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Research Article

ANTHROPOMETRIC CHARACTERISTICS AND NUTRITIONAL STATUS OF RURAL PRIMARY SCHOOL CHILDREN IN FATEHABAD DISTRICT OF HARYANA

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ABSTRACT

Under-nutrition continues to be a primary cause of ill health among children in developing countries. Adequate nutrition is critical for optimal growth, health and development of children. The objective of the present study was to assess the prevalence of underweight, stunting and wasting among rural school children of Government primary schools of Fatehabad district of Haryana. A total of 397 students were included in the study from primary schools of three villages in Fatehabad district of Haryana and nutritional status of the children was assessed by anthropometric measurements. Students aged 6 -10 years were included in the study. Weight and height of the children were measured and height-for-age (stunting), weight-for-height (wasting) and weight-for-age (underweight) were calculated. Out of 397 school children, 254 children (63.97 %) were found be malnourished. Grade I malnutrition was most common (38.29%) followed by grade II (20.90%) and grade III (4.79%) malnutrition. Wasting was found in 63.48 % children (71.08 % girls and 55.45 % boys) out of which 0.5 % children showed severe degree of wasting. Stunting was found in 48.6 % children (54.41% girls and 42.49 % boys). This study provided evidence that rural school children were under acute and chronic nutritional stress indicating the requirement of immediate appropriate public health nutritional intervention programmes along with promotion of appropriate dietary habits through effective nutrition education.

Keywords: *Under Nutrition, Underweight, Stunting, Wasting, Rural School Children*

INTRODUCTION

Under nutrition is a major public health problem among children. According to the most recent estimates (1996-2005), in developing world, approximately 146 million children are underweight, out of these 57 million children live in India (UNICEF, 1997). Over 1/5th of population in India comprises of children aged 5-14 years. The school age period is nutritionally significant because this is the prime time to build up body stores of nutrients in the preparation for rapid growth of adolescence (Awasthi, 2000). Anthropometry is the most useful tool for assessing the nutritional status of children. There are many anthropometric indicators that describe the nutritional status of children such as, height-for-age (stunting), weight-for-height (wasting) and weight-for-age (underweight). The height-for-age index is an indicator chronic illness and weight-for-height index is an indicator of acute illness. Weight-for-age is a composite index and it takes into account both acute and chronic malnutrition (Bose, 2007).

In India, according to National Family Health Survey (2005-2006), the prevalence of wasted, stunted and underweight children was 19.8%, 48% and 42.5% respectively. The situation of malnutrition in children is also grave in Haryana as according to National Family Health Survey (2005-2006), the prevalence of wasted, stunted and underweight children was 19.1 %, 45.7 % and 39.5 % respectively (NFHS-3, 2007) Most of the studies done earlier has assessed the nutritional status of infants and pre-school children only. Very little information is available on the nutritional status of school going children especially of rural

areas. So the present study was conducted to assess the nutritional status of rural school going children of Fatehabad district of Haryana.

MATERIALS AND METHODS

Study area and subjects: The present cross-sectional study was conducted on school going children in the age group 6-10 years from January 2014 to March 2014 in rural area of Fatehabad district of Haryana. Total 397 rural school going children i.e. 193 boys and 204 girls were selected for the study, from the Govt. Primary School of Badopal, Majara and Khara Kheri villages of Fatehabad district, Haryana.

Subjective Parameters: Age was recorded from birthday by calendar to the nearest of year (<6 months and >6 months). Standing height was recorded without shoes and with light cloths on a wall mounted measuring tape to the nearest of centimeters (<5 mm and >5 mm). Weight was recorded without shoes and with light cloths on a Krups weighing machine with a least count of 500 grams.

Anthropometric assessment for undernutrition: After collection, the whole data was compiled; analyzed and appropriate statistical tests were applied. The nutritional status was assessed by the quantitative classification given by Indian Academy of Pediatrics (Ghai, 2005) and wasting and stunting were assessed according to Waterlow classification (Park, 2013)

RESULTS

Out of total 397 students (193 boys & 204 girls), Malnutrition was noted in 63.97% children. Grade I malnutrition was most common (38.29%) followed by grade II (20.90%) and grade III (4.79%) malnutrition.

Table 1: Weight for age as per IAP classification

	Boys		Girls		Both Sex	
Grades	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Normal	85	44%	58	28.43%	143	36.02%
I	66	34.20%	86	42.16%	152	38.29%
II	37	19.20%	46	22.55%	83	20.90%
III	5	2.60%	14	6.86%	19	4.79%
IV	0	0%	0	0%	0	0%
Total	93	100%	204	100%	397	100%

Table II shows that 36.52 % children were found to be normal as per their weight for height, 63.48 % children were wasted and 0.5 % children showed severe degree of wasting. The children of 6 years were found to be at the highest (65 %) risk of wasting. Girls (71.08 %) were affected more than the boys (55 %) (Table III).

Table IV shows 51.40 % children were found to be normal as per their height for age, 48.60 % children were stunted with 44.30 % children showing mild degree and 4.30 % children moderate degree of stunting. The children above 9 years were the most affected. Girls (54.41%) were affected more than the boys (43.0 %) (Table V)

Table 2: Nutritional status of children (wasting) as per age

		Nutritional status of children									
						Wasted				Total	
Age	Total	Normal	Percent	Mild	Percent	Moderate	Percent	Severe	Percent	Number	Percent
6year	100	35	35%	54	54%	9	9%	2	2%	65	65%
7year	63	22	34.92%	33	52.38%	8	12.70%	0	0%	41	65.08%
8year	67	20	29.85%	42	62.69%	5	7.46%	0	0%	47	70.15%
9year	77	31	40.25%	42	54.55%	4	5.20%	0	0%	46	50.75%
10year	90	37	41%	49	54%	4	5%	0	0%	53	59%
Total	397	145	36.52%	220	55.42%	30	7.56%	2	0.50%	252	63.48%

Table 3: Nutritional status of children (wasting) as per sex

		Nutritional status of children									
						Wasted				Total	
Sex	Total	Normal	Percent	Mild	Percent	Moderate	Percent	Severe	Percent	Number	Percent
Boys	193	86	45%	97	50%	9	5%	1	1%	107	55%
Girls	204	59	28.92%	123	60.29%	21	10.29%	1	1%	145	71.08%
Total	397	145	36.52%	220	55.42%	30	7.56%	2	0.50%	252	63.48%

Table 4: Nutritional status of children (Stunting) as per age

		Nutritional status of children									
						Stunted				Total	
Age	Total	Normal	Percent	Mild	Percent	Moderate	Percent	Severe	Percent	Number	Percent
6 year	100	48	48%	45	45%	7	7%	0	0%	52	52%
7 year	63	45	71.43%	18	28.57%	0	0.00%	0	0%	18	28.57%
8 year	67	41	61.20%	23	34.32%	3	4.48%	0	0%	26	38.80%
9 year	77	34	44.15%	39	50.65%	4	5.20%	0	0%	43	55.85%
10year	90	36	40%	51	57%	3	3%	0	0%	54	60%
Total	397	204	51.40%	176	44.30%	17	4.30%	0	0%	193	48.60%

Table 5: Nutritional status of children (Stunting) as per sex

Nutritional status of children											
						Stunted				Total	
Sex	Total	Normal	Percent	Mild	Percent	Moderate	Percent	Severe	Percent	Number	Percent
Boys	193	111	58%	75	39%	7	4%	0	0%	82	43%
Girls	204	93	45.59%	101	49.51%	10	4.90%	0	0%	111	54.41%
Total	397	204	51.40%	176	44.33%	17	4.30%	0	0.00%	193	48.60%

DISCUSSION

In the present study out of total 397 children 36.03% (143/397) children had normal nutritional status and 63.97% (254/397) children suffered from different grades of malnutrition. 38.29% (152/397) children had grade I malnutrition status, 20.90% (83/397) children had grade II malnutrition status, and 4.79% (19/397) children had grade III malnutrition status. Grade IV malnutrition status was not seen in any child. Among the boys 44% (85/193) had normal nutritional status, 34.20% (66/193) boys had grade I malnutrition status, 19.20 % (37/193) boys had grade II malnutrition status and 2.60% (5/193) had grade III malnutrition status. Among the girls 28.43% (58/204) girls had normal nutritional status, 42.16% (86/204) had grade I malnutrition status, 22.55% (46/204) girls had grade II malnutrition status and 6.86% (14/204) girls had grade III malnutrition status. Prakash *et al.,* (2002) observed 51.9% children having normal nutritional status followed by grade I (21.9%), grade II (18.57 %) and grade III (6.60%) malnutrition. Patwari *et al.,* (1979) reported malnutrition as 60.4% in Kathua district of Jammu and Kashmir and Josheph *et al.,* (2002) observed malnutrition also as 60.4% in rural areas of Karnataka state. In study conducted by Sati and Dahiya (2012) rural areas in Hisar district of Haryana 55.5 % school children were found to be malnourished.

In the present study, 36.52 % children were found to be normal as per their weight for height, 63.48 % children were wasted and 0.5 % children showed severe degree of wasting. The children in the age group of 6-8 years were found to be at the highest (53.8%) risk of wasting. These findings are higher than those reported by Semwal *et al.,* (2006) (52.6%). Present study reported 71.08 % girls and 55.45 % boys as wasted with 0.50 % girls and 0.50 % boys showing severe degree of wasting ($p>0.05$) which is higher than that reported by Khalil *et al.,* (2004) who reported the prevalence of wasting in boys and girls 32.76% and 28.12% respectively.

Present study showed 51.40 % children to be normal as per their height for age, 48.60 % children were stunted with 44.3 % children showing mild degree and 4.3 % children moderate degree of stunting. The children above 8 years were the most affected. Semwal *et al.,* (2006) reported mild stunting in only 20.7% children and moderate and severe degree of stunting in 5.5% and 5.6% children respectively. Josheph *et al.,* (2002) observed stunting as 38.6 % in rural areas of Karnataka state. In study conducted by Sati and Dahiya in rural areas in Hisar district of Haryana , 54.11 % school children were found to be stunted (Sati and Dahiya, 2012) Present study reported stunting in 54.41 % girls and 42.49 % boys ($p>0.05$) which is lower than that reported by Khalil *et al.,* (2004) who observed stunting in 79.73% boys and 81.80% girls.

Conclusion

This study provided evidence that rural school children were under acute and chronic nutritional stress indicating the requirement of immediate appropriate public health nutritional intervention programmes along with promotion of appropriate dietary habits through effective nutrition education.

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