



## **AN ANALYTICAL STUDY ON ANTHROPOMETRIC MEASUREMENT OF SCHOOL GOING GIRLS**

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### **ABSTRACT**

It is a well known established fact that Anthropometric measurements are useful indices for the evaluation of nutrition status of population. To assess the growth in school going girls different measurements like length, height and weight and head circumference. The current analytical study aims to assess the nutritional status of school going girls from two blocks of Raipur district namely Arang & Abhanpur. the present study was carried out with the aim to assess the nutrition status of school going children from arang and abhanpur block of Chhattisgarh, 100 girls from class 9-12 were randomly selecte for the abov purpose. The study quasi experiment design .the data was collect by using following parameters (weight, height ) for the assess of nutrition status .all the data were compared with standard. For Measurements of Height and Weight, weight for height' and 'height for age' index by water low classification was selected. MUAC measurements were also taken and compared with the WHO standards. It was observed that height & weight of all the school girls from both the blocks were significantly lower than NCHS standards.

**Keywords:** school going girls, Anthropometric measurements, MUAC and Malnutrition

### **INTRODUCTION**

Adolescence is a vulnerable period in human lifecycle when nutritional requirements increase due to the adolescent growth spurt. This period is characterized by rapid increase in height, weight and hormonal changes resulting in sexual maturation (Gupta 1990). Most girls begin a rapid growth spurt between the ages of 13 and 19 years. Nearly every organ in the

body grows faster during this period which lasts about 3 years. Adolescence, one of the nutritional stress periods of life with profound growth, comes with increased demands for energy, protein, minerals and vitamins (Gopalan et al. 2001). In India, poor nutrition, early bearing and reproductive health complications compound the difficulties of physical development in adolescent girls



(Manford and Picciano 2000). Increased physical activity combined with poor eating habits and the onset of menstruation contribute to accentuating the potential risk for adolescent's poor nutrition (Bhaskaran 2001). In India, reproductive health of adolescent girls is very poor and they suffer from nutritional deficiency. Dietary habits of adolescent girls in slum areas are very poor (Parimalavalli et al. 2007). Anthropometric measurements can be used to monitor changes in growth of adolescents. This study attempt to analyze the anthropometric measurements and to explore the nutrient intake of the selected adolescent girls.

## **MATERIALS AND METHODS**

Arang & Abhanpur are the blocks of Raipur district in Chhattisgarh. The subjects were identified from government schools of these two blocks. Total of 100 samples, 50 subjects from each blocks were randomly identified. The subjects were informed about the study and has given their

consent for the study. A predefined questionnaire was used to collect the demographic and background information such as age, type of house, family size, and monthly income of family. The Anthropometric measurements were used to capture height and body weight. The height of the subjects were captured by standing barefoot and body weight was measured with the help of electronic scale. Body Mass Index is the widely used and accepted parameter and associated with height of adolescents. BMI reflects the positive association between height and weight (Khan et al. 2004). The formula for calculation of BMI is weight (Kg)/ height (m<sup>2</sup>) was used. The results were compared with NCHS standards (Jelliffe 1966). Precise information of food consumption pattern of the subjects was gathered through 24 hours recall method using an interview schedule. Intake of nutrient was computed using the values given in the nutritive value of Indian foods (Gopalan et al. 2001).



## DATA ANALYSIS

Collected data was analyzed with the help of SPSS and t-test

## RESULTS AND DISCUSSION

Table 1 shows that the socio-economic background of the girls from two blocks of Raipur District. It was observed that nearly 70 to 83 percent of them were in the age group of 16 - 18 years. Nearly 47 percent of the respondents resided in semi-pucca house. Twenty one per cent of the girls in government school belonged to low income group whereas twenty-seven percent of the girls in the matriculation school belonged to middle income group.

Table 02 shows the age wise distribution of height of samples from Arang & abhanpur, it is observed mean height of girls were significantly lower than the NCHS value in the age group of 17 years & 18 years respectively. In the lower age group no significant difference was observed between the standard height and mean height of samples in the age group of 13 years to 16 years in both Arang & Abhanpur blocks.

was applied to the subject. The results were calculated at 1% level of significance.

Table 3 shows the mean weight distribution of samples under the study from Arang & Abhanpur blocks. It was observed that mean distribution of weight for girls are significantly lower than the NCHS standards.

The mean heights and weights of girls were uniformly lower than the NCHS standards for corresponding in the age group of 16 to 18 years and the differences were statistically significant

Table 04 below shows the BMI comparison of school girls from Arang & Abhanpur. It is observed that 62% from Arang & 64% from abhanpur blocks are having normal weight. It shows the overall normal growth pattern among school going girls. Only 01 sample from Abhanpur block was overweight.

## Conclusion and Recommendation

The result shows that majority of the samples were in the age range of 15-18 years with



small and medium size family. Regarding the anthropometric measurements, height and weight of the selected individuals were found to be significantly different when compared with the standard which would be due to faulty dietary habits. It is recommended to provide nutrition counselling specific to each individual to aware them about the increasing requirement of nutrition with growth.

Periodic medical examinations have to be carried

out in both blocks to detect any illness conditions in early stages and take remedial measures. School/College health clinics should be organized and school/college environment shall be conducive for health promotion. Special attention is to be paid to drinking water, waste disposal, ventilation and lighting, etc. Provision of these facilities in the institution also serves as model and motivates the students for adoption of the same at their homes.

**Table 1: Demographic distribution of subjects (N=100)**

<b>Parameters Arang block</b>		<b>Abhanpur block</b>		
<b>Age in Years</b>	<b>No (%)</b>		<b>No (%)</b>	
13-15	15 30		18 36	
16-18	35 70		32 64	
<b>Type of house</b>				
Kutcha	19 38		17 34	
Semi-Pucca	23 46		24 48	
Pucca	8 16		9 18	
<b>Family Size</b>				
Small (1-4)	22 44		20 40	
Medium (5-6)	18 36		21 42	
Large (above 7)	10 20		9 18	



<b>Monthly Income in Rupees</b>		
Below 4500	13	9
	26	18
4500-7500	10	17
	20	34
Above 7500	27	24
	54	48

**Table 2: Age wise distribution of height of Samples (N=100)**

<b>Age in Years</b>	<b>NCHS (Height in cm)</b>	<b>Number of Samples (Arang)</b>	<b>Mean ± Standard Deviation</b>	<b>t- value (P&lt;0.001)</b>	<b>Number of Samples (Abhanpur)</b>	<b>Mean ± Standard Deviation</b>	<b>t- value (P&lt;0.001)</b>
<b>13</b>	155	5	159 ± 2.89	0.94	6	158.20±2.97	0.98
<b>14</b>	159	5	163.57 ± 1.39	1.31	7	162.37±3.10	1.19
<b>15</b>	161	5	163.57 ± 4.61	0.39	5	164.59±2.90	0.45
<b>16</b>	162	12	161.5 ± 1.69	0.14	11	162.21±1.67	0.21
<b>17</b>	163	9	162.56 ± 2.89	0.36	10	163±2.17	0.42
<b>18</b>	164	14	161.10 ± 3.10	0.20	11	162.15±3.79	0.23

**Table 03: Mean Weight Distribution of sample (N=100)**

<b>Age in Years</b>	<b>NCHS (Weight in kg)</b>	<b>Number of Samples (Arang)</b>	<b>Mean ± Standard Deviation</b>	<b>t- value (P&lt;0.001)</b>	<b>Number of Samples (Abhanpur)</b>	<b>Mean ± Standard Deviation</b>	<b>t- value (P&lt;0.001)</b>
13	44	5	41.2 ± 0.84	10.16	6	42.23 ± 2.78	11.16
14	48	5	44.2 ± 1.92	2.85	7	46.21 ± 3.91	3.85
15	51.4	5	47.5 ± 3.43	0.61	5	49.52 ± 2.13	0.71
16	53	12	50.25 ± 4.28	(0.12)	11	49.53 ± 5.18	(0.10)
17	54	9	52.67 ± 2.06	(1.44)	10	51.72 ± 3.16	(2.30)
18	54.4	14	53.07 ± 3.19	(1.05)	11	50.07 ± 4.19	(1.15)

**Table 04: BMI comparison of school girls from Arang & Abhanpur.**

Sr. No.	BMI	Arang (N=50)	Percentage	Abhanpur (N=50)	Percentage
1	Underweight (<18)	19	19	17	17
2	Normal weight (18.5-24.9)	31	31	32	32
3	Overweight (25-29.9)	Nil	-	1	1
4	Obese Class I (30-34.9)	Nil	-	Nil	-
5	Obese Class II (35-39.9)	Nil	-	Nil	-
6	Obese Class III (>=40)	Nil	-	Nil	-

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