



Nutritional Health Status of Rural School-Going Children of Karnal District, Haryana

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INTRODUCTION

Children nutritional status is a sign of nutritional contour of whole community. Inadequate nutrition may lead to malnutrition, growth retardation, reduced work capacity and poor mental and social development (Awasthi and Kumar, 1999; Manna *et al.*, 2011). The future of our nation depends on the way we nurture our children today.

WHO dedicated the year 2003 toward the improvement of children through an announcement of world day slogan "A healthy environment to the child". Growth development and body weight of the children is of utmost significance of present general health status of community and nation as whole. The future of the society depends on the quality of life of the children. A healthy child is an asset on which the nation remarks its progress. The nutritional needs of children are unique and demand special attention because of the rapid growth and development which is

dependent on the adequacy of diet consumed by them.

Malnutrition is a major public health problem in developing countries. Malnutrition in all its forms is a considerable public health apprehension and it increases the risk of disease and early deaths. The school going age is nutritionally momentous as this is the crucial period to build up body stores of nutrients preparation for rapid growth of adolescence. According to WHO criteria, fifty two percent of school going children in under developed countries

Materials and Methods

Subject selection: The research was conducted on school going children belonging to the rural areas of district Karnal, Haryana. Purposive sampling was used to select three villages in Karnal district. The government schools of the selected villages cater to low socio-economic group of Population. Total two are

considered normal, where as forty eight per cent of them are malnourished and ten per cent of them are severely malnourished (UNICEF, 2006). Developing countries like India, account for about forty per cent undernourished children in the world is mainly due to the dietary inadequacy in relation to their needs (Mitra *et al.*, 2007). The situation of child malnutrition is also critical in Haryana state. According to National Family Health Survey (2005-2006), the prevalence of wasted, stunted and underweight children in this state was found to be 19, 38 and 46 per cent, respectively. Good nutrition is obligatory part of healthy life and access to healthy diet and optimum nutrition are important for good health. Early nutritional support can improve nutritional status, minimize morbidity and may prevent clinical deterioration.

Thus, there is a need for assessment of nutritional status of children of our country to attain a clear depiction of status of malnutrition in various regions. Keeping this in view, the present study was conducted to assess the nutritional status of rural school-going children of Karnal district, Haryana hundred school going children in the age group of 6- 9 years from three different schools comprising of both sexes (boys n= 100; girls n=100) were selected for the study.

General Information: Information about age, gender, religion, caste, family type and family income was collected with the help of questionnaire-cum-interview schedule method.

Measuring body weight: Weight was recorded in kilograms by using standard weighting machine. During measuring weight, each subject was asked to bear footed and to remove heavy cloth.

Measuring height: For measurement of height, subjects were positioned to stand on the platform, bare footed with their head

upright, looking straight forward by using standard height measurement scale. Height was measured to the nearest 0.1 cm.

Assessment of nutritional status

The nutritional status of school children was assessed by anthropometric measurements viz., height in centimeter (cm) and weight in kilograms (kg). It was determined by Z-score value according to WHO classification (1995).

Table 1
General Profile of the children (N =200)

Variables	Number of subjects with percentage
Age group (in years)	95(47.5)
6-7	105(52.5)
8-9	
Sex	100(50)
Girl	100(50)
Boy	
Religion	170(85)
Hindus	30(15)
Sikhs	
Caste	49(24.5)
General	110(55)
SC	
BC	41(20.5)
Family Type	92(46)
Joint	20(10)
Extended	
Nuclear	88(44)
Family Occupation	110(55)
Agriculture	60(30)
Labour	
Service	10(5)
Others	20(10)
Family Income (Rs.)per month	70(35)
<3000	50(25)
3001-4000	
4001-5000	50(25)
>5000	30(15)

Data collected regarding general profile as shown in Table-1, two hundred subjects were selected purposively for this study. Among them 50 per cent were boys and 50 per cent were girls. Out of them 52.5 per cent of the subjects were from the age group 8-9 years, while 47.5 per cent were from the age group 6-7 years. Most of them (85%) subjects belong to Hindu families and only 15 per cent were Sikhs. Out of 200 selected subjects, majority (55%) of them were from S.C category followed by general (24.5%) and backward (20.5%) categories. It has also

been observed that maximum subjects (46%) were having joint families. The percentage of the subjects who belong to nuclear and extended families were found to be 44% and 10%, respectively. Regarding family occupation, agriculture was the main occupation (55%) followed by labour (30%), others (10%) and service (5%)

As per the requirement of this study, sample selection was restricted to low socio economic status. Family income of the maximum subjects (35%) was less than 3000

rupees per month. However, only fifteen per cent were getting income more than 5000 rupees per month.

Prevalence of malnutrition in rural school going children

The results in Table II indicated the mean weight and height of school children according to age and gender. Mean weight of boys and girls were 23.81 and 20.14 kg respectively, which is 94.48 and 80.56 per cent of ICMR standards. Mean height of boys and girls were 121.12 and 108.70 cm respectively, which is 93.09 and 84.13 per cent of ICMR standards. The WHO, Health statistics, (2012) for India indicates the proportion of stunting as 47.9 per cent and of underweight as 43.5 per cent. A study conducted by Panda, P.*et al.*(2000) in school children of Ludhiana city reported the prevalence of stunting as 26.28 per cent. Another study carried out by N C Shivaprakash *et.al.*(2014) revealed that the prevalence of stunting was more in the boys

as compared to the girls (29.1% vs. 26.5%) in rural children of age group 6-12 years in District, Karnataka.

Weight for age

Weight for age is an indicator of underweight that reflects long term malnutrition. Data in Table III as per Gomez classification of malnutrition according to gender comparison it was found that 74 per cent boys and 56 per cent girls were found normal, whereas 20 per cent boys and 24 per cent girls were found in Grade -I malnutrition and only 6 and 20 per cent of boys and girls, respectively were found in Grade-II malnutrition category. A study conducted by Patwari, A. *et al.* in Kathua district of Jammu and Kashmir reported the prevalence of underweight as 60.4 per cent from study population. Sundaram, M.V.*et al* (1978) also reported prevalence of grade I malnutrition as 30.5per cent, of grade II malnutrition as 42.5per cent, and of grade III malnutrition as 21.5per cent in school children of Madras city.

Table II

Mean weight and height of rural school children (n=200)		
Anthropometric measurements	Boys (n=100)	Girls (n=100)
Mean weight (kg)	23.81 ± 6.30 (94.48)	20.14 ± 3.81 (80.56)
ICMR Standard	25.20	25.00
Z-value	3.58	4.09
Mean height (cm)	121.12 (93.09)	108.70 (84.13)
ICMR Standard	130.10	129.20
Z-value	10.01	15.02
Values are Mean ± SD *Significant at 5% level		
Figures in parentheses indicate percentage **Significant at 1% level		
ICMR standards (2010) NS = Non-significant		

Table III

Nutritional status of rural school children according to Gomez Classification by age and gender (n=200)				
Gender	Normal (90-110%)	Malnutrition		
		Grade I – Mild (75-90%)	Grade II – Moderate (60-74.9%)	Grade III – Severe (<60%)
Boys (n=100)	37 (74)	10 (20)	3 (6)	-
Girls (n=100)	28 (56)	12 (24)	10 (20)	-
Gomez Classification (1956) (Figure in parentheses indicate percentage)				

BMI for Age

The body mass index of the sample was calculated on the basis of the height and weight using the formula. BMI = Weight

(kg)/Height (m²). The WHO (1995) expert committee has recommended that it is the best indicator for the children to assess thinness. The Table IV shows BMI of boys and girls according to age and gender. BMI is a good indicator of gradation of malnutrition.

TABLE IV

BMI of boys and girls according to age and gender (n=200)		
Sex	BMI	
	Normal	Under-nourished
Male	32 (64)	18 (36)
Female	24 (48)	26 (52)
Figures in parentheses indicate percentage		

The Data in Table IV showed that 64 per cent boys and 48 per cent girls had normal BMI, whereas 36 per cent boys and 52 per cent girls had BMI less than 5th percentile which indicated that the children were under-nourished. A study done by Caroline *et al.* (2014) revealed that the percentage of the children who were categorized as normal according to their BMI was only 10 per cent in rural, 32 per cent in semi urban and 38 per cent in urban areas, respectively. According to WHO (2006) BMI for age classification it was observed that only 11 percent of the children had BMI less than 5th percentile of the WHO standards, which indicates that children were undernourished

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