



ISSN: 2456-0057  
IJPNPE 2019; 4(2): 514-518  
© 2019 IJPNPE  
www.journalofsports.com  
Received: 13-05-2019  
Accepted: 15-06-2019

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## A profile of growth of preschool female children in Ayodhya (Faizabad) district, UP

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### Abstract

The present paper deals with the anthropometric measurement genetically determined or strongly influenced by nutrition. The reflected pattern of growth and physical state of individuals indicate how the individual deviate the various ages in body size build and nutritional status. It has been found by different studies that in most of the developing countries of the world, there is a relative neglect of preschool children of both sexes in general and of female children in particular.

Keeping in view this aspect the present study was done in district Ayodhya (Faizabad). The cluster sample technique was used as suggested by Handerson and Sunderson.

The height and weight of preschool children has been displayed in different tables. The results have been compared with Harvard, NCHS and ICMR studies.

**Keywords:** Growth, preschool female children

### Introduction

Anthropometric measurements, although genetically determined, are strongly influenced by nutrition. Correctly recorded and interpreted they reflect the pattern of growth and physical state of individual, and indicate how the individual deviate from the average of various ages in body size, build and nutritional status.

In most developing countries of the world, there is a relative neglect of per-school children of both sexes in general and female children in particular. Considering this aspect in the mind, the present study was conducted in Faizabad district.

### Material and methods

Adhering to the cluster sampling technique suggested by Handerson and Sunderson (1982) [2], 340 female children each from rural and urban areas were identified. According there were 85 female children in every age group of 12-23; 24-35; 36-47; and 48-59 month, in both the residential areas. The mothers of these children were interrogated for collection of the desired information's, in addition to health status of the children and their anthropometric measurements. A pretested and predesigned questionnaire was employed for this purpose. The study was conducted in between July 1997 to December 1997.

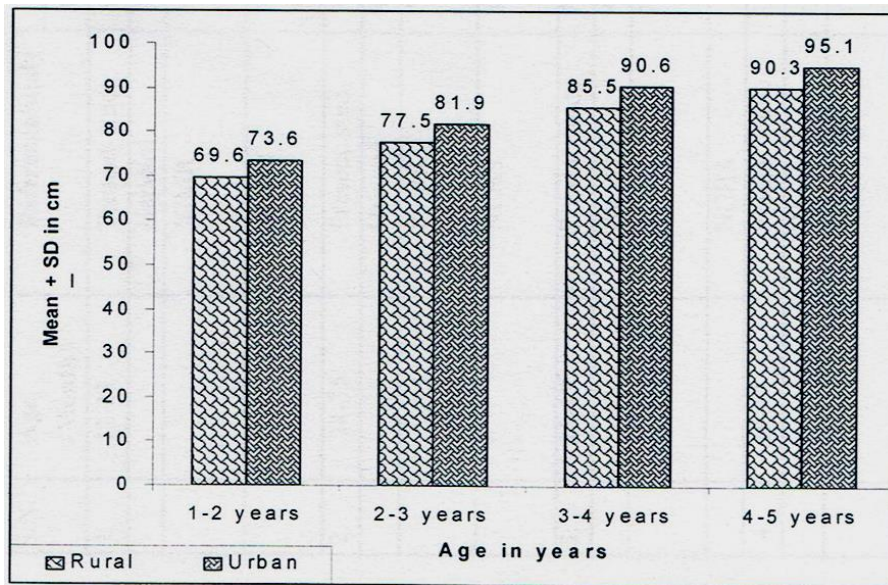
### Result and Discussion

The height and weight of the pre-school female children have been displayed in Table 1 and table 2. In addition to mean  $\pm$  SD value of height and weight, various percentile values; such as 3<sup>rd</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> and 97<sup>th</sup> have been worked out and simultaneously compared with Harvard, ICMR and NCHS standards.

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**Table 1:** Mean ± SD value of Height of Pre-school Female Children According to residential Status

S.N.	Age (Month)	Residential Status			Statistical Significance
		Total (cms) Mean ±SD	Rural Mean ± SD (cms)	Urban Mean ± SD (cms)	
1.	12-23	71.64 ± 3.33	69.66 ± 3.15	73.63 ± 2.11	t= 9.67 P<0.001***
2.	24-35	79.74 ± 3.48	77.54 ± 3.24	81.93 ± 2.02	t= 10.619 P<0.001***
3.	36-47	88.12 ± 3.98	85.57 ± 3.73	90.66 ± 2.20	t= 10.811 P<0.001***
4.	48-59	92.74 ± 4.47	90.31 ± 4.53	95.16 ± 2.79	t= 8.442 P<0.001***



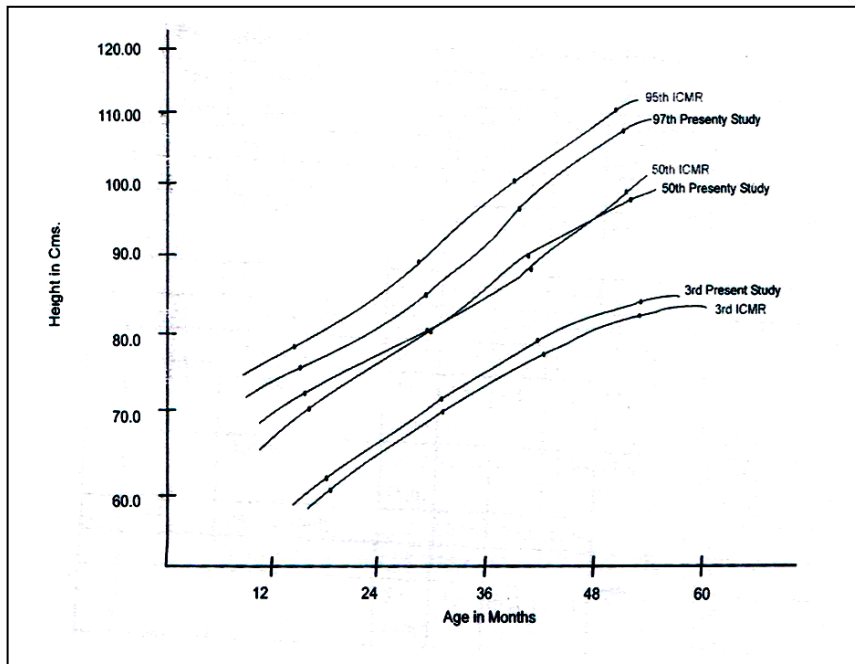
**Graph 1:** Mean ± SD value of height of female Pre-schools according to their residential status

The mean ± SD values of height of these children were 79.94. It was observed that mean ±SD height of the female children (Table 1) belonging to age group 12-23 months was 71.64 ± 3.33 cm. As the various percentile values such as 3<sup>rd</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup>, and 97<sup>th</sup> were 65.02, 66.88, 69.29, 72.18, 73.99, 75.00 and 78.04 cms respectively (graph 1). It is also

evident that the 50<sup>th</sup> percentile value is comparable with the ICMR standard (72.4 cms)<sup>3</sup>, where as it is very near to 3<sup>rd</sup> percentile of Harvard standard of 5<sup>th</sup> percentile NCHS standard. Similar observations were also observed for the female children aged 24-35, 36-47 and 48-59 month.

**Table 2:** Percentile values of the height of the Pre-school female children

S.N.	Age (Month)	Reference/study	Percentile values in cms						Remarks	
			3 <sup>rd</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>		97 <sup>th</sup>
1	12-23	Present study	65.02	66.88	69.29	72.18	73.99	75.00	78.04	
		Harvard	74.9	76.8	79.0	80.0	82.9	84.5	86.7	
		ICMR	64.5 (5 <sup>th</sup> )	66.3	66.2	72.4	75.5	78.7	80.9 (95 <sup>th</sup> )	
		NCHS	76.0 (5 <sup>th</sup> )	77.2	78.8	80.9	83.0	85.0	86.1	(95 <sup>th</sup> )
2	24-35	Present study	72.7	74.82	77.68	79.90	82.69	84.11	84.77	
		Harvard	84.5	86.3	89.3	91.4	93.8	96.4	98.7	
		ICMR	71.50 (5 <sup>th</sup> )	73.1	76.3	79.9	83.7	87.2	89.9 (95 <sup>th</sup> )	
		NCHS	86.0 (5 <sup>th</sup> )	87.0	88.9	91.3	93.7	95.6	96.9 (95 <sup>th</sup> )	
3	36-47	Present study	79.63	82.95	85.21	88.37	91.21	93.41	94.76	
		Harvard	92.0	94.2	96.9	99.5	102.0	105.9	108.0	
		ICMR	76.5 (5 <sup>th</sup> )	79.5	83.1	87.1	91.4	94.8	97.4 (95 <sup>th</sup> )	
		NCHS	-	-	-	-	-	-	-	Not available
4	48-59	Present study	84.44	86.83	89.57	93.00	95.56	98.25	101.21	
		Harvard	98.0	100.9	103.6	106.8	109.3	113.5	116.2	
		ICMR	84.2 (5 <sup>th</sup> )	86.6	90.4	4.5	100.5	102.5	104.9 (95 <sup>th</sup> )	
		NCHS	-	-	-	-	-	-	-	Not available



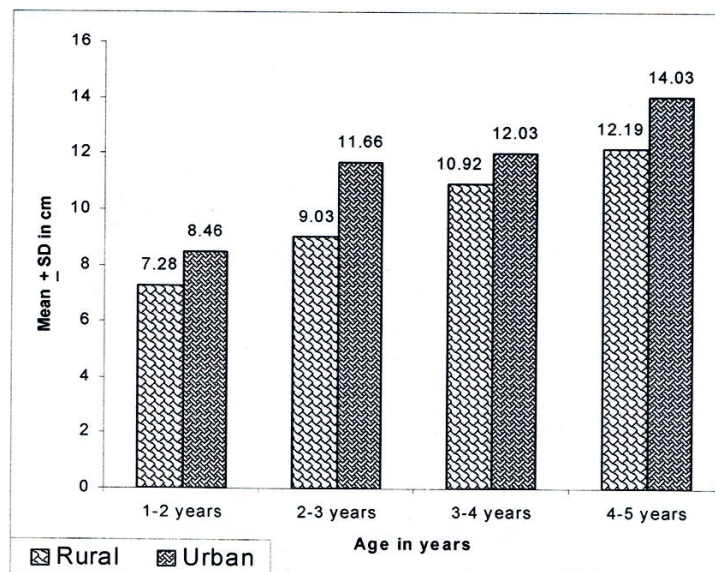
**Graph 2:** Percentile values of height of the Preschool female children

± 3.48; 88.12 ± 3.98 and 92.74 cms. In addition the 50<sup>th</sup> percentile values were 79.90; 88.37; and 93.00 cms respectively. According to residential status, the values for urban children were significantly higher than their rural counterparts. This is all due to better environmental and housing condition, high literacy status and income of the parents, and adequate nutritional diet provided to the urban children,

Further the mean ± SD weight of the female children (Table-3 and Graph-II) belonging to 12-23 month was 7.87 ± 1.02 kegs, where as the 3<sup>rd</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 90<sup>th</sup> percentile values where as the 3<sup>rd</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> percentile values were 6.13; 6.45; 7.06; 7.82; 8.64; 9.33 and 9.90ngs, respectively. It is also evident that the 50<sup>th</sup> percentile value of the present study is well comparable with ICMR standard of 7.70kg, but lagging to 3<sup>rd</sup> and 5<sup>th</sup> percentiles of Harvard and NCHS standards.

**Table 3:** Mean ± SD values of weight of Pre-school female children according to residential statuses

S.N.	Age (Month)	Residential Status			Statistical Significance
		Total (kg) Mean±SD	Rural Mean ± SD (kg)	Urban Mean ± SD (kg)	
1.	12-23	7.87 ±1.02	7.28 ±0.88	8.46 ±0.79	t= 9.212 P<0.001***
2.	24-35	10.34 ± 1.58	9.03 ±1.06	11.66 ±0.63	t= 19.686 P<0.001***
3.	36-47	11.48 ±1.10	10.92 ±1.02	12.03 ±0.89	t= 7.531 P<0.001***
4.	48-59	13.11 ±1.73	12.19 ±1.77	14.03 ±1.09	t= 8.163 P<0.001***



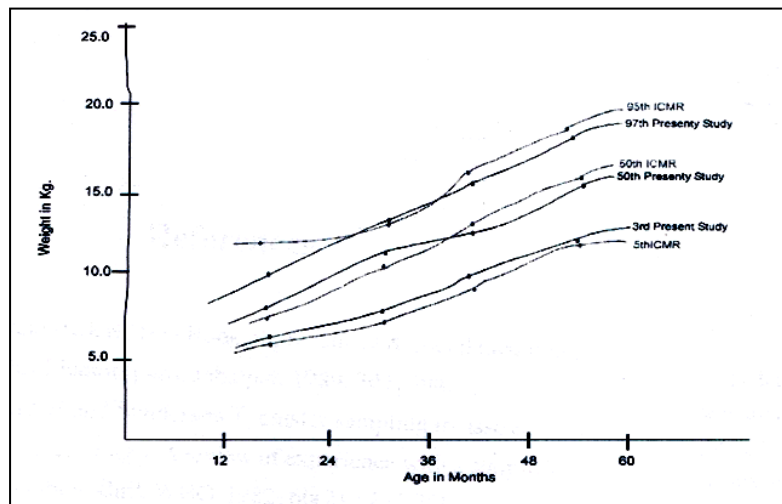
**Graph 3:** Mean ± SD values of weight of Pre-schooler according to their residential status

**Table 4:** Percentile values of weight of the Pre-school female children

S.N.	Age (Months)	Reference/ Study	Percentile values in kgs							Remarks
			3 <sup>rd</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	97 <sup>th</sup>	
1	12-23	Present study	6.13	6.43	7.06	7.82	8.64	9.33	9.90	
		Harvard	8.8	9.6	10.3	11.1	11.9	12.8	14.0	
		ICMR	5.6 (5 <sup>th</sup> )	6.1	6.9	7.7	8.6	9.5	11.6 (95 <sup>th</sup> )	
		NCHS	8.92	9.30	10.04	10.82	11.55	12.30	12.76	
2	24-35	Present study	7.32	8.04	8.98	10.68	11.64	12.27	12.81	
		Harvard	10.7	11.4	12.4	13.4	14.5	15.7	17.3	
		ICMR	7.0 (5 <sup>th</sup> )	7.5	8.4	9.4	10.5	11.7	12.7 (95 <sup>th</sup> )	
		NCHS	10.78 (5 <sup>th</sup> )	11.21	12.21	12.93	13.93	14.8	15.35 (95 <sup>th</sup> )	
3	36-47	Present study	9.39	10.09	10.66	11.44	12.20	12.8	13.88	
		Harvard	12.5	13.4	14.3	15.4	16.8	18.3	20.6	
		ICMR	8.6 (5 <sup>th</sup> )	9.2	10.2	11.8	12.4	13.5	14.2 (95 <sup>th</sup> )	
		NCHS	-	-	-	-	-	-	-	Not available
4	48-59	Present study	10.39	11.15	12.09	13.19	14.16	15.15	16.15	
		Harvard	13.9	14.9	16.0	17.5	19.1	21.2	23.1	
		ICMR	10.0 (5 <sup>th</sup> )	10.7	11.7	13.3	14.0	15.3	16.2 (95 <sup>th</sup> )	
		NCHS	-	-	-	-	-	-	-	Not available

The mean  $\pm$  SD values for the other groups of children such as 24-35; 36-47; and 48-59 month were  $10.34 \pm 1.58$ ;  $11.48 \pm 1.10$ ; and  $13.11 \pm 1.73$  kgs, where as 50<sup>th</sup> percentile values 10.68; 11.44; and 13.11 kgs respectively. It is also evident that these values were very near to ICMR standard, while less

in comparison to 3<sup>rd</sup> or 5<sup>th</sup> percentile value of Harvard or NCHS standard. It very interesting that the means values of weight of the rural female children in the present study possessed significantly lower value of weight in all age groups due to various reasons documented earlier.

**Graph 4:** Percentile values of weight of the Pre-School female children

The most common causes of low anthropometric measurements of the pre-school female children of the present study are (i) low nutritional quantity of the diets taken by the children; (ii) lack of knowledge of the mothers regarding nutrients; (iii) larger family size (iv) low income and (v) deprival of female child. The findings of the present study fully agree with the findings of various workers. Chaudhary M.K. (1975) [3]; Rao DH, *et al.* (1975) [4]; Naik PA, *et al.* (1976) [5]; Bakshi AC and Bhandari NR (1977) [6]; Srivastava P (1991) [7]; Srivastava MM and Patel NV (1992) [8] and Agarwal DK and Agrawal KN (1994) [9] had also reported that the various anthropometric measurements of the female children were far below in comparison to Harvard and NCHS standards. The 50<sup>th</sup> percentile of height of the female children in Rao DH, *Et al.* (1975) [4] study were equal to 25<sup>th</sup> percentiles of Harvard standard, while Bakshi AC and Bhandari NR (1977) [6] found the 50<sup>th</sup> percentile of height &

weight of the female children equal to 3<sup>rd</sup> percentile of Harvard standard. In addition Naik PA, *et al.* (1976) [5] and Bakshi AC and Bhandari NR (1977) [6] documented the anthropometric measurements of the children well comparable to the ICMR standards as we have observed in our present study.

### Conclusion and Suggestions

The anthropometric measurements of the pre-school female children of Faizabad district had lower values in comparison to Harvard and NCHS standards. It is again very disappointing that the height & weight of the rural children were significantly lower than their urban counterparts. In most of the cases, the height & weight of the female children of the present study were well comparable with ICMR standards.



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