



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2020; 9(6): 487-490

© 2020 TPI

www.thepharmajournal.com

Received: 16-04-2020

Accepted: 18-05-2020

Dr. Rita Mishra

Ph.D., Department of Food and Nutrition, Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan, India

Dr. Seema Singh

Ph.D., Department of Food and Nutrition, Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan, India

A comparative study of the nutritional status of primary school children aged 7-9 years of residing in rural and urban areas of Bikaner District (Rajasthan)

Rita Mishra and Seema Singh

Abstract

A Comparative study of nutritional status 827 school children aged 7-9 years of Bikaner district (Rajasthan) was studied by using anthropometric measurements. It was found that the greater percentage (52.21%) of them were girls than boys (47.78%) in rural areas. On the basis of weight for age 4.05-9.12 per cent were severe under nourished, 64.20-62.80 per cent were moderate under nourished, 20.84 & 17.52 per cent were mild under nourished and only 0.73 & 0.70 per cent were overweight and 0.36-1.75 per cent were found to be obese. On the basis of height for age 7.38 & 0.70 per cent were dwarf in girl and boy subjects while, the percentage of short were quite higher 43.91-48.42 per cent and 45.01-46.66 per cent were found to be normal. Only 3.69-4.21 per cent was fall in giant category. Findings of present study indicate that there is a good scope to improve the nutrition of school going children with nutrition education and control of undernutrition.

Keywords: Nutrition, severe under nourished, moderate under nourished, mild under nourished

Introduction

The school-age of a child is roughly equivalent to the period from kindergarten to junior high school; it begins after the pre-school period with a high risk of mortality and continues through most of the adolescent development and sexual maturity until adulthood^[1]. Young children are extremely vulnerable to various infections due to poor quality and unhygienic food. For the sake of good health, children must be granted their right to education and nutritious food for comprehensive development. Children are descendants of the country. Appropriate engrossment must be reimbursed to their quality education and nutritious healthy food. School age children make up a significant proportion of the world's population, about 24 per cent of the population in the less developed world and about 15 per cent of the industrialized world respectively. In primary school, children receive primary education at the age of about 6 to 12 years, coming to pre-school and middle school. In most regions of the world, primary education is the first stage of compulsory education and it can be provided free or at a paid private school.

School life is nutritionally important because this is the first time to build body stores of nutrients in preparation for rapid growth. Nutrition plays a vital role, as insufficient nutrition during childhood may lead to malnutrition, delayed growth, reduced ability to work and poor mental and social development^[2]. According to UNICEF data, 90 per cent of developing world's undernourished children lives in Asia and Africa, while 40 per cent of the World's malnourished in India. The most recent estimates (1996-2005), in developing World, approximately 146 million children are underweight, out of these 57 million live in India.

Maintaining good nutrition for primary school students is becoming more challenging not only for parents but also at the national level. Since today's children are tomorrow's adults. They will play an important role in the development of the country. If the nutritional status of children is better, the rise of the country is higher. Therefore, their nutritional status is of great significance.

This requires a comprehensive study of the current nutritional status of children to make pivotal adjustments in their nutritional practices. There is a relative scarcity of literature on information regarding the nutritional status of children attending school, especially from arid regions such as Bikaner (Rajasthan). Keeping this in mind, the current study, therefore, is planned to assess the nutritional status of primary school children in changing the scenario of nutritional practices and lifestyle with the following goals.

Corresponding Author:

Dr. Rita Mishra

Ph.D., Department of Food and Nutrition, Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan, India

Looking into paucity of available literature about a study, a comparative study between nutritional status of primary school children aged 7-12 years of residing in rural and urban areas of Bikaner District (Rajasthan) present study, had therefore been planned and executed.

Methodology

Selection of subjects: The study was conducted on 7-9 years old primary school children studying in primary schools of Bikaner district (Rajasthan) including both urban and rural areas. First step of the study, taken by the investigator was to obtain the exhaustive list of all government primary schools of urban and rural areas of Bikaner District (Rajasthan). Thereafter, Fifty percent of those schools having at least hundred students population in primary section within 50 km distance from the College were selected. Thus, the study was conducted six government upper primary school in urban area situated at *Hanuman hatha, Rampura bas* (Ialgarh), *Bhutonka bas, Kyroinka Bas, Sadulgang and Subashpura*. The six government upper primary schools in rural area situated at *Pemasar, Dholera no.1, Gigasar, Nagarsugni, Khara and Ridmalsar purothian*. After seeking prior permission and having discussion with respective school authorities, a list of all children (827 in number) aging 7-9 years of both gender was prepared. These children were studying in class 1st to 5th standards. After explaining purpose of study and after taking consent from respective school authority and participant this study was conducted. Regularity in attending the school as well as willingness of the children to co-operate during the study was also taken care before selection of the subjects.

Data collection: Pre tested questionnaire was used to record the information of school children. Age was recorded simply asking date of birth from each participant and was verified from school record book. Height in centimeter was marked on a wall in school with the help of measuring tape. All students

were asked to stand against wall without footwear, heel together and head positioned so that line of vision perpendicular to the body. A glass scale was placed on topmost point of head & then height was measured in centimeter. Weight was measured in kilogram with the help of weighing machine. The participants were asked to stand on weighing machine with light clothing without footwear with feet part & looking forward. The nutritional status based on weight for age and height for age, McLaren (1976) classification was used.

Statistical analysis of the data: Percentage mean and standard deviation of data were calculated during present study for statistical analysis of findings. The statistical analysis was carried out with the help of Microsoft excel 2007.

Result and discussion

In the present study total 827 children participated, out of that 542 primary school children (65.53%) belonged to rural areas and 285 of them (34.46%) were from urban areas. Age-wise view of the study groups clearly reveals that 33.73 per cent of them were age group of 7 years, 32.52 per cent of them were age group of 8 years and 33.73 per cent of them were age group of 9 years. The percentage of girls 52.21 per cent was higher than the boys 47.78 per cent in rural areas. The percentage of boys 27.49 per cent is higher in urban areas than girls 25.09 per cent. Findings of greater number of girls were also reported by Khera (2002) while assessing the impact of a mid-day meal programme on the enrolment of children in primary schools of Rajasthan [3]. On the contrary, Shivprakash and Joseph (2014) found that boys constituted greater no (52.5%) as compared to their girl's counterpart (47.5%) in their study on 6 to 12 years old school going children at Karnataka [4].

Table 1: Distribution of subjects according to age and gender

Age (years)	Total subjects (N=827)	Rural subjects (n=542) (65.53%)			Urban subjects (n=285) (34.46%)		
		Boy (n=259) (47.78%)	Girl (n=283) (52.21%)	Total (n=542)	Boy (n=149) (27.49%)	Girl (n=136) (25.09%)	Total (285)
7	279(33.73)	86(33.20)	82 (28.97)	168(30.99)	63(42.28)	48(35.29)	111(38.94)
8	269(32.52)	81(31.27)	97(34.27)	178(32.84)	53(35.57)	38(27.94)	91(31.92)
9	279(33.73)	92(35.52)	104(36.74)	196(36.16)	33(22.14)	50(36.76)	83(29.12)
Total	N=827	259(100)	283(100)	542(100)	149(100)	136(100)	285(100)

Note: Values in parenthesis indicate the percentage of the subjects

Table 2 data unfold the prevalence of severe (3.66, 3.09, 9.62%) & (3.49, 2.47, 1.09%) moderate (59.76, 47.42, 66.35%) & (80.23, 64.20, 68.48%) and mild (20.73, 34.02, 17.31%) & (11.63, 19.75, 20.65%) malnourished in the age group 7, 8 & 9 years old subjects. While, the percentage of normal category were found to be 14.63, 14.43 & 5.77 &

3.49, 12.35 & 8.7 per cent from aged 7,8 & 9 years old girl and boy subjects and respectively. While, in the category of overweight 1.02 & 0.95 per cent were girl subjects and 1.16, 0, & 1.08 per cent were boy subjects respectively. The subjects were 1.22 per cent girls and 1.23 per cent were boys found to be obese. Overall conclusion from aged 7, 8 & 9 years old that the percentage of moderate malnourished were higher 64.20 per cent as compared to normal 9.77 per cent.

Table 2: Age - wise distribution of rural subjects according to grades of malnutrition based on weight for age

Age (in years)	Subjects (n= 542)	Weight (kg) NCHS standard	No. of rural subjects as per their grades of malnutrition of based on their weight					
			<60% (severe malnutrition)	61-80% (moderate malnutrition)	80-90% (mild malnutrition)	91-110% (normal)	110-120% (overweight)	120% and above obese
7	G (n=82)	21.8	3(3.66)	49(59.76)	17(20.73)	12(14.63)	0(0)	1(1.22)
	B (n=86)	22.9	3(3.49)	69(80.23)	10(11.63)	3(3.49)	1(1.16)	0(0)
8	G (n=97)	24.8	3(3.09)	46(47.42)	33(34.02)	14(14.43)	1(1.04)	0(0)
	B (n=81)	25.3	2(2.47)	52(64.20)	16(19.75)	10(12.35)	0(0)	1(1.23)
9	G (n=104)	28.5	10(9.62)	69(66.35)	18(17.31)	6(5.77)	1(0.95)	0(0)
	B (n=92)	28.1	1(1.09)	63(68.48)	19(20.65)	8(8.7)	1(1.08)	0(0)
Total	G (n=283)	75.1	16 (5.65)	164 (57.95)	68 (24.02)	32 (11.30)	2 (0.70)	1 (0.35)
	B (n=259)	76.3	6(2.31)	184(71.04)	45 (17.37)	21 (8.10)	2 (0.77)	1 (0.38)
Overall total	(n=542)	-	22(4.05)	348(64.20)	113(20.84)	53(9.77)	4(0.73)	2(0.36)

Note: Value in parenthesis indicates the percentage of the subjects.

Table 3 the data unfold the prevalence of severe (10.43, 5.26, 4%) & (3.49, 2.47, 1.09%), moderate (58.33, 57.89, 72%) & (80.23, 64.20, 68.48%) and mild (14.58, 23.68, 18%) & (11.63, 19.75, 20.65%) malnourished in the age group of 7, 8 & 9 years old girl and boy subjects. The percentage of normal category was 12.5, 10.53 and 6.0, & 3.49, 12.35 & 8.7 per

cent from aged 7, 8 & 9 years for girl and boy subjects respectively. In the age group of 7-9 years 2.08 and 2.64 per cent of the girl subjects found to be obese, as comprised of boys subjects were found to be 1.16, 0, & 1.08 per cent overweight, while, 1.23 per cent were found to be obese. The overall total percentage of moderate malnutrition 62.80 per cent were higher as compared to others grades of malnutrition according to weight for age.

Table 3: Distribution of urban subjects according to grades of malnutrition based on weight for age

Age (in years)	Subjects (n= 285)	Weight (kg) NCHS standard	No. of urban subjects as per their grades of malnutrition of based on their weight					
			<60% (severe malnutrition)	61-80% (moderate malnutrition)	80-90%(mild malnutrition)	91-110% (normal)	110-120% (overweight)	120%and above obese
7	G(n=48)	21.8	5 (10.43)	28(58.33)	7(14.58)	6(12.5)	1(2.08)	1(2.08)
	B(n=63)	22.9	10(15.87)	39(61.9)	11(17.46)	3(4.77)	0(0)	0(0)
8	G n=38)	24.8	2(5.26)	22(57.89)	9(23.68)	4(10.53)	0(0)	1(2.64)
	B(n=53)	25.3	5(9.43)	37(69.81)	6(11.33)	3(3.77)	1(1.89)	2(3.77)
9	G(n=50)	28.5	2(4)	36(72)	9(18)	3(6.0)	0(0)	0(0)
	B(n=33)	28.1	2(6.06)	17(51.52)	8(24.24)	5(15.15)	0(0)	1(3.03)
Total	G(n=136)	75.1	9(6.61)	86(63.23)	25(18.38)	13(9.55)	1(0.75)	2(1.47)
	B(n=149)	76.3	17 (11.40)	93 (62.41)	25 (16.77)	11(7.38)	1 (0.67)	3 (2.01)
Overall total	(n=285)	-	26(9.12)	179(62.80)	50(17.54)	24(8.42)	2(0.70)	5(1.75)

Note: value in parenthesis indicate the percentage of the subjects

Table 4 data disclose that in the subjects aged 7 years old was observed that 3.66 & 8.14 per cent were dwarf, 57.32 & 67.44 per cent were short and 36.58 & 22.09 per cent were found to be normal, while, 2.44 & 2.33 per cent were fall in giant category. The majority of aged 7 years old rural girls & boy subjects were found to be short heightened. The subjects were from 8 years of age group were recorded that 7. 22 & 6.17 per

cent were dwarf, 37.11 & 27.16 per cent were short, normal were 50.52 & 64.2 per cent, while, 5.15 & 2.47 per cent of the subjects were found to be giant. In the age group of 9 years 8.65 & 9.78 per cent were dwarf, 47.12 & 28.26 per cent were short, normal were found to be 41.35 & 55.43 per cent and the percentage of giant category were 2.88 & 6.53 per cent. While, the majority of normal subjects in the age group of 8 and 9 years old in both the group of subjects as compared to 7 years of age group.

Table 4: Distribution of rural subjects as per grades of malnutrition based on height for age

Age (in years)	Subjects (n=542)	Height (cm) (NCHS standards)	No. of rural subjects as per grades of malnutrition based on height			
			<80% (Dwarf)	80-93% (Short)	93-105% (Normal)	>105% (Giant)
7	G(n=82)	120.6	3(3.66)	47(57.32)	30(36.58)	2(2.44)
	B (n=86)	121.7	7(8.14)	58 (67.44)	19(22.09)	2(2.33)
8	G(n=97)	126.4	7(7.22)	36(37.11)	49(50.52)	5(5.15)
	B (n=81)	127	5(6.17)	22 (27.16)	52 (64.2)	2(2.47)
9	G(n=104)	132.2	9(8.65)	49(47.12)	43(41.35)	3(2.88)
	B (n=92)	132.2	9(9.78)	26 (28.26)	51 (55.43)	6(6.53)
Total	G(n=283)	379.2	19(6.71)	132(46.64)	122(43.10)	10(3.53)
	B(n=259)	380.9	21(8.10)	106(40.92)	122(47.10)	10(3.86)
Overall total	(n=542)	-	40(7.38)	238(43.91)	244(45.01)	20(3.69)

Note: values in parenthesis indicate the percentage of the subjects

From the Table 5, it can be easily viewed that the subjects from aged 7 years old girl subjects none of were found to be dwarf but in the group of boy subjects 3.17 per cent were found to be dwarf, short were 62.5 & 61.9 per cent normal were quite less 33.33 & 31.75 per cent and 4.17 & 3.18 per cent were fall in giant category. In the age group of 8 years again none of the subjects were found to be dwarf in both the

groups, short heightened were 50 per cent & 43.4 per cent, while, normal subjects percentage were little less 47.37 & 47.17 per cent and subjects were 2.63 & 9.43 per cent from giant category. Similarly, in the age group of 9 years none of the subjects from dwarf category in both groups, short heightened were 36 & 27.26 per cent, while, normal were much more 64 & 66.67 per cent and none of the subjects were fall in giant category in girl subjects while, in the groups of boys subjects 6.06 per cent were found to be giant.

Table 5: Distribution of urban subjects as per grades of malnutrition based on height for age

Age (in years)	Subjects (n=285)	Height (cm) (NCHS standards)	No. of urban subjects as per grades of malnutrition based on height			
			<80% (Dwarf)	80-93% (Short)	93-105% (Normal)	>105% (Giant)
7	G (n=48)	120.6	0 (0)	30 (62.5)	16 (33.33)	2 (4.17)
	B(n=63)	121.7	2 (3.17)	39 (61.9)	20 (31.75)	2(3.18)
8	G(n=38)	126.4	0(0)	19 (50)	18 (47.37)	1 (2.63)
	B(n=53)	127	0(0)	23(43.4)	25 (47.17)	5(9.43)
9	G(n=50)	132.2	0(0)	18 (36)	32 (64)	0 (0)
	B(n=33)	132.2	0 (0)	9 (27.27)	22 (66.67)	2 (6.06)
Total	(n=136)	379.2	0(0)	67(49.26)	66(48.52)	3(2.20)
	(n=149)	380.9	2(1.34)	71(47.65)	67(44.96)	9(6.04)
Overall total	(n=285)	-	2(0.70)	138(48.42)	133(46.66)	12(4.21)

Note: values in parenthesis indicate the percentage of the subjects

Percent prevalence of underweight (19.72%) and overweight (0.70%) reported by Kumawat *et al.*, (2016) also fall within the range of present findings as 2.31 to 71.04 per cent (underweight) and 0-2.88 per cent overweight based on weight for age. Kumawat *et al.*, (2016) also reported that 9.86 per cent of their study population was stunted but during the present study a greater percentage of the subjects (31.92 to 49.80%) were found to be short heighted [5].

Conclusion

During present study total of 872 rural and urban primary school children comprising of 419 girls (283 rural, 136 urban) and 408 (259 rural, 149 urban) were boys. On the basis of weight for age rural and urban subjects were found to be moderate undernourished were much more as compared to normal category. Similarly, on the basis of height for age in the rural area the majority of normal were little higher but in case of urban area the majority of short heightened were more.

References

1. Bulatao R, Stephens P. Estimates and projections of mortality by cause: a global overview, 1970-2015. In: Jamison DT, Mosley WH, eds. *evolving health priorities in developing countries*. Washington, DC: World Bank, Population, Health, and Nutrition Division, 1990.
2. Awasthi CP, Kumar S, Tiwari PP, Singh AB. Nutritional status of preschool and school children in rural areas of Sultanpur District. *J Dairying Foods & Home Sci.* 2000; 19:16-21.
3. Khera R. Mid - Day Meals in Rajasthan,' *The Hindu*, 13 November, 2002.
4. Shivprakash N, Joseph BR. Nutritional Status of Rural School Going Children (6 to 12 years) of Mandya District, Karnataka. *International Journal of Scientific Study.* 2014; 2(2):39-43.
5. Kumawat R, Acharya R, Sharma G, Sethia A, Shekhawat, K, Meena RA *et al.* descriptive cross-sectional study to assess prevalence of malnutrition in school children 6-14 years of age in rural and urban area of Bikaner, Rajasthan, India. *International Journal of Community Medicine and Public Health.* 2016; 3(5):1079-1083.