COMPARATIVE STUDY OF NUTRITIONAL STATUS OF PRIMARY SCHOOL CHILDREN IN AN URBAN AREA OF JHANSI

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ABSTRACT:

The present study is an attempt to find out the nutritional status including anthropometric assessment. A cross -sectional study was conducted in primary section of two governments and two convent schools of Jhansi city during the study period of march 1999 to feb2000.Selected school children (n=840) aged 5-11 years, 453 children from municipal school and 387 children from convent school comprised the study material. Following results were observed -out of total children surveyed, 52.98% were male and rests 47.02% were females. Hindu formed majority (70.90%) of children in both types of schools. Mean height and weight of boys and girls were higher than ICMR standards in both type of school. The mean mid arm circumference of all girls and boys from both type of schools had higher value than the ICMR standards but did not come up to WOLANSKI standard. Statistical analysis-percentage, mean, chi-square test.

***Key- words:** Midarm circumference, Indian council of medical research, Wolanski standard*

Introduction:

Primary school age is a dynamic period of physical growth and mental development of the child. Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low school enrolment, high absenteeism, early dropout and poor classroom performance.The present position with regard to the health and nutritional status of the children in our country is very unsatisfactory. Apart from mid- day meal programme, which is run by the Government of India in government run schools, there are no other efforts for children in age group 5-14 years. The NFHS data shows that 53% of children in rural areas are underweight in India and this varies across states.The extent of stunted growth of children is also of concern and has consequences.

Causes of malnutrition are complex, multidimensional and interrelated. In children, malnutrition is most likely to strike those who lack nutritionally adequate diets, are not protected from frequent illnesses and do not receive adequate care. Factors pertaining to shelter, women's workload and decision making opportunities, traditional beliefs and practices and men's attitude towards child care contribute to malnutrition and eventually to maternal and child deaths.

Nutritional assessment in the community is essential for accurate planning and implementation **of** intervention programmes to reduce morbidity and mortality associated with under-**nutrition.** Extensive surveys has been carried out in different parts of India and the finding shows that sickness morbidity and mortality rates of children in India are among the highest in the world.The **study** was therefore, carried out to determine and compare the **nutritional status of children** attending convent and municipal **primary schools** in Jhansi city.

Material And Methods:

The present study is an attempt to ascertain the nutritional status of primary school children of Jhansi city. Four schools were selected following cluster sampling from the Jhansi city. Selected schools were two Government schools namely Basic D.C Talpura and Arya Kanya Inter College (primary section) and two convent schools-Christ the King and Kendriya Vidhyala No-II.

The present Cross-Sectional study was carried out from March1999-Feb 2000.Children of age group 5-11 years, attending the two convents and two municipal school of Jhansi, comprised the study material. Only 840 children could be examined after repeated survey, 453 children from municipal schools and 387 children from convent schools. A child schedule was employed to collect the required information which was field tested to ensure accuracy and work ability .Nutrition status of children was assessed by the help of anthropometric measurements, that include weight ,height and mid arm circumference as per standard methods(Jelliffe, 1966)[3]. Mid- arm circumference was measured while left arm hanging freely at its mid point (between acromian process of scapula and olecranon process of ulna).Data so obtained from the study was subjected to the statistical analysis and means were compared by ICMR standard .The difference between convent and municipal schools were examined statistically.

Results & Discussion:

In the present study a total of 840 primary school children aged 5-11 years were examined. Out of which 453 children were from municipal schools and 387 children were from convent schools of Jhansi city. Following observation were made in the present study.

Table 1

SOCIO-DEMOGRAPHIC PROFILE OF SCHOOL CHILDREN

Diseases	Municipal School			Convent School			Total
	Boys	Girls	No. (%)	Boys	Girls	No. (%)	No. (%)
Religion							
Hindu	168	109	277(61.15)	235	84	319(82.43)	596(70.95)
Muslim	117	59	176(38.85)	08	-	08(2.07)	184(21.91)
Others	-	-	-	51	09	60(15.50)	60(7.14)
Total	285	168	453(100)	294	93	387	840(100)
Caste							
Scheduled	59	17	76(16.77)	07	01	08(2.07)	84(10.00)
Backward	126	84	210(46.36)	34	34	68(17.57)	278(33.10)
Others	100	67	167(36.87)	252	59	311(80.36)	478(56.90)
***Food habits**							
Vegetarian	159	101	260(57.40)	193	67	260(67.18)	520(61.90)
Non-vegetarian	126	67	193(42.60)	101	26	127(32.82)	320(38.10)

* Chi-square value-24.47, d.f=1, p<0.001 The majority of children in both type of schools were Hindus (70.95%) followed by Muslims (21.91%) and children belonging to others religion were only 7.14%. Out of total children studied, 56.90% were from other caste, 33.10% backward caste and 10.00% children were from schedule caste. 80.36% of the children in convent school belong to other caste as compared to 36.88% in municipal schools.

Of the total children studied, 61.91% were vegetarian and remaining 38.09% were non-vegetarians. In both the school children having vegetarian diet were more as compared to non-vegetarian and this difference was found to be statistically highly significant. **(Table-1)**

Table 2

MEAN WEIGHT OF BOYS OF CONVENT AND MUNICIPAL SCHOOLS
IN COMPARISON WITH ICMR VALUES

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean wt (kg)	ICMR standard	Mean wt (kg)	ICMR standard
5-6	15.3(±1.9)	14.8	16.5(±2.3)	14.8
6-7	18.2(±3.0)	16.3	19.5(±1.8)	16.3
7-8	19.4(±2.4)	18.0	20.0(±2.3)	18.0
8-9	20.8(±3.4)	19.7	22.4(±2.6)	19.7
9-10	22.6(±3.2)	21.15	23.4(±3.4)	21.5
10-11	24.5(±2.4)	23.5	26.5(±2.5)	23.5

(Figures in brackets are S.D)Mean weight of convent school boys had higher value than the municipal school boys for all ages. Mean weight of all school boys in both type of schools had higher values as compared to the ICMR standards.

Table 3
MEAN WEIGHT OF GIRLS OF CONVENT AND MUNICIPAL SCHOOLS IN COMPARISONS WITH ICMR VALUES.

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean wt (kg.)	ICMR standard	Mean wt (kg.)	ICMR standard
5-6	15.0(±1.9)	14.5	15.6(±1.5)	14.5
6-7	16.5(±2.5)	16.0	19.0(±3.1)	16.0
7-8	18.7(±2.5)	17.4	21.8(±2.5)	17.4
8-9	22.8(±2.9)	19.4	23.8(±2.9)	19.4
9-10	23.4(±2.4)	21.3	25.8(±2.1)	21.3
10-11	25.4(±2.8)	23.6	26.8(±3.1)	23.6

Mean weight of convent school girls had higher value than the municipal school girls for all ages. Mean weight of all school girls in both type of schools had higher values as compared to the ICMR standards. **(Table-3)**

Table 4
MEAN HEIGHT OF BOYS OF CONVENT AND MUNICIPAL SCHOOLS IN COMPARISONS WITH ICMR VALUES

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean height (cm)	ICMR standard	Mean height (cm)	ICMR standard
5-6	104.5(±4.2)	102.1	112.0(±5.5)	102.1
6-7	112.3(±5.9)	108.5	114.5(±5.8)	108.5
7-8	118.5(±6.3)	113.9	119.5(±6.6)	113.9
8-9	123.5(±5.3)	119.3	125.6(±5.2)	119.3
9-10	125.0(±5.8)	123.7	128.9(±5.3)	123.7
10-11	129.8(±5.9)	124.4	134.8(±5.2)	124.4

The average height of boys for all ages was higher than the ICMR standards. The average height of boys from convent schools was higher than their counterpart in municipal schools.

Table 5
MEAN HEIGHT OF GIRLS OF CONVENT AND MUNICIPAL SCHOOLS IN COMPARISON WITH ICMR VALUES

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean height (cm)	ICMR standard	Mean height (cm)	ICMR standard
5-6	103.8(±3.2)	101.4	110.0(±5.8)	101.4
6-7	108.9(±3.8)	107.4	116.0(±8.3)	107.4
7-8	115.4(±7.5)	112.8	119.0(±5.2)	112.8
8-9	120.0(±6.0)	118.2	125.5(±5.2)	118.2
9-10	129.5(±7.4)	122.9	130.5(±7.6)	122.9
10-11	132.8(±4.2)	128.4	134.6(±8.9)	128.4

The average height of girls for all ages was higher than the ICMR standards. The average height of girls from convent schools was higher than their counterpart in municipal schools.

Table 6
MEAN UPPER MID- ARM CIRCUMFERENCE OF BOYS OF CONVENT AND MUNICIPAL SCHOOL IN COMPARISON WITH ICMR VALUE AND WOLANSKI STANDARD

Age in Years	Municipal school(n=453)			Convent school(n=387)		
	Mean mid arm circumference (cm)	ICMR standard	Wolanski standard	Mean mid-arm circumference	ICMR standard	Wolanski standard
5-6	14.3(±1.0)	13.6	15.7	15.5(±0.8)	13.6	15.7
6-7	15.9(±1.2)	14.9	17.5	16.7(±1.5)	14.9	17.5
7-8	16.0(±1.3)	14.9	18.1	16.9(±1.5)	14.9	18.1
8-9	17.1(±1.7)	14.9	18.7	17.8(±0.5)	14.9	18.7
9-10	18.5(±1.5)	16.5	19.3	18.9(±1.5)	16.5	19.3
10-11	19.1(±1.2)	16.5	20.0	19.5(±1.2)	16.5	20.0

The midarm circumference values revealed that mean mid-arm circumference values of boys were found to higher than the ICMR standards but did not come up-to the Wolanski standards.

Table 7
MEAN UPPER MID- ARM CIRCUMFERENCE OF GIRLS OF CONVENT AND MUNICIPAL SCHOOL IN COMPARISON WITH ICMR VALUE AND WOLANSKI STANDARDS

Age in Years	Municipal school(n=453)			Convent school(n=387)		
	Mean mid arm circumference	ICMR standard	Wolanski standard	Mean mid-arm circumference	ICMR standard	Wolanski standard
5-6	16.2(±1.2)	13.6	15.6	15.6(±1.0)	13.6	15.6
6-7	15.0(±1.0)	14.9	17.5	16.2(±1.3)	14.9	17.5
7-8	16.1(±1.1)	14.9	18.1	17.1(±1.2)	14.9	18.1
8-9	16.6(±1.0)	14.9	18.7	17.5(±1.8)	14.9	18.7
9-10	17.1(±1.2)	16.5	19.5	18.1(±1.5)	16.5	19.5
10-11	18.2(±1.2)	16.5	20.3	19.5(±1.5)	16.5	20.3

The midarm circumference values revealed that mean mid-arm circumference values of girls were found to higher than the ICMR standards but did not come up-to the Wolanski standards. The mean mid arm circumference of girls of convent school were higher than the municipal school.

In the present study a total of 840children aged 5-11 years were surveyed in different schools of Jhansi .453 students were examined from municipal school and 387 from convent schools.

Of the total 840 children surveyed 52.98% were male and rests of 47.02% were female. Children belonging to schedule caste 10.0%, backward caste 33.0 and others caste 56.90%. Hindu children formed a majority 70.95%, rest of them belong to Muslims 21.91%and other religion 7.14%. Other studies also reported the similar finding.[5]

Mean weight and height of convent school boys and girls had higher value than the municipal school boys and girls for all ages. Lower value could be due to low socio economic and poor nutrition status. Similar finding were reported by others.[5,7] Whereas others study found contrary to present study.[1]The reason for dissimilarity of the present study with the other study quoted may be due to natural variation as this study performed in different field area and in different socio-economic group.

The mid arm circumference values of the present study

revealed that mean mid-arm circumference values of both boys and girls were found to higher than the ICMR standards but did not come up-to the Wolanski standards. Similar findings were reported by others[1,5]

Conclusion :

The present study was conducted with the objective of assessing the nutrition status of primary school children of Jhansi city. The nutrition status of children from municipal school was comparatively poor .The value of all anthropometric measurement were found to be lower in municipal school children .Boys showing higher value than girls for same age group in both types of schools .Mean value of weight, height and mid-arm circumference were higher than the ICMR standards in both type of school. Convent school children had a higher muscle mass than their counterparts in municipal schools.

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