

Physical Body Measurements of School Going Children from Sonapat District, Haryana

Abstract

The school children population approximate one-fifth of the total population forms the future hope of the nation. Health of the children is the wealth of the nation and better the nutritional status of the children, higher will be the nation rise. Today's children are tomorrow's citizen who should be healthy. The present study entitled "Effect of supplementation and nutrition education in addition to mid day meal on nutritional status of school children in Sonapat district of Haryana" was carried out in Department of Food and Nutrition at B.P.S. Institute of higher learning, B.P.S. Women University of Khanpur Kalan, Sonapat (Haryana). Physical body measurements of school going children of 7-9 years was assessed. In this study found that the mean weight of boys and girls of age 7-8 year was 19.54 kg and 18.18 kg. The weight of boys and girls was 86.08 and 80.63 per cent of reference value. The mean weight of boys and girls of ages 8-9 year were 22.59 kg and 20.81 kg. The weight of boys and girls were 89.34 and 83.24 per cent of reference value. Mean height and weight was significantly lower than reference values. The result showed that the BMI of girls and boys was significantly lower than reference value.

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Introduction

School going children form an important vulnerable segment of the nation's population. The school age is one of the crucial period of life, as about 40 per cent of physical growth and 80 per cent of mental growth is believed to take place during this age. School age is a dynamic period of physical growth and development. In this age mental, emotional and social changes also take place and the need for a nutritionally adequate diet is of permanent importance for optimum growth and development. It is the prime time to build up body stores of nutrients and significant in preparation for rapid growth of adolescence. In this period the emphasis must be given to their high requirements for growth, their eating patterns and their susceptibility to environmental influences.

Malnutrition also significantly increases the risk of developing chronic pathologies in adulthood, including as coronary disease, hypertension and diabetes, as well as contagious diseases such as tuberculosis. Several studies on the relationship between under nutrition, wasting, stunting and academic achievement have been published around the world and all of them have reported significant associations between nutritional status indicators and cognitive test scores or school performance indicators.

Review

Datta and banik (1982) observed that the mean height and weight of children of high income group in Delhi compared well with the 50th percentile of American children. Further the mean height and weight of lower income group corresponded 25th and 10th percentile of American children.

Gale et al (1984) observed the National Evaluation of School Nutrition Program (NESNP) in USA. Their observation showed that the school lunch programme exceeds most reasonable expectations for its nutritional effectiveness. The anthropometric analysis in the NESNP suggested that long term participation in the school lunch programme had no relationship to height but a marginal impact with respect to weight and triceps fat fold of the beneficiaries.

Kanani and Gopaldas (1988) studied the nutritional status of under-privileged Mid Day-Meal (MDM) Program beneficiaries and the

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contribution of MDM to their home-level nutrition intake. It was concluded that the 50th percentile of weight, height and arm circumference of subjects corresponded with only the 5th percentile of Indian national norms. By Waterlow's classification about one-third were stunted. 'Wasting' afflicted more 10-15 year olds than 5-9 year olds.

Abdelaziz et al. (2015) conducted a community based cross-sectional survey to determine the nutritional status and dietary habits of school children aged (5-19 years) in Beni Suef Governorate, Egypt. Weight, height and age data were used to calculate z-scores of the three different nutritional indicators. Dietary habits were studied using a food frequency questionnaire. Obtained BMI z-scores as revealed that 2.8% children were underweight (<-2SD) and 34.4% were obese (>+2SD). More boys were found to be underweight (3%) than girls (2.2%). Katyal and Boora (2015) conducted a study in Rohtak district, Haryana to assess the nutritional status of 7-9 years school going children. A total of 200 school going children were selected randomly from four different schools in the study area and the nutritional status was assessed by anthropometric measurements. Among 200 students, 29% of the students were found to be moderately underweight, 7.5% were severely underweight, 24 and 10 per cent were moderately and severely stunted, 16 and 7% were moderately and severely wasted.

Thakur and Gautam (2015) reported wide variations in stunting, underweight and undernourished among girls (5-18 years) of a central Indian city (Sagar). It was found that 5.4% girls were stunted 5.7% girls were underweight and 4.1% girls were undernourished. It was also found that with improved standard of living, the prevalence of stunted girls had decreased: whereas highest proportion of under nourished and underweight girls falls under medium level of living standard. Dietary habits also found to have impact on the nutritional status of respondents. But the impact of standard of living, parent's education and dietary habits on the nutrition of the girls were found statistically significant.

Patel et al. (2016) reported percentage of stunting (24% boys and 19% girls) and wasting (17% boys and 18% girls) was significantly higher in adolescent receiving MDM, while the percentage of risk of being overweight i.e. BMI for Z (BAZ) > 1 or above 85th percentile (18% boys and 12% girls) was predominant in non-MDM receiving adolescents.

Parkash and Yadav (2017) reported that the prevalence of underweight, wasting and stunting was 7.40%, 52.59% and 28.88%, respectively. The highest number of boys were in underweight than girls in 7-9 years age and was statistically insignificant. Most of the boys were wasted than girls in 10-12 years with 47.88% followed by 13-15 years of 21.12% and was statistically insignificant. The highest number of respondents were stunting in 10-12 years age 48.71% followed by 13-15 years age with 30.76% and was statistically insignificant.

Zeru et al. (2017) reported that the prevalence of stunting, wasting and underweight of school children of Ethiopia were 36%, 50.5% and

58.70% respectively. The prevalence of malnutrition in the study area was higher than the national level. Nutritional status of children and predictors had a significant influence on the educational programme of school children. Provision of school meals or initiation of school feeding programme is recommended.

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Firdos et al. reported significant ($p > 0.05$) lower heights of both male and female children of low SES compared with of high SES. Similarly, mean weight of children of low SES was significantly lower than children of middle and high SES

Material and Method

Physical body measurements of school going children of 7-9 years was assessed. The present study entitled "Effect of supplementation and nutrition education in addition to mid day meal on nutritional status of school children in Sonapat district of Haryana" was carried out in Department of Food and Nutrition at B.P.S. Institute of higher learning, B.P.S. Women University of Khanpur Kalan, Sonapat (Haryana).

Anthropometric measurements like weight, height, and waist hip measurements were taken. BMI waist hip ratio were calculated to assess the nutritional status of women. Anthropometric is one of the best method to assess the nutritional status. The data collected will be analyzed by using standard statistical methods.

Results

Anthropometric measurements of boys & girls have been presented in Table 1 and 2.

The mean height of boys of age 7-8 year was 108.42 cm which was 87.22 per cent of reference value and mean height of girls (7-8 year) was 107.71 cm which was 87.14 per cent of reference value and the mean height of boys 8-9 years was 120.54 cm which was 92.65 per cent of reference value. The

mean height of girls of 8-9 years was 118.51 cm which was 91.72 per cent of reference value. The observed mean value of height of boys and girls was significantly lower than reference value (ICMR – 2010).

The mean weight of boys and girls of age 7-8 year was 19.54 kg and 18.18 kg. The weight of boys

and girls was 86.08 and 80.63 per cent of reference value. The mean weight of boys and girls of ages 8-9 year were 22.59 kg and 20.81 kg. The weight of boys and girls were 89.34 and 83.24 per cent of reference value. Mean height and weight was significantly lower than reference values.

Table 1 Mean anthropometric measurements of school going children (7-8 year)

Anthropometric Parameter	Boy (n= 56)				Girls (n = 49)			
	Reference Value	Observed value	Z value	% Ref. Value	Ref. Value	Observed Value	Z value	% Ref. Value
Height (cm)	124.3	108.42 ± 8.11	- 19.7	87.22	123.6	107.71 ± 10.69	- 14.8	87.14
Wt (kg)	22.7	19.54 ± 2.63	- 12.00	86.08	22.3	18.18 ± 2.18	- 18.8	80.63
BMI	14.7	12.51 ± 1.19	- 18.4	89.35	14.6	12.01 ± 14.6	- 24.9	82.26

The mean BMI of boys and girls of ages 7-8 year was 12.51 and 12.01 and the mean BMI of boys and girls of age 8-9 year were 12.41 and 12.81 respectively. The result showed that the BMI of girls and boys was significantly lower than reference value.

Table 2 Mean anthropometric measurements of school going children (8-9 year)

Anthropometric Parameter	Boy (n= 44)				Girls (n = 51)			
	Reference Value	Observed value	Z value	% Ref. Value	Ref. Value	Observed Value	Z value	% Ref. Value
Height (cm)	130.1	120.54 ± 11.51	- 8.3	92.65	129.2	118.51 ± 8.32	- 13.2	91.72
Wt (kg)	25.2	22.59 ± 3.47	- 7.5	89.64	25.0	20.81 ± 2.84	- 14.7	83.24
BMI	14.9	12.41 ± 1.23	-20.2	83.28	15.0	12.81 ± 1.34	- 16.3	85.40

Values are mean ± SD

** Significant at 1% level

Z value indicate comparison of observed and reference values.

Reference values are according to ICMR (2010)

Conclusion

Anthropometric measurements of school children in terms of height, weight & BMI were found to be significantly lower than the reference value. Lower anthropometry observed in children might be due to consumption of faulty diet and lack of knowledge in mothers and children about balanced diet which is required for growth leading to higher physical development in this age. Therefore they need to be educated regarding balance diet and good food habits which will make them healthy.

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