Nutritional status of children attending mid day meal scheme in government primary school in Aligarh City

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ABSTRACT

Research Question: What is the nutritional status of children attending mid day meal scheme in government primary schools in the age group 6-14 years.

Study design: Cross-sectional.

Setting: Six government primary schools of urban areas of Aligarh city. Simple Random Sampling (SRS) was used.

Study variables: Height, weight and general physical examination.

Results: The mean height and weight of the present study was compared with that of ICMR standard. The mean difference between them was studied by 't' test and it was concluded that the difference is statistically not significant (P> .05). The prevalence of stunting of boys and girls was 75.35% and 74.68% respectively and wasting was observed as 86.95% for boys and 76.53% for girls. The association of stunting and wasting with that of age group was studied by chi-square test further it was concluded that age has not played any significant role in stunting of both boys and girls and wasting for boys only. Statistically age was significantly associated with wasting of girls only (P<.05).

Conclusion: The study revealed poor nutritional status of school children receiving mid day meal every day.

Introduction:

School children constitute a major segment of the community whose health and nutritional status will indicate the changing trend of nutritional profile of a region. They are the inheritors of our past and seeds of our future. The main nutritional problems facing the school children include growth retardation, stunting, underweight, IDD, anemia and vitamin A deficiency. There are concerted efforts to provide care to the children under six years of age through various national maternal and child health programs for example ICDS, RCH etc. Apart for "Mid day meal Program" which is being run by the government of India in government run schools, there are no other efforts for children in age group 5-14 years. They thus remain a neglected group.

According to WHO malnutrition though continues to be a major health problem in South East Asian regions. Studies have reported a large section of children especially the urban and rural poor in India are suffering from varying grades of malnutrition. It has been estimated that about two third of children do not take adequate nutrition that leads to malnutrition, besides, macro and micro nutrients deficiencies continue to affect the physical and mental health of the children. For 5-14 years old children, if they are to reach adulthood in a healthy state, it becomes necessary to provide target and concreted services with political commitment so that their nutritional status is improved. The present study was carried out to find out the nutritional status of children receiving mid day meal in schools in urban area of Aligarh city.

Matterial and Methods:

The data was collected from six government primary schools (mid day meal school) in urban area of Aligarh city. Mid day meal program is being run by all selected schools and food prepared in the school premises itself. A total of 300 students of both sexes (138 boys and 162 girls) were examined. Physical examination of all children was carried out and their height (nearest to 0.5 cm) and weight in kg (nearest to 100 grams) were recorded. The mean weight and height of the children according to age and sex were compared with the mean weight and height for age as per the ICMR standards. The nutritional status of the children was studied by assessing their height-for-age (stunting) and weight-for-height (wasting).

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Results:

The objective was to determine the pattern of nutritional status of children attending mid day meal scheme in government primary schools in age 6-14 years.

Table 1: Distribution of boys and girls according to age and sex

Age (years)	Sex of Mid Day Meal (MDM) School Children				Total	
	Boys		Girls			
	No.	%	No.	%	No.	%
6	1	0.72	8	4.93	9	3.00
7	2	I.44	12	7.40	14	4.67
8	14	10.14	30	18.51	44	14.67
9	23	16.66	13	8.02	36	12.00
10	30	21.73	32	19.75	62	20.67
11	13	9.42	22	13.30	35	11.67
12	31	22.50	18	11.11	49	16.34
13	11	8.00	17	10.49	28	9.34
14	13	9.42	10	6.17	23	7.67
Total	138	46.00	162	54.00	300	100

In Table 1 maximum number of boys was in the age group of 12 and in girls it is in the age group of 10. In total 46% of boys and 54% of girls were studied in the present study.

Table 2: Distribution of children as per their mean height and mean weight and ± SD

Age (years)	Boys			Girls		
	No.	Mean ht. (cm)±SD	Mean wt. (kg)±SD	No.	Mean ht. (cm)±SD	Mean wt. (kg)±SD
6	1	116±NA	17±NA	8	116.32±5.27	15.25±2.71
7	2	113.5±0.70	15±0	12	117.33±4.62	16.66±2.02
8	14	122.76±5.94	17.71±2.08	30	122.58±6.56	18.58±3.76
9	23	124.30±4.66	19.32±2.33	13	123.46±5.24	19.38±2.28
10	30	129.85±5.89	21.45±3.34	32	131.73±6.94	21.40±4.10
11	13	133.96±6.27	24.34±3.44	22	136.43±5.32	24.22±3.45
12	31	138.3±11.42	26.51±5.05	18	149.66±8.08	27.16±5.19
13	11	149.45±8.81	29.54±3.53	17	146.29±7.16	31.17±4.80
14	13	155.65±9.69	31.15±5.09	10	152.05±15.43	34.9±9.78

It may be observed from Table 2 that both boy's and girl's mean height and weight increased monotonically with their age. However the trend of mean height in the age group of 7 years of boys and 13 years for girls does not match with that of age.

The peak increase in height of boys was between 12 and 13 years of age and in girls it was between 11 and 12 years. In boys increase in mean weight was noticed at different age but the maximum increase in mean weight in girls was noticed between 12 and 13 years of age.

The overall increase in mean height for boys was 42.15 cm and for girls 33.73 cm. However, the overall increase in mean weight for boys was 16.15 kg and for girls it was 19.65 kg. It can be concluded that boys are taller than girls in all the ages except at age of 7 to 12 years, but girls were heavier than boys at pre-puberty and puberty (8-14 years). The present pattern of growth of boys and girls were same as compared with the study by P. Panda et al. (2000) and Khalil and Khan (2004).

Table 3: Distribution of mean height and weight of present study and that of ICMR standard according to age and sex

Age (yr)	Boys						Girls					
	Height (cm)			Weight (kg)			Height (cm)			Weight (kg)		
	ICMR	Mean ht.	Diff.	ICMR	Mean wt.	Diff.	ICMR	Mean ht.	Diff.	ICMR	Mean wt.	Diff.
6	116.1	116.0	0.1	20.7	17	3.7	114.6	116.31	1.71	19.5	15.25	4.25
7	121.7	113.5	8.2	22.9	15	7.9	120.6	117.33	3.27	21.8	16.66	5.14
8	127	122.76	7.9	25.3	17.71	7.59	126.4	122.58	3.82	24.8	20.58	4.22
9	132.2	124.30	7.9	28.1	19.32	8.78	132.2	123.46	8.74	28.5	19.38	9.12
10	137.5	129.85	7.65	31.4	21.45	9.95	138.3	131.73	6.57	32.5	21.40	11.11
11	140	133.96	6.04	32.2	27.35	4.85	142	136.43	5.57	33.7	24.22	9.48
12	147	138.3	8.7	37	29.51	7.49	148	149.66	1.66	38.7	29.16	9.54
13	153	149.45	3.55	40.9	32.54	8.36	150	146.29	3.71	44	33.17	10.83
14	160	155.65	4.35	47	36.5	10.5	155	152.05	2.95	48	35.9	12.1

Results on the distribution of height of children (Table 3) indicated that boys of our study were shorter than well to do boys of ICMR by 0.1 cm to 8.7 cm from 6 to 14 years and the maximum difference was found in age group of 12 years. In case of girls the difference ranged from 1.71 cm to 8.74 cm and the maximum difference was in girls of 9 years. Data on weight indicated that the maximum difference in boys was reported in age group of 14 years (10.5 kg) and in girls it was 12.1 kg in the same age group (14 years). The mean difference of height and weight of boys in present study with that of ICMR was 8.6 cms. and 6.8 kg. respectively and for girls it was 7.08 cms. height and 6.86 kg. weight.

Table 4: Distribution of stunting (height-for-age) as per age for children

Age (years)	Stunting (height-for-age)					
	Normal		Stunted		Severely stunted	
	Boys No. (%)	Girls No. (%)	Boys No. (%)	Girls No. (%)	Boys No. (%)	Girls No. (%)
6 – 8	4 (23.62)	16 (31.37)	7 (41.17)	18 (35.29)	6 (35.21)	17 (33.34)
9 – 11	17 (25.75)	17 (25.38)	32 (48.50)	32 (47.76)	17 (25.75)	18 (26.84)
12 – 14	13 (26.63)	8 (17.77)	34 (61.81)	25 (55.55)	8 (14.56)	11 (24.48)
Total	34 (24.63)	41 (25.32)	73 (52.89)	75 (46.29)	31 (22.48)	46 (28.39)

Total number of boys – 138, Total number of girls – 162

(24.63%) boys and (25.32%) girls (Table 4) were found to be normal as per their height-for-age (stunting). Higher percentage of boys (52.89%) than girls i.e. (46.29%) was reported to be stunted and (22.48%) of boys and (28.39%) of girls were found severely stunted. Comparing the status of stunting between boys and girls it was noticed that girls were falling more under normal category (25.32%) than boys (24.63%). Severe stunting was higher among girls (28.39%) compared to boys (22.48%). In the present study prevalence of stunting was reported to be less the earlier study conducted by Khalil and. Khan (2004) but more than P. Panda et al. (2000) study.

In order to test the significance of stunting with different age groups chi-square test was used and it was found that at 5% level of significance with 4 degree of freedom was 6.64 and 4.96 which was statistically not significant (P>.05) for both boys and girls.

Table-5: Distribution of wasting (weight-for-height) as per age for children.

Age (years)	Wasting (weight-for-height)					
	Normal		Wasted		Severely Wasted	
	Boys No. (%)	Girls No. (%)	Boys No. (%)	Girls No. (%)	Boys No. (%)	Girls No. (%)
6 – 8	4 (19.04)	16 (34.78)	6 (28.57)	14 (30.43)	11 (52.38)	16 (34.78)
9 – 11	8 (12.12)	13 (18.84)	20 (30.30)	30 (43.47)	38 (57.57)	26 (37.68)
12 – 14	6 (11.76)	9 (19.14)	20 (39.21)	30 (63.82)	25 (49.01)	8 (17.02)
Total	18 (13.04)	38 (23.45)	46 (33.33)	74 (45.67)	74 (53.62)	50 (30.86)

Total number of boys – 138, Total number of girls – 162

Table 5 indicates that 13.04% boys and 23.45% girls were found to be normal as per their weight-for-height (wasting). Higher percentage of girls (45.67%) than boys (33.33%) were reported to be wasted where as higher percentage of boys (53.62%) than girls (30.86%) were severely wasted.

Comparing the prevalence of wasting between boys and girls it was noticed that girls were falling more under normal category (23.45%) than boys (13.04%). Overall wasting was reported higher in boys (86.95%) than girls (76.53%). The results of Das (2003) study were similar to the results of present study. To study the association of wasting with that of different age groups of both boys

and girls chi-square test was used and it was found that at 5% level of significance with 4 degree of freedom was 1.94 for boys and 13.52 for girls. Hence the association of wasting with different age group of boys was not statistically significant (P>.05). However it concludes that age is significantly associated with wasting for girls only (P<.05).

By summing up the present study it can be concluded that wasting was reported to be more than stunting for both boys and girls.

Discussion:

The prevalence of stunting among school going children in the present study was less than that found of Khalil and Khan (2004). However wasting was more in present study. Osci et al (2010) and Chowdhry et al. (2008) both reported lower prevalence in stunting and wasting in boys and girls than the present study. According to Knani and Gopaldas (1998) more school children who were affected from stunting were in age group between 10 to 15 years whereas in present study the most stunted MDM children were in age group 9 to 12 years with regards to Gopaldas (2003) girls were found to be more under nourished than boys. According to Laxmaiah et.al (1999) more boys (4.8%) were found wasted or thin than girls (3.6%). The results of Gopaldas (2003) study were similar to the results of present study who found that the children were skinning or underweight.

Conclusion:

In the present study it was noticed that there was a high degree of relationship between height and weight. The pattern of gain in height was more in boys but girls had gained more weight than boys at pre-puberty and puberty. It can be concluded that boys were taller than girls but girls were heavier than boys. Statistically the mean height and weight of the present study are lower than that of ICMR standards. The nutritional status of the school children under study was found to be low. The prevalence of stunting among boys and girls were 75.37% and 74.68%, respectively, 86.95% wasting has been observed for boys and 76.53% for girls. There was no significant difference in the prevalence of stunting and wasting for both boys and girls. Further there was no significant statistical association (P>.05) between age and nutritional status of boys and girls in stunting and wasting of boys only. However there was a significant statistical association (P<.05) between age and nutritional status in wasting of girls only.

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