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Assessment of the nutritional status among rural (6 -12 year) school going children

Sumil Ameta

Present study has been undertaken with the objective to assess the nutritional status of school going children 6 to 12 year of rural area (Paldi), Bhilwara district of Rajasthan. The sample size has taken 75 samples. Girls and boys both were included in sample. An interview schedule was developed to collect the information on general profile, health habits and dietary intake (24 hours recall method) etc. Results showed that in the present study is children were rural area school. out of 75 children 12 per cent children were belonging to 7th age group, 13.33 per cent children were belonging to 8th age group, 18.66 per cent were belonging to 9th age group, 17.33 per cent were belonging to 10th age group, 13.33 per cent, were belonging to 11th age group, 13.33 per cent were belonging to 12th age group. Out of total 75 children in rural area 48 per cent were boys and 52 per cent were girls. The number of girls was more than the number of boys. The area of the study was Hindu dominated and schools were Hindi medium so Hindi preference rural school children reveled that out of the total 75 children in the study 30.66 per cent children were general, 6.66 per cent children were OBC, 60 per cent children were SC and 2.66 per cent children were ST. In this study the rural area reveled that from the selected subjects 38.66 per cent children were belonging to nuclear family, 61.33 per cent children were belonging to joint family. Eating habits of the Indian families is determined by their socio-economic status and religion, 100 per cent children found vegetarian in rural area. Food intake of rural area subject's higher consumption food was 68 per cent fruits, less consumption food was green leafy vegetable 15.9 per cent. In the present study result calculated based on nutrients intake, anthropometric measurement and body mass index (BMI). 9.33 per cent of male were in underweight and 6.66 per cent female were in underweight, 13.33 per cent of male were in stunting and 9.33 per cent female comes in stunting, 24 per cent male were in thinness and 16 per cent female comes in thinness, 25.33 per cent children were dull and dry hair, 5.33 per cent children were flag sign hair, 53.33 per cent children were normal hair, 5.33 per cent children were thin hair, 4 per cent were bitot's spot and 96 per cent children were normal eyes, 42.33 per cent children were enamel teeth, 26.66 per cent children were mottled teeth, 30.66 per cent children were normal teeth, 16 per cent children were crackle nails, 84 per cent children were normal nails. In this study can conclude that many deficiency seen in rural area children or found low intake of nutrients.

Key Words : Rural area, Malnutrition, Anthropometric measurements, Dietary intake, Nutrition

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INTRODUCTION

Malnutrition is a broad term which refers to both under nutrition (sub nutrition) and over nutrition. Malnutrition is the most important nutritional problem "Globally". The dictionary meaning of malnutrition is imperfect or faulty nutrition. Malnutrition is characterized by cellular imbalance between the supply of nutrients and energy on one hand, and body's demand, for them to ensure growth, maintenance and specific functions on

AUTHOR FOR CORRESPONDENCE

Sumil Ameta, Department of Food and Nutrition, Faculty of Home Science, Smt. Sushila Devi Mathur P.G. Girls College, **Bhilwara (Rajasthan) India**

others. Malnutrition refers to the situation where there is an unbalanced diet in which some nutrients are in excess, lacking or wrong proportion.

Malnutrition can be defined as "an imbalance between the need and intake of essential nutrients," which may result in either under or over nutrition (World Health Organization, 2002). Both conditions can deteriorate physical and mental development.

Childhood is one of the most critical and formative periods of human life. A growing body of evidence has indicated that adequate nutrition is crucial for optimizing both physical and mental development (United Nations Children's Fund, 2012).

Acceleration (Belli *et al.*, 2005) of economic growth of a country requires healthy and adequately nourished populations, who are able to enhance their skills to promote development of their communities.

Children are essential assets of a country, because they are the future human potential required for its future development (Belli and Appaix, 2003).

(Hasan *et al.*, 2011) from Bangalore, conducted nutritional assessment study among 500 children in three Government Urdu higher primary schools of Azad Nagar and its surrounding area. The overall prevalence of malnutrition in the school children was found to be 52 per cent (260). The prevalence of malnutrition among boys was 53.85 per cent (161) and among girls was 49.25 per cent (99). Stunting was seen in 41.47 per cent (124) boys and 38.81 per cent (78) girls.

The World Bank estimates that India is one of the highest ranking countries in the world for the number of children suffering from malnutrition. The prevalence of underweight children in India is among the highest in the world, and is nearly double that of sub Saharan Africa with dire consequences for mobility, mortality, productivity and economic growth.

Evaluated that (Ghosh and Shah, 2004) Nutritional problems like protein energy malnutrition (PEM), anemia and vitamin A deficiency continue to plague a large proportion of Indian children. Another distressing feature is the lack of any significant improvement over the years in this population. Most common causes of malnutrition include faulty infant feeding practices, impaired utilization of nutrients due to infections and parasites, inadequate food and health security, poor environmental conditions and lack of proper child care practices. High prevalence of malnutrition among young children is also due to lack of awareness and knowledge regarding their food requirements and absence of a responsible adult care giver.

Malnutrition is a fairly wide-spread and complex problem that poses a serious threat to life in some parts of the world. Recent estimates point out that one in every four children under-five (including 146 million children in the developing world) is underweight (UNICEF, 2006). Of the 146 million, 78 million children are in South Asia.

School children from various primary and middle level educational facilities from a rural health block were surveyed during the school health programme. Both mean weight and height were higher in females than males. The overall prevalence of under nutrition was 19.2 per cent. The prevalence of underweight was lowest in 5 year female (0.0%) and highest in 6 year male (21.5%). For stunting 7 year males recorded the lowest (0.0%) and 12 year males the highest (28.5%) prevalence. The highest and lowest prevalence of wasting was recorded in 6 year old females (2.56%) and 9 year old males (24.6%), respectively. Prevalence of thinness was lowest in 13 year old females (14.2%) and highest in 13 year old males (47.1%). The nutritional status of school age children in this health block are comparatively better even though a large number of children still fall below the cutoff for various nutritional indicators **(**Fazili *et al*., 2012).

Anthropometrics profile of 1240 children 888 (71.61%) boys and 352 (28.38%) girls of age 6-14 years was studied in 12 rural schools (Khalil and Khan, 2004). The overall increase in a mean height is more in boys (40.52 cm) than girls (37.35 cm), but increase in mean weight was more for girls (19.76 kg) than boys (16.92 kg). It can be concluded that boys are taller than girls, but girls are heaver than boys at pre-puberty and puberty (14 years of age). The prevalence of wasting of boys and girls were 32.76 per cent and 28.12, respectively, stunting was observed as 79.73 per cent of boys and 81.80 per cent for girls. Statistical significance of wasting and stunting associated with different age group. It was concluded that age has play no significance role in stunting of both boys and girls and wasting for girls, but age was significantly associated with wasting of boys only.

School-aged children constitute as much as 20 per cent of the Indian population (Rawat *et al.*, 2014). Sample size was four hundred and sampling technique used was simple random sampling. Data was collected by conducting house to house visits, measuring height and

weight of children and also through interview using a structured questionnaire. The prevalence of underweight in children was found to be 48.0 per cent (95% CI 43.00-52.99). 56 per cent of the undernourished children were boys. Significantly higher prevalence rates were observed among children having unpiped water supply to the house {(P<0.01), or=4.64 (95% CI 1.52-14.13)}, having suffered from diarrhoea in last 1 year {(P<0.001), or =4.93 (95% CI 3.22-7.55)}, having history of passing worms in last 6 months {(P<0.01), or =2.00 (95% CI 1.25-3.20)} and among those children who had never taken deforming {(P<0.001), or =2.95 (95% CI 1.83-4.76)}.

Observed that conduct problems in school settings can pose significant challenges for both children and teachers (Lynda *et al.*, 2015). The study was undertaken in 11 schools located in south west Ireland. Overall, children displayed positive socio-emotional and behavioral adjustment, although more than one-quarter had difficulties outside the 'normal' range. Class size and gender were shown to play a role in the level of difficulties experienced. Teachers reported significant challenges in managing classroom behavioral problems. This study provides some useful insights into the socio-emotional and behavioral needs of school-entry age children. The findings also have important policy and practice implications for school psychologists and other key school personnel and highlight, in particular, the need to develop and implement early intervention and prevention strategies in schools.

One of the major causes for malnutrition in India is gender inequality. Due to low social status of Indian women, their diet often lacks in both quality and quantity. Many factors including region, religion and caste affect the nutritional status of Indians. Living in rural areas also contribute to nutritional status.

METHODOLOGY

The present study has been undertaken with the objective to assess the nutritional status of school going children 6 to 12 year of rural area (paldi), Bhilwara district of Rajasthan.

Selection of area:

The present study was undertaken in Bhilwara district of Rajasthan. Rural area school going children 6 to 12 year was selected. The sample size has taken 75 sample was taken from rural school. Girls and boys both include in sample. Sample selection is randomly rural school age of 6 to 12 year.

Analysis of data:

In the present study data were collected regarding anthropometry, clinical sings and symptoms of nutritional deficiency disease, dietary habits and food intake, general information of subject and their families of subjects on various aspects of nutrition and health. Data were distributed and classified in the form of frequency symptoms.

Statistical analysis is very important for the research because that is the backbone of every research. Statistical can be described as the scientific, mathematical study of data. In very large data set, it is impossible or impractical to quickly analyze every piece of data. So the sample of the data is studied and the rest of the data results can extrapolated from the sample data.

The data was statistical analyzed as per the objective. General information and anthropometric measurement among the subject was expressed as percentage; Mean ± SE and was calculated by help of statistical process.

OBSERVATIONS AND ASSESSMENT

All the children having 6 to 12 years of study were selected by purposive sampling method for the present. All children studied for general information, anthropometry clinical signs and symptom of deficiency diseases, dietary habits and food intake were studied on these samples also. An overview of the results or findings the present study pertaining to various parameters are arranged in following manner.

General information:

Question regarding from parents children's age, sex, religion, caste, type of family parent's education status parent's occupation and parents income 12 per cent children were belonging to 7^{th} age group, 13.33 per cent children were belonging to 8^{th} age group rural, 18.66 per cent were belonging to 9^{th} age group, 17.33 per cent were belonging to 10^{th} age group, 13.33 per cent, were belonging to 11^{th} age group, 13.33 per cent were belonging to 12^{th} age group 48 per cent were boys and 52 per cent were girls. The children were categorized according the study 93.33 per cent children were Hindu and 6.66 per cent were Muslim. The area of the study was Hindu

dominated and schools were Hindi medium so Hindi preference was in evitable. The cast ratio found 30.66 per cent children were general, 6.66 per cent children were OBC, 60 per cent children were SC and 2.66 per cent children were ST, 38.66 per cent children were belonging to nuclear family, 61.33 per cent children were belonging to joint family. Dietary habits found that 100 per cent were vegetarian.

Anthropometric measurement of children:

Anthropometric measurement serve as a good indicator as a part and present nutritional status of an individual since physical means are particularly depend upon nutrient intake they are of much value in assessing one of the major outcome of introduction between nutrition and the environment.

The mean ± standard deviation weight of 11 year male was (7) 24 ± 4.00 and female was (3) 23 ± 4.26. The mean ± standard deviation weight of 12 year male was (6) 24.5 ± 4.24 and female was (4) 24.75 ± 3.99. (Table 1).

Height:

The mean ±standard deviation of height in rural area

Table 1: Wt (Mean ± SD) in rural area schools were subjects

Age	Sex	No. of subject	Wt. (Mean ± SD)
6	Male	5	21.4 ± 4.17
	Female	4	16.5 ± 5.05
7	Male	6	20.16 ± 4.09
	Female	3	17.33 ± 3.99
8	Male	4	20.75 ± 4.05
	Female	6	25 ± 4.24
9	Male	5	21.4 ± 2.71
	Female	9	22.55 ± 4.07
10	Male	3	23 ± 5.00
	Female	10	25.1 ± 4.05
11	Male	7	24 ± 4.00
	Female	3	23 ± 4.26
12	Male	6	24.5 ± 4.24
	Female	4	24.75 ± 3.99

Table 2: Ht (Mean ±SD) in rural area schools were subject

Age	Sex	No. of subject	Ht. (Mean ±SD)
6	Male	5	116.8 ±8.98
	Female	4	114 ±9.31
7	Male	6	116.5 ±9.80
	Female	3	119 ±8.44
8	Male	4	121.75 ±9.74
	Female	6	125.83 ±8.58
9	Male	5	122.4 ±11.43
	Female	9	125.22 ±8.51
10	Male	3	131.33 ±9.92
	Female	10	132.3 ±9.65
11	Male	7	131.71 ±9.51
	Female	3	126.66 ±9.16
12	Male	6	139 ±10.29
	Female	4	137 ±9.83

the male subject was (5) 116.8 ±8.98 and in female subject was (4) 114 ±9.31 in 6 year. Similarly the mean ± standard deviation height of 7 year male was (6) 116.5 ± 9.80 and female was (3) 119 ± 8.44. The mean ± standard deviation

Table 3: BMI (Mean ±SD) in rural area schools were subjects

Age	Sex	No. of subject	BMI (Mean± SD)
6	Female	4	12.68 ±2.03
	Male	5	15.93 ±2.08
7	Female	3	12.14 ±1.46
	Male	6	14.82 ±2.17
8	Female	6	15.92 ±1.82
	Male	4	14.03 ±2.16
9	Female	9	14.41±1.82
	Male	5	14.32 ±2.12
10	Female	10	14.29 ±1.99
	Male	3	13.4 ±2.80
11	Female	3	14.26 ±2.13
	Male	7	13.75 ±2.04
12	Female	4	13.16 ±1.93
	Male	6	12.72 ±2.25

Table 4: Malnutrition ratio of rural area subjects

Indicator	Male	Female	Total
Underweight	7 (9.33%)	5 (6.66%)	12 (16%)
Stunting	10 (13.33%)	7 (9.33%)	17 (22.66%)
Thinness	18 (24%)	12 (16%)	30 (40%)

Table 5 : The food intake (Mean ±SD) in rural area school subjects

Food group	Mean ±SD	% of (s)	RDA
Cereal	85.6 ±37.69	32.70%	270
Pulses	25.58 ±12.06	42.63%	60
Milk	148.97 ±89.72	29.79%	60
Roots	23.12 ±10.99	23.12%	500
Green leafy veg.	15.90 ±6.64	15.9%	100
Other veg.	22.28 ±11.13	22.28%	100
Fruits	68.42 ±43.52	68%	100
Sugar / jaggery	8.83 ±6.40	29.43%	30
Fats / oils	4.7 ±0.42	18.8%	25

Table 6 : The nutrient intake (Mean ±SD) in rural area subjects

Nutrient intake	Mean ±SD	RDA
Energy	620.55 ±78.16	1950
Protein	15.39 ±2.11	41
Fat	20.38 ±4.44	25
Calcium	220.7 ±40.81	400
Iron	4.27 ±1.09	26

height of 8 year male was (4)121.75 ± 9.74 and female was (6) 125.83 ± 8.58. The mean ± standard deviation height of 9 year male was (5) 122.4 ± 11.43 and female was (9) 125.22 ±8.51. The mean ± standard deviation height of 10 year male was (3) 131.33 ±.92 and female was (10) 132.3 ±9.65. The mean ± standard deviation height of 11 year male was (7) 131.71 ± 9.51 and female was (3)126.66 ± 9.16. The mean ±standard deviation height of 12 year male was (6) 139 ±10.29 and female was (4) 137 ±9.83 (Table 2).

Body mass index (BMI):

The mean ± standard BMI of rural area's children female were (4)12.68 ± 2.03 and in male (5)15.93 ± 2.08 in year. The mean ± standard deviation BMI of 7 year female was (3)12.14 ±1.46 and male was (6)14.82 ±2.17. The mean ± standard deviation BMI of 8 year female was (6)15.92 ±1.82 and male was (4)14.03 ±2.16.The mean ±standard deviation BMI of 9 year female was (9)14.41±1.82 and male was (5)14.32 ±2.12. The mean ± standard deviation BMI of 10 year female was (10)14.29 ±1.99 and male was (3)13.4 ± 2.80. The mean ± standard deviation BMI of 11 year female was (3)14.26 ± 2.13 and male was (7)13.75 ± 2.04. The mean ± standard deviation BMI of 12 year female was (4)13.16 ± 1.93 and male was (6)12.72 ± 2.25 (Table 3).

It was found that out of 75 subjects 9.33 per cent of male were in underweight and 6.66 per cent female were in underweight, 13.33 per cent of male were in stunting and 9.33 per cent female comes in stunting, 24 per cent male were in thinness and 16 per cent female comes in thinness.

Nutritional profile of the respondent:

Food intake of rural area subject's higher consumption food was 68 per cent fruits, 42.63 per cent was pulses, less consumption food was green leafy vegetable 15.9 per cent (Table 5).

In the present study energy intake of rural area subjects mean was 620.55 and 78.16 was standard deviation. Protein intake mean 15.39 ±2.11 (SD), fat intake mean 20.38 ±4.44 (SD), calcium intake mean was 220.7 ± 40.81 (SD), iron intake was 4.27±1.09 (SD). Fat consumption were higher than other nutrient (Table 6).

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