

## Anthropometric Measurements of School Children of Raichur, (Karnataka)

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**ABSTRACT** The nutritional status of school age children of Raichur region was assessed using the anthropometric measurements. Of the 560 children, 50 per cent belonged to rural area and other half to schools of urban area. The nutritional status of children from rural and urban areas was lower than the NCHS standard, girls showing lower measurements than boys. The children from urban area were better than their rural counterparts in all the measurements though the percentage of wasted and stunted children was in rural areas.

### INTRODUCTION

Children are the wealth of any country. Special attention should be paid to meet the needs of this group, constituting one fifth of the country's population (Khader, 1997). The physical growth of children is reflected by different anthropometric measurements especially weight and height. The physical dimensions of the body are much influenced by nutrition in growing period of school age. Poor health and nutritional status will affect work capacity as well as cognitive functions. And it is this age group that is a dynamic period of growth and development as children undergo physical, mental, emotional and social changes. Hence, it is necessary to assess the nutritional status of this demographic group.

Raichur in Karnataka is designated as one of the backward districts. Since information on the nutritional status of school going children of this region is lacking, the present investigation was undertaken with the objectives to assess the nutritional status of school going children of Raichur, to categorize the children into different degrees of malnutrition and to compare the nutritional status of urban and rural school age children of this region.

### MATERIAL AND METHODS

A total of 560 primary school children from four different schools (two each from rural and urban) of Raichur taluk formed the sample. The distribution of study sample according to age and sex is given in Table 1. Most of the parents of

children in rural schools belonged to labour class while, those from the urban schools belonged to business class or were engaged in an employment. There was a marked variation in the socio economic status.

Data regarding general information was

**Table 1: Distribution of study subjects according to age and gender.**

Age	Boys	Girls	Total
5-6	40	40	80
7+	40	40	80
8+	40	40	80
9+	40	40	80
10+	40	40	80
11+	40	40	80
12-13	40	40	80
Total	280	280	560

collected by personally interviewing the subjects. 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 (Anon, 1983) and MUAC with Jelliffe, (1966). Different indices computed using the anthropometric measurements included the weight for height and weight for age. Based on these indices children were classified into different degrees of malnutrition according to Waterlow classification (Bamji, 1996).

**Table 2: Mean anthropometric measurements of school children of Raichur (N = 560)**

S. No.	Age (years)	Gender	Height (cm)		Weight (kg)		MUAC (cm)	
			Urban	Rural	Urban	Rural	Urban	Rural
1.	5-6	Boys	111.35	105.3	17.30	14.32	15.08	13.87
		Girls	108.65	107.03	15.55	14.53	14.66	14.15
2.	7+	Boys	118.70	113.55	19.38	16.15	15.59	14.31
		Girls	114.50	113.33	16.80	16.32	14.69	14.66
3.	8+	Boys	123.83	122.09	21.10	19.98	15.94	15.75
		Girls	123.30	119.79	21.23	18.49	16.15	15.00
4.	9+	Boys	125.78	125.75	21.12	20.58	15.73	15.53
		Girls	127.58	126.53	21.30	21.20	15.85	15.77
5.	10+	Boys	133.75	129.15	26.55	21.93	17.88	15.40
		Girls	122.45	128.30	22.85	22.30	16.40	16.48
6.	11+	Boys	134.63	135.98	25.93	25.08	17.97	16.08
		Girls	137.33	134.72	25.15	26.30	16.89	17.19
7.	12-13	Boys	141.48	139.50	29.60	27.65	17.71	17.53
		Girls	138.85	139.23	27.80	27.78	17.65	17.28
	Mean	Boys	127.07	124.47	23.00	20.81	16.56	15.50
		Girls	124.67	124.13	21.53	20.99	16.04	15.79
	Combined mean		125.87	124.3	22.27	20.90	16.30	15.65

## RESULTS AND DISCUSSION

The mean anthropometric measurements of the school age children from urban and rural areas of Raichur taluk are given in Table 2. The height increased with the advancement of age, as expected, in both girls and boys of rural and urban areas. The children of urban areas were taller than their rural counterparts. The mean height of urban boys, irrespective of age, was

more than girls of same location, but such differences were not seen among rural children. However, the children from both locations were shorter than the NCHS standard.

Similar trend was observed with regard to weight. Irrespective of age, girls of urban areas weighed less than the boys of same location (21.53 and 23.00 kg respectively), but such a difference was not observed in case of rural children (20.81 and 20.99 kg respectively). Rural

**Table 3: Categorization of children based on waterlow classification**

Age (Yrs)	Gender	Normal		Stunted		Wasted		Stunted & Wasted	
		R	U	R	U	R	U	R	U
5-6	Boys	6	15	8	-	2	5	4	-
	Girls	7	14	6	3	3	3	4	-
7+	Boys	8	18	5	-	4	2	3	-
	Girls	7	12	6	3	5	5	2	-
8+	Boys	13	14	4	4	2	2	1	-
	Girls	13	17	3	1	4	1	-	1
9+	Boys	13	15	-	1	4	4	3	-
	Girls	10	3	1	3	9	4	-	-
10+	Boys	11	15	3	3	4	2	2	-
	Girls	8	10	7	6	3	2	2	2
11+	Boys	7	13	5	3	6	2	2	2
	Girls	9	8	4	1	3	8	4	3
12-13	Boys	7	10	5	6	7	2	1	2
	Girls	7	7	10	5	1	3	2	5
Total	Boys	65	100	30	17	29	19	16	4
	Girls	61	78	39	20	22	31	18	11
Grand total		126	178	69	37	51	50	34	15
		(23)	(32)	(12)	(6)	(9)	(9)	(6)	(3)

Note: R-Rural ; U-Urban  
 Figures in parenthesis indicate percentages

children in general, were lighter than the urban school age children, the weights of both urban and rural children being less than the NCHS standard.

Mid upper arm circumference (MUAC) of urban children was lower than their rural counterparts without any difference between the two gender groups. When compared with standard, (Jelliffe, 1966) both urban and rural children recorded lower MUAC.

The lower anthropometric measurements of rural children can be attributed to frequent illness due to lack of hygiene, which is reflected by the poor socio-economic status. Khader (1997) also reported lower weights of children from poor socio-economic status and attributed this to the dietary pattern.

The children were classified into different degrees of malnutrition using Waterlow classification. It can be seen from Table-3 that higher percentage of rural children (32%) were grouped as normal and very low per cent of them (3%) were wasted as well as stunted, irrespective of age and sex. Though they belonged to poor socio-economic status, their weights for height were normal. The difference between rural and urban children, in weight was very small at 7+, 9+, 10+, 11+ and 12+. The percentage of stunted children and both stunted and wasted children though smaller, was almost double in rural compared to urban areas. Equal number of children from both locations suffered from wasting.

As expected, higher percentage of boys were normal than girls in both locations reflecting the gender discrimination in providing the nutrition

in terms of food. This discrimination was more in girls of higher age group (Table-3).

### SUMMARY AND CONCLUSION

The nutritional status of school age children of Raichur region was assessed using the anthropometric measurements. Of the 560 children, 50 per cent belonged to rural area and other half to schools of urban area. The nutritional status of children from rural and urban areas was lower than the NCHS standard, girls showing lower measurements than boys. The children from urban area were better than their rural counterparts in all the measurements though the percentage of wasted and stunted children was in rural areas. 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 age children of Raichur region.

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