INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE & TECHNOLOGY
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www.vmsindia.org

# ASSESSMENT OF HEIGHT AND WEIGHT AMONG SCHOOL GOING CHILDREN

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**Abstract**
Body weights and heights of children reflect their state of health and growth rate. In many developing countries with widespread food inadequacy and malnutrition, the weights and heights that prevail among the population will be below normal. The objective of the present study was to determine the physical growth of children aged 6 to 11 years. Sixty students both boys and girls were selected from the school situated in west Nagpur, Maharashtra. Height (cm) and weight (kg) were taken. Mean and standard deviation were computed and compared with the NCHS standards. Student't' test was applied to see the significant difference if any. The results revealed that the mean height and weight of boys and girls were s below NCHS standards but there is not much difference observed in the values of height and weight of girls and boys. It is concluded from the results that the anthropometric measurements of school going children irrespective of the age and sex observed very less than the standards indicating poor nutritional status.
**Key words :** Height, weight, nutritional status, school going children.

## Introduction

Children are considered to be the most important natural resource and biggest human investment for development in every community. Approximately twenty percent of the population in every country constitutes school age children (5-15 years) (Kaushik A., 2012). Health of every child reflects the status of that particular nation where he or she lives. The study on growth of children is the most important criteria for recognizing health of children (Navali and Kimiagar, 1992). Increase in height and weight are the clinical sign of growth. Growth can be defined as an increase in size, biological growth of an organism takes place through cell multiplication. There is a progressive increase in size until the child reaches adulthood (Renuka, 1994).

Children are the wealth of any country. Special attention should be paid to meet the needs of this group (Khader, 1997).

School-going children constitute a sizeable section of India's population, which is easily accessible and also receptive. An early and convenient method of assessing nutritional status of growing children is anthropometry. In the developing countries, the growing children by and large are deprived of good nutrition on account of their poor socio-economic status, ignorance and lack of health promotional facilities. This nutritional deprivation results in relative stunting of growth (Khan 1990).

Physical growth of children is reflected by different anthropometric measurements especially weight and height. On the other hand, child height and weight are good index for recognizing the nutritional status. So the comparison of the child height and weight to standard tables can be used for screening or assessing nutritional status of children. Thus the study was conducted to know the physical growth status among school going children.

## Methodology

The present study was conducted in Valmik Nagar School, Gandhi Nagar, Nagpur district, Maharashtra. The sample for the study comprised of 60 school going children both boys (30) and girls (30). The anthropometric measurements such as height, weight, and mid arm circumference were measured. The age was recorded as indicated in the school records. Height was measured using portable height rod and weight by personal weighing balance with minimum clothing. Mid Upper Arm Circumference (MUAC) was recorded with the help of flexible non-stretchable steel measuring tape to the nearest 0.1cm. The height and weight measurements were compared with NCHS standards. Mean and standard deviation was computed. To see the significant difference if any among the height and weight of boys and girls student't' test was applied.

## Result and Discussion

Table 1 shows the distribution of mean values and standard deviations of height, weight in school going boys and girls. In height, both boys and girls have a specific trend of age wise increment. The height of boys and girls increased with the advancement of age, as expected, but it was observed shorter

than the NCHS standards in both boys and girls. The result of the 't' test showed that there is an insignificant difference observed in the height of the boys and girls ($p > 0.05$).

Similar trend was observed in weight of the girls and boys. Irrespective of age, weight of the girls and boys weighed less than the NCHS standard. The result of the 't' test showed that there is an insignificant difference in the weight of the boys and girls ($p > 0.05$) though their measurements are below the standards.

**Table 1: Comparison of Mean Values and Standard Deviation of Height and Weight of Boys and Girls**

| Sr. No. | Age (years) | Parameters | Height (cm) | 't' Test | Weight (kg) | 't' Test |
|---|---|---|---|---|---|---|
| 1. | **Girls** 06 (n= 03) | Mean | 111.33 | 0.28* | 15.33 | 0.55* |
| | | S.D. | ± 11.11 | | ± 0.28 | |
| | | NCHS | 114.6 | | 19.5 | |
| | | Range | 96-122 | | 15-15.5 | |
| | **Boys** 06 (n= 03) | Mean | 108.33 | | 14.33 | |
| | | S.D. | ± 10.20 | | ± 2.62 | |
| | | NCHS | 116.1 | | 20.7 | |
| | | Range | 96-121 | | 12-18 | |
| 2. | **Girls** 07 (n= 07) | Mean | 114.57 | 0.34* | 16.57 | 0.15* |
| | | S.D. | ± 8.84 | | ± 2.20 | |
| | | NCHS | 120.6 | | 21.8 | |
| | | Range | 97-125 | | 14.5-20 | |
| | **Boys** 07 (n= 05) | Mean S.D. | 114.8 ± 4.56 | | 16.3 ± 3.18 | |
| | | NCHS | 121.7 | | 22.9 | |
| | | Range | 110-123 | | 13-21 | |
| 3. | **Girls** 08 (n= 03) | Mean | 113.5 | 0.12* | 16.33 | 0.58* |
| | | S.D. | ± 8.25 | | ± 2.86 | |
| | | NCHS | 126.4 | | 24.8 | |
| | | Range | 102-121 | | 13-20 | |
| | Boys 08 (n= 03) | Mean | 114.4 | | 17.4 | |
| | | S.D. | ± 8.85 | | ± 3.61 | |
| | | NCHS | 127 | | 25.3 | |
| | | Range | 97-121 | | 11-21 | |
| 4. | Girls 09 (n= 13) | Mean | 124.75 | 0.24* | 30.64 | 1.52* |
| | | S.D. | ± 4.34 | | ± 2.91 | |
| | | NCHS | 132.2 | | 28.5 | |
| | | Range | 118.5-133.5 | | 16-27 | |
| | Boys 09 (n= 10) | Mean | 124.2 | | 23.5 | |
| | | S.D. | ± 5.67 | | ± 5.51 | |
| | | NCHS | 132.2 | | 28.1 | |
| | | Range | 117-134.5 | | 18-36 | |
| 5. | **Girls** 10 (n= 02) | Mean | 130.75 | 2.65* | 22.5 | 0.69* |
| | | S.D. | ± 1.24 | | ± 1.5 | |
| | | NCHS | 138.3 | | 32.5 | |
| | | Range | 129.5-132 | | 21-24 | |
| | **Boys 10** (n= 03) | Mean | 128.1 | | 23.6 | |
| | | S.D. | ± 0.42 | | ± 3.03 | |
| | | NCHS | 137.5 | | 31.4 | |
| | | Range | 127.5-128.5 | | 22-25 | |
| 6. | **Girls** 11 (n= 02) | Mean | 138.35 | 0.56* | 28.5 | 1.04* |
| | | S.D. NCHS | ± 0.14 142 | | ± 0.38 33.7 | |
| | | Range | 138.2-138.5 | | 28-29 | |
| | **Boys** 11 (n= 06) | Mean | 141.5 | | 34.2 | |
| | | S.D. | ± 6.90 | | ± 6.71 | |
| | | NCHS | 140 | | 32.2 | |
| | | Range | 135.5-155 | | 27-43 | |

**S.D.- Standard Deviation, NCHS- National Centre for Health Statistics. * Insignificant ($p > 0.05$).**

The data of mean mid upper arm circumference of girls is shown in table 2.

**Table 2: Mean Mid Upper Arm Circumference of the Girls**

| Sr. No. | Age (years) | Parameters | MUAC (cm) |
|---|---|---|---|
| 1. | 06 (n= 03) | Mean | 6.03 |
| | | S.D. | ± 0.36 |
| | | Range | 5.6-6.5 |
| 2. | 07 (n= 07) | Mean | 6.5 |
| | | S.D. | ± 0.37 |
| | | Range | 6-7 |
| 3. | 08 (n= 03) | Mean | 11.5 |
| | | S.D. | ± 0.20 |
| | | Range | 15 – 15.5 |
| 4. | 09 (n= 13) | Mean | 16.74 |
| | | S.D. | ± 1.84 |
| | | Range | 15-19 |
| 5. | 10 (n= 02) | Mean | 16 |
| | | S.D. | ± 00 |
| | | Range | 16 |
| 6. | 11 (n= 02) | Mean | 18.75 |
| | | S.D. | ± 0.24 |
| | | Range | 18.5-19 |

Mid upper arm circumference (MUAC) of girls was increasing with the age. The minimum MUAC is 5.6 and maximum is 19 cm observed among girls. In the age of 6 years it is 6.03 cm (± 0.36) and 18.75 cm (± 0.24) in the 11 years age group was observed.

The data of mean mid upper arm circumference of boys is presented in table 3.

**Table 3: Mean Mid Upper Arm Circumference of the Boys**

| Sr. No. | Age (years) | Parameters | MUAC (cm) |
|---|---|---|---|
| 1. | 06 (n= 03) | Mean | 5.96 |
| | | S.D. | ± 0.81 |
| | | Range | 5.0-7 |
| 2. | 07 (n= 05) | Mean | 9.94 |
| | | S.D. | ± 3.56 |
| | | Range | 6-15 |
| 3. | 08 (n= 03) | Mean | 14.32 |
| | | S.D. | ± 0.82 |
| | | Range | 13.2 – 15.5 |
| 4. | 09 (n= 10) | Mean | 17.6 |
| | | S.D. | ± 3.20 |
| | | Range | 14.2-23 |
| 5. | 10 (n= 03) | Mean | 15.3 |
| | | S.D. | ± 0.2 |
| | | Range | 15-15.3 |
| 6. | 11 (n= 06) | Mean | 18.11 |
| | | S.D. | ± 1.86 |
| | | Range | 16.2-21.5 |

From the above table it is observed that, in the age of 6 years the mean mid upper arm circumference was observed 5.96 cm (± 0.81). As the age increases the mid upper arm circumference is also increases. In the age of 11 years it is 18.11cm (± 1.86).

**Conclusion**

Such data of nutritional assessment is to be gathered from time to time and it is especially important from public health standpoint as it would provide reliable bases for instituting appropriate strategies to identify and combat factors associated with nutritional abnormalities in children. The nutritional status of school going girls and boys of Nagpur city was assessed using the anthropometric measurements. Looking at the results of the study, it can be concluded that there is a need to implement intervention programmes effectively to improve the nutritional status of school going children of Nagpur city.

**References**

1. Navali, L. and M. Kimiagar (1992). The study of weight and height in children of Theran. Shaheed Beheshti Univ. Sci., J. Fac. Med., 15: 18-27. Refered from Hunshal S. C., Pujar L. & Vati N. (2010). Physical growth status of school going children. Karnataka J. Agric. Sci.,23 (4) : (625-627)
2. Renuka. A.M. (1994) Growth status and puberty of urban and rural girls. M.H.Sc Thesis,Univ. Agric. Sci., Dharwad(India). Refered from Hunshal S. C., Pujar L. & Vati N. (2010). Physical growth status of school going children. Karnataka J. Agric. Sci.,23 (4) : (625-627)
3. Hunshal S. C., Pujar L. & Vati N. (2010). Physical growth status of school going children. Karnataka J. Agric. Sci.,23 (4) : (625-627)
4. Khan, A.Z., N.I. Singh, S.B. Hasan, S.N. Sinha and M. Zaheer (1990). Anthropometric Measurements in Rural School Children. doi: 10.1177/146642409011000512 Perspectives in Public Health. Vol. 110 no. 5: 184-186.Refered from Das S., Addhya

D. & Chakrabarty F. (2012). Prevalence of thinness among 6-12 years rural children of Kharagpur. A cross-sectional study in West Bengal, India. Antrocom Online Journal of Anthropology, vol. 8. n. 1. 5-10.

5. Das S., Addhya D. & Chakrabarty F. (2012). Prevalence of thinness among 6-12 years rural children of Kharagpur. A cross-sectional study in West Bengal, India. Antrocom Online Journal of Anthropology, vol. 8. n. 1. 5-10.
6. Khader V. (1997). Anthropometric measurements of primary school children (6-10years) in Vallabah Vidyanagar, Gujarat. The Indian Journal of Nutrition and Dietetics, 34: 15-19 .
7. Kaushik A., Richa, Mishra C.P. & Singh S. P. (2012). Nutritional Status of Rural Primary School Children and their Socio-demographic Correlates: A Cross Sectional Study From Varanasi. Indian Journal of Community Health, Vol. 24, No. 4, 312-318.
8. Nutrient Requirements and Recommended Dietary Allowances for Indians. (2002). ICMR NIN, Hyderabad.

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