	4.76
Mid upper arm circumference (MUAC)	Normal (>13.5 cm)	138	93.87
	Moderate(12.5-13.4cm)	0	0
	Severe (<12.5 cm)	9	6.12
BMI classification (Agarwal BMI percentile)	Underweight	76	51.02
	Normal	37	25.17
	Overweight	13	8.84
	Obesity	1	0.68

TABLE-3: Age Wise Nutritional Status Among Children (IAP Classification)

Age (years)	Total No of Students		Normal (>80%)		Malnutrition (<80%)	
	F	%	F	%	F	%
5-10	118	80.27	58	49.15	60	50.83
11-15	29	19.72	5	17.24	24	82.76
Total	147	100	63	42.88	84	57.15

TABLE-4: Sex Wise Nutritional Status Among Children (iap Classification)

Sex	Total No of Students	Normal (>80%)		Malnutrition (<80%)	
		F	%	F	%
Male	74	32	21.77	42	28.57
Female	73	31	21.09	42	28.57
	147	63	42.86	84	57.15

CONCLUSION: Nutritional status of children is associated by many inter related factors. Growth assessment serves as a means for

evaluating the health and nutritional status of children, just as it also provides an indirect measurement of the quality of life of an entire population. The results of the present study clearly indicate that the nutritional status of these children is unsatisfactory in urban community. Multi approach interventions are required in terms of nutrition, food technology, health administration, health education, marketing etc. at various levels- family, school, community, national and international levels for improvement of the nutritional status.

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