

A comparative study on nutritional status of ICDS pre-school children in urban and rural zone of Jammu

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■ **ABSTRACT** : The present research is an attempt to study the nutritional status of preschool children (3-6 yrs) in urban and rural zone of Jammu district under ICDS project. A sample of 300 children was selected. The tool consisted of an anthropometric measurement (weight and height). Data of 300 children were analyzed with the help of WHO Anthropometric software. Z scores of malnutrition were calculated by this software. Further, the Z-score data of children obtained were systematically coded and tabulated according to exhaustive categories. Analysis of the data was done qualitatively and quantitatively using simple numbers and percentage and Chi square with the help of statistical software SPSS. The study indicated towards poor child feeding and caring practices for young children existing among families in Jammu district. The study also revealed towards the gender bias malnutrition in Jammu district as the girls were found to be more malnourished than boys. The study concluded for the fact that feeding practices have to be evaluated on larger scale for younger age group within the state and component of nutrition education for mother regarding unbiased child care and feeding practices has to be strongly analysed and implemented.

■ **KEY WORDS** : Pre-school children, ICDS, Nutritional status, Malnutrition

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Pre-school children are one of the most nutritionally vulnerable segments of the population. Nutrition during the first five years has an impact not only on growth and morbidity during childhood, but also acts as a determinant of nutritional status in adolescent and adult life. Globally, more than one third of child deaths are attributable to under nutrition (Status of world children; UNICEF, 2009). According to the Indian census in 2001, the child population (0-6 years) was 15.9 per cent of the total population. The prevalence of underweight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa. The 3rd National Family Health Survey findings showed that 45 per cent of less than 3 year old children were malnourished (National Family Health Survey -3, 2005-2006). If this continues, India would be raising a generation which is debilitated and unable to contribute effectively to the productivity of the country. The Integrated Child Development Services

(ICDS) programme is a globally recognized community based early child care programme, which addresses the basic interrelated needs of young children, expectant and nursing mothers and adolescent girls across the life cycle, in a holistic manner. ICDS in India is a response to the challenge of breaking a vicious cycle of malnutrition, impaired development, morbidity and mortality in young children. The ICDS is perhaps one of the better concerned programmes, yet on travels around country one realises that there is a huge gap between what is expected of the programme and the ground situation. What is even more worrying is that even the existing centres do not function effectively and that corruption, mismanagement and callousness seem to permeate even the ICDS programme (Ramachandran, 2005). The present study has been taken up with the objective of studying the nutritional status of ICDS pre school children attending Anganwadi centres in rural and urban block of Jammu district.

RESEARCH METHODS

The present study was conducted in Jammu block of Jammu district during the year 2010-2011 with an attempt to study the nutritional status of pre-school children (3-6 yr) attending Anganwadi centres in urban and rural zone of Jammu district. Three hundred pre-school children (3-6 years) attending Anganwadi centres were selected from urban and rural zone of Jammu region. Multi stage sampling technique was adopted for sample selection. Samples were randomly selected for the purpose. A pre-designed information sheet was used to collect the information by investigator on the nutritional status of the children with the help of Integrated Child Development Services (ICDS) growth card and existing previous records. Children were weighed using a standardized Salter's scale to the nearest 100 grams when attending an Anganwadi. The grades of malnutrition were assessed using World Health Organization (WHO) recommended standards. Data of all children were analysed using the WHO Anthropometric and Anthropometric Plus Software. Anthro software was used for children between 3-5 years and Anthro-plus software was used for children between 5-6 years. Anthropometric measurement (weight and height) was used as a tool for data collection. Data were collected by visits made to Anganwadi centres. The data obtained were coded and tabulated. Analysis of the data was done qualitatively and quantitatively using simple numbers and percentage and Chi square with the help of statistical software SPSS.

RESEARCH FINDINGS AND DISCUSSION

The experimental findings obtained from the present study have been discussed in following heads:

Mean height and weight of sample population:

It was indicated from Table 1 that mean height of urban children (boys and girls) aged between 3-6 years was found to be higher than the mean height of rural children (boys and girls) of the same age groups. Similarly, the mean weight of rural children (boys and girls) aged between 3-5 years was found to be higher than the mean weight of urban children (boys and girls) of the same age group. Within the age group of 5-6 years, it was found that the mean weight of urban children (boys and girls) was higher than the mean weight of rural children (boys and girls) of same age group. Within the age group of 5-6 years, it was found that the mean BMI of rural boys was found to be higher than the mean BMI of urban boys while the mean BMI of rural girls was found to be higher than the mean BMI of urban girls.

Nutritional status of children in sample population:

Weight for age:

It was seen from Table 2 that 20.6 per cent urban children and 16 per cent rural children between 3-6 years were found to be underweight. Table data indicated that 17.3 per cent urban children showed higher percentage of moderate underweight than rural children (15.3%). Similarly 3.3 per cent urban children showed higher percentage of

Table 1 : Age and sex variation in anthropometric characteristics of urban and rural children of Jammu district

Age (years)	Urban					Rural				
	Gender	N	Height (cm) Mean \pm S.D.	Weight (kg) Mean \pm S.D.	BMI (kg/cm ²) Mean \pm S.D.	Gender	N	Height (cm) Mean \pm S.D.	Weight (kg) Mean \pm S.D.	BMI (kg/cm ²) Mean \pm S.D.
3-4 years	Boys	50	96.04 \pm 6.54	13.70 \pm 1.81	NA	Boys	33	90.50 \pm 10.07	14.13 \pm 2.52	NA
	Girls	49	95.40 \pm 5.52	12.64 \pm 1.61	NA	Girls	49	90.83 \pm 8.56	14.22 \pm 2.32	NA
4-5 years	Boys	17	103.75 \pm 8.54	15.68 \pm 2.57	NA	Boys	21	96.52 \pm 9.95	16.36 \pm 2.38	NA
	Girls	17	101.35 \pm 7.54	14.94 \pm 1.85	NA	Girls	27	97.98 \pm 7.91	16.71 \pm 1.94	NA
5-6 years	Boys	7	109.71 \pm 4.63	16.30 \pm 2.20	13.60 \pm 2.22	Boys	9	105.53 \pm 8.84	16.07 \pm 2.33	14.53 \pm 1.99
	Girls	10	108.60 \pm 8.53	16.53 \pm 1.81	14.10 \pm 1.51	Girls	11	105.95 \pm 8.01	15.78 \pm 2.24	14.02 \pm 1.01

Table 2: Classification of types of malnutrition based on Z-scores for urban and rural children (3-6 years) of Jammu district

Age group	Nutritional status	Urban (n=150) frequency (%)					Rural (n=150) frequency (%)					X ² value
		N	Normal	Moderate malnutrition	Severe malnutrition	Total malnutrition	N	Normal	Moderate malnutrition	Severe malnutrition	Total malnutrition	
3-6 years	WFA (Underweight)	150	119 (79.3%)	26 (17.3%)	5 (3.3%)	31 (20.6%)	150	126 (84%)	23 (15.3%)	1 (0.6%)	24 (16%)	1.7
3-6 years	HFA (Stunting)	150	113 (75.3%)	26 (17.3%)	11 (7.3%)	37 (24.6%)	150	79 (52.6%)	35 (23.3%)	36 (24%)	71 (47.3%)	20.6*
3-5 years	WFH (Wasting)	133	122 (92%)	8 (6%)	3 (2%)	11 (8%)	130	115 (88.4%)	11 (8.4%)	4 (3%)	15 (11.5%)	0.31
5-6 years	BMI	17	14 (82.3%)	2 (11.7%)	1 (5.8%)	3 (17.6%)	20	18 (90%)	1 (5%)	1 (5%)	2 (10%)	1.1

* indicate significance of value at P=0.05, critical $\chi^2=5.99$, df =2

severe underweight than rural children (0.6%). Chi square calculation showed insignificant difference in underweight between urban and rural children.

Height for age:

It was seen from Table 2 that 24.6 per cent urban children and 47.3 per cent rural children between 3-5 years showed prevalence of stunting according to height for age parameter. Table data also revealed that 23.3 per cent rural children showed higher prevalence of moderate stunting than their urban counterparts (17.3 %). Similarly, 24 per cent rural children showed higher percentage of severe stunting than their urban counterparts (7.3%). There was found a high significant difference between the prevalence of stunting in urban and rural children of 3-5 years according to height for age parameter.

Weight for height:

It was also seen from Table 2 that 8 per cent urban children and 11.5 per cent rural children between 3-6 years showed prevalence of wasting according to weight for height parameter. Table data also revealed that 8.4 per cent rural children showed higher prevalence of moderate stunting than their urban counterparts (6%). Similarly, 3 per cent rural children showed higher percentage of severe stunting than their urban counterparts (2%). There was found an insignificant difference between the prevalence of wasting among urban and rural children of 3-6 years according to height for age parameter.

BMI for age:

It was seen from Table 2 that 3 per cent urban children and 2 per cent rural children between 5-6 years showed low BMI index. Table data also revealed that 11.7 per cent urban children showed moderate malnourishment than their rural counterparts (5%). Similarly, 5.8 per cent urban children showed higher percentage of severe malnourishment than their rural counterparts (5%). There was found an insignificant difference between the BMI index among urban and rural children of 5-6 years.

Nutritional status and age of children:

Table 3 revealed that the case of moderate underweight in study area was 16.3 per cent. While severe under nutrition was reported in study area was only 2.6 per cent. Out of total study population, the age wise classification was higher (11.3 %) in 3-4 years age category. 9 per cent moderate under nutrition and 2.3 per cent severe underweight was found in age category of 3-4 years. The higher incidence of malnutrition among children of 3-4 years of age has also been reported in the studies of Ballweg (1972), Ghosh (1989), Hota (1995) and Chandran and Gangadharan (2009) because of the poor child feeding and caring practices.

Age of children (in years)	Child nutritional status			Total
	Normal (> -2 SD)	Moderate (<-2SD to > -3SD)	Severe (< -3SD)	
Weight for age (WFA) (underweight)				
3-4 years	147 (49)	27(09)	07(2.3)	181 (60.3)
4-5 years	69 (23)	13(4.3)	-	82(27.3)
5-6 years	27(09)	09(03)	01(0.3)	37(12.3)
Total	243(81)	49(16.3)	8(2.6)	300 (100)
Height for age (HFA) (stunting)				
3-4 years	120(40)	31(10.3)	30(10)	181 (60.3)
4-5 years	46(15.3)	21(07)	15(05)	82(27.3)
5-6 years	24(08)	11(3.6)	02(0.6)	37(12.3)
Total	190(63.3)	63(21)	47(15.6)	300 (100)
Weight for height (WFH) (wasting)				
3-4 years	157(59.6)	19(7.2)	05(1.9)	181 (69)
4-5 years	78(29.6)	03(1.1)	1(0.3)	82(31)
5-6 years	NA	NA	NA	NA
Total	235(89.3)	22(8.3)	06(2.2)	263 (100)
BMI for age				
3-4 years	NA	NA	NA	NA
4-5 years	NA	NA	NA	NA
5-6 years	32(86.4)	03(8.1)	02(5.4)	37(100)
Total	32(86.4)	03(8.1)	02(5.4)	37 (100)

Approx. values in percentage
WFA= Underweight, HFA= Stunting, WFH= Wasting

According to the height for age classification, the case of moderate stunting was 21 per cent. While severe stunting of pre-school children in sample population was found to be 15.6 per cent. and 10.3 per cent of pre-school children in the age group between 3-4 years and 7 per cent of the age group between 4-5 years were facing low height for age index which identified chronic (moderate) malnutrition, about 10 per cent population in age group of 3-4 years and 5 per cent population in age group of 4-5 years were facing low height index which identified acute (severe) malnutrition.

Stunting is associated with a number of long term factors including chronic insufficient protein and energy intake, frequent infection, sustained in appropriate feeding practices and poverty. Weight for height is another anthropometric measure of child nutritional status. Both moderate wasting (7.2 %) and severe wasting (1.9 %) was highest reported in the age group of 3-4 years. Low weight for height helps to identify children suffering from current or acute under nutrition. Wasting is associated with the cause include inadequate food intake, incorrect feeding practices, disease and infection. The findings of the study showed that the extent of underweight (<- 2SD and <-3SD) decreased with increasing age. The prevalence of stunting and wasting also followed the same trend. Thus, it was depicted by the

study that extent of malnutrition was declining with increasing age in sample population. This highlighted for the fact that feeding practices has to be evaluated on larger scale for younger age group within the state and component of nutrition education for mother regarding child care and feeding practices has to be strongly analysed and implemented. NNMB data on time trends in intra familial distribution of food has also suggested that young child feeding and caring practices and not poverty and lack of food at home are becoming major factors responsible for inadequate dietary intake in pre-school children. (NNMB, 2000).

Body mass index (BMI) is another anthropometric measurement used for the assessment of children above 5 years of age. Since the ICDS includes children up to 6 years of age, BMI index has been included within study for assessment of nutritional status. The table revealed that population in age group of 8.1 per cent and 5.4 per cent children in sample population of 5-6 years were facing low BMI index identifies moderate and severe malnutrition, respectively.

Nutritional status and sex of children:

Gender bias, even when it is not disastrous, may still generate greater debility among surviving girls and its effect may be perpetuated over generations (Merchant and Kurz, 1992; Mosley and Becker, 1991; Mosley and Chen, 1984; Pande, 2003; Sen, 1998). Table 4 indicates that only a marginal difference in proportion in under nutrition was observed by sex of child in case of underweight, stunting and wasting. The data of the table 4.9.3 indicated that out of

total study population (boys and girls), girls showed higher percentage of moderate underweight (9%), moderate stunting (12%) and moderate wasting (4.5 %) than boys for weight for age, height for age and weight for height parameter, respectively. Similarly, girls showed higher percentage of severe underweight (1.6%), severe stunting (9%) and severe wasting (1.9 %) than boys for weight for age, height for age and weight for height parameter, respectively. On the parameter of BMI Index for the age group of 5- 6 years , 100 per cent girls showed normal status while boys showed 5.5 per cent moderate malnutrition and 5.5 per cent severe malnutrition (Table 4).

The extent of moderate and severe degree of underweight, stunting and wasting was comparatively slightly higher among female children within the age group of 3-5 years. This is line with the nutrition picture of almost every state of India (NNMB, 1999 ; Lakshmi *et al.*, 2003). Several nutritionists have suggested that the negligence of the girl child during illness may tend to deteriorate their nutritional status rather than differences in food distribution between boys and girls (Rai and Vailaya,1996; Lakshmi *et al.*, 2003). Evidences suggest that malnourished female children grow up as short stature women and give birth to low birth weight babies characterized by growth retardation throughout the growing period, there by perpetuating a vicious cycle through generations (Lakshmi *et al.*, 2003).

Conclusion:

A younger child is more dependent in his/ her food choices and food intake on mothers or elderly care and concern but as the child grows; he/she starts making his/her own food preferences and decreases his/her dependency on mothers for food intake. Results of present study showed that children between 5-6 years were less malnourished as compared to their younger counterparts between the age group of 3-5 years in same category. This indicated towards poor child feeding and caring practices for young children existing among families in Jammu district. The findings of the study were in line supporting with NNBM suggestion in year 2000 that poverty is not the major factor of malnutrition in pre-school children rather poor practices of child feeding and caring is responsible for prevalence of malnutrition. The finding of studies also indicated towards the existing gender bias malnutrition in Jammu district. Girls were found to be more malnourished than boys in sample population of Jammu district. The study concluded for the fact that feeding practices has to be evaluated on larger scale for younger age group within the state and component of nutrition education through Anganwadi worker for mothers and care takers of young children regarding unbiased child care and feeding practices has to be strongly analysed and implemented. The study strongly suggested for a quality

Sex of children	Child nutritional status			Total
	Normal (> -2 SD)	Moderate (<-2SD to > -3SD)	Severe (< -3SD)	
Weight for age (WFA)				
Boys	112(37.3)	22(7.3)	3(1)	137(46)
Girls	131(43.6)	27(9)	5(1.6)	163(54)
Total	243(81)	49(16.3)	8(2.6)	300(100)
Height for age (HFA)				
Boys	90(33)	27(9)	20(6.6)	137(46)
Girls	100(33.3)	36(12)	27(9)	163(54)
Total	190(63.3)	63(21)	47(15.6)	300(100)
Weight for height (WFH)				
Boys	110(41.8)	10(3.8)	1(0.3)	121(46)
Girls	125(47.5)	12(4.5)	5(1.9)	142(54)
Total	235(89.3)	22(8.3)	6(2.2)	263(100)
BMI for age				
Boys	12(33.3)	2(5.5)	2 (5.5)	16 (44)
Girls	20(55.5)	-	-	20(56)
Total	32(88.8)	2(5.5)	2(5.5)	36(100)

Approx. Values in percentage

WFA= Underweight, HFA= Stunting, WFH= Wasting

training of Anganwadi workers as nutrition educators so that they could contribute towards more effectively for community participation and could play strong role of nutrition guide to mothers and other family members for the battle against malnutrition.

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