



## NUTRITIONAL HEALTH STATUS OF PRIMARY SCHOOL CHILDREN OF DARBHANGA DISTRICT (BIHAR)

**Nisha Kumari**  
Research Scholar, Univ.Dept. Of Home Science,  
L.N.M.U. Darbhanga.

### ABSTRACT

*The nutritional health analysis shows signs of deficiencies among the rural children. The frequency of essential food intake like milk and complex carbohydrates is also poor among the rural children studied. Therefore, their energy requirement is not met by their daily diet.*

**KEY-WORDS :** Quality of life, Society & Nutrients.

### INTRODUCTION

Since 1947, India has made substantial progress in human development. Still the manifestations of malnutrition are at unacceptable levels. Nineteen per cent of world's children live in India. India is a home to more than one billion people, of which 42 per cent are children. More broadly, malnutrition in India is in a state of silent emergency and thereby demands greater priority than ever before. The nutritional status of population is therefore critical to the development and well being of the nation (National Nutrition Policy, 1993 Government of India). The present status of malnutrition in India is that a devastating half of all the newborns are malnourished and 30 per cent are born underweight making them more vulnerable to further malnutrition and diseases. To evaluate nutritional status, assessors can use measure of body composition and development (anthropometric measurements) or measures of how well the body performs certain tasks (functional tests of nutrition status). Anthropometric measurements and functional tests useful in nutritional assessment indicate that each measurement depends on adequate nutrition. Poor growth in children indicates malnutrition. Malnutrition is an impairment of health resulting from deficiency of calories and/or more essential nutrients, and over nutrition, which is an excess of one or more nutrients and usually of calories.

Under nutrition is a major public health problem worldwide, particularly in developing countries (Onis et. al.). One third of the children under 5 years old worldwide are moderately or severely undernourished. Under nutrition impairs physical, mental and behavioural development of millions of children and is a major



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cause of child death (World Bank, 1993, Falkner, 1991).

Shrivastava, Rahul (2008) - according to 'National Sample Survey Organisation', twenty per cent people in rural India earn only 12 a day, of which each person spends just ` 7 on food. In Orissa and Chhattisgarh, 44 per cent people suffer from such a devastating situation. Ever wondered why people migrate from villages to cities? The survey says life is a shade better in urban India where 22 per cent people spend ` 19 daily. In urban Bihar, 56 per cent live on this amount.

"Nations where the human resource is undervalued and material resources are overvalued always remain poor." India stands 25th on the Global hunger Index with 46 per cent of underweight children below 5 years of age. (State of World Children, 2008).

This perhaps holds good especially for a State like Uttar Pradesh which, with a population of about 18 crore, is home to about one-sixth of country's population. Every sixth malnourished child in India lives in U. P. Fifty Seven per cent children born to malnourished mothers are underweight. In Uttar Pradesh the under-nutrition figure is as high as 72 per cent.

Therefore, the major objective of the present study is to assess the nutritional health status of the primary School Children in the rural and urban areas of Darbhanga district.

## METHODOLOGY

The study was undertaken with the objective "to assess the nutritional health status of children in Darbhanga district". Assessment of nutritional status is the first step in the formulation of any public health strategy to combat malnutrition. The children with in 7-9 years of age were selected randomly from the identified schools. Two hundred children from rural and urban areas each constituted the total sample of 400. Three tools were used in the study to assess the nutritional health status- Clinical Nutrition Survey Chart, 24-hr recall method, Food frequency questionnaire.

Clinical examination is commonly used in survey, since it is relatively simple and do not call for sophisticated equipment. It reveals the anatomical changes due to malnutrition that can be diagnosed by the naked eyes.

24-hr recall method is generally used by dietician to obtain a general picture of person's food intake. It is used to elicit an accurate picture of the diet history. In 24-hr recall method, the actual food and drink consumed in the immediate past 24 hours is recorded. Sometimes, a longer period may be used. The recorded food consumed in the last 24 hours is then converted to the nutrients available in each food item used in preparing it and then compared with the Recommended Dietary Allowances.

Food Frequency Questionnaire is either interviewer administered or self-completed. A detailed questionnaire includes the list of foods and the subject answers as to how often and in what quantity each food is eaten per day, per week and per month. The collected information of the food consumed is then checked with the Recommended Dietary Allowances (RDA by ICMR, 1990). It gives an estimate of the amount and frequency of the various nutrients consumed by the individual.

## RESULTS AND DISCUSSION

The results of the present study conducted on the primary school children are discussed below:

**TABLE 1**  
**Clinical Nutritional Survey Chart of Rural and Urban Children**

Clinical Signs	Category	Rural	Urban
General Appearance	Good	6%	97%
	Fair	45%	3%
	Poor	45%	-
	Very Poor	4%	-
Hair	Normal	37.5%	99.5%
	Loss of Luster	51%	0.5%
	Discolored & Dry	13.5%	-
	Sparse & Brittle	21.5%	-
Eye Discharge	Absent	99%	100%
	Watery	1%	-
	Mucopurulent	-	-
Lips	Normal	6.5%	98%
	Angular Stomatitis, Mild	65%	2%
	Angular Stomatitis, Marked	17.5%	-
Gums	Normal	94.5%	98.5%
	Bleeding	4.5%	1.5%
	Pyorrhoea	-	-
	Retracted	1%	-
Teeth	Absent	21%	98%
	Chalky Teeth	44%	2%
	Pitting of Teeth	8.5%	-
	Discoloured	26.5%	-
Skin	Normal	46.5%	99.5%
	Loss of Luster	49.5%	-
	Dry & Rough	4%	0.5%
	Hyperkeratosis	-	-
Bones	Normal	100%	100%
	Rickets	-	-

Source: FAO/ WHO Expert Committee on Medical Assessment of Nutritional Status, WHO Tech. Rep. Ser. 258.

### Interpretation

Table 1, shows the percentage distribution of the nutritional deficiency signs amongst rural and urban respondents. The description of the rural children is as follows- General Appearance: A majority of the rural respondents (90%) were classified as fair, (45%) and poor (45%). Eyes:

99 per cent of rural respondents had normal eyes with no presence of discharge, only 1 per cent having watery eyes. Lips: 65 per cent of the children were observed to suffer mild Angular Stomatitis and close to 17.5 per cent had marked Angular Stomatitis. Gums: were observed normal in 94.5 per cent of the rural respondents, while 4.5 per cent of them had bleeding gums. Teeth: 44 per cent of the rural children had chalky teeth confirming the deficiency of Calcium, 26.5 per cent had discolored teeth which could be a result of poor dental care. Hair: 37.5 per cent of rural children had normal hair. However, 51 per cent had dull hair or hair without luster. 13.5 per cent of the respondents had discolored and dry hair and 21.5 per cent had sparse and brittle hair. A not so encouraging hair condition of the respondents indicates a significant deficiency of protein amongst the rural respondents. Bones: were found normal. None of the children had Rickets or any other visible orthopedic problem. Skin appearance: was normal in 46.5 per cent, dull in luster in 49.5 per cent. The balance 4 per cent of the respondents had dry and rough skin. Hyperkeratosis was not observed in any respondent.

Table 1, also exhibits the status of urban respondents on clinical signs and symptoms. General

Appearance: 97 per cent of the respondents appeared good while 3 per cent were fair. Eyes: All the respondents had healthy eyes with no discharge. Lips: 98 per cent of the respondents exhibited normal condition of lips and only 2 per cent of them had mild angular stomatitis. Gums: 98.5 per cent of the urban respondents had normal gums while a minor fraction, 1.5 per cent, had bleeding gums indicating lack of dental care awareness. Teeth: Flurosis was absent in all the children while only 2 per cent had discolored teeth. Hair & Bones: Almost all the respondents had normal hair and bones. Skin Appearance: The skin appearance of urban respondents was normal. Only 0.5 per cent of the respondents had dry and rough skin which could be a result of the stringent climatic consideration/s.

**TABLE 2**  
**Percentage distribution of children according to deficient nutrient intake within last 24 hours**

S.No.	Nutrient	RDA*	Rural		Urban	
			% Deficient	Average Intake (g/day)	% Deficient	Average Intake(g/day)
1.	Protein (g/day)	41	20.0%	27	6%	34
2.	Fat (g/day)	25	15.3%	18	-	-
3.	Carbohydrates (kcal/day)	390	96.0%	249	53.3%	296
4.	Energy (kcal/day)	1,950	54.0%	1,418	11.3%	1,650
5.	Calcium (mg/day)	400	76.0%	229	1.3%	186
6.	Iron (mg/day)	26	42.0%	16	70%	16

\* Recommended Dietary Allowance/sby ICMR 1990.

### Interpretation

The 24-hr recall method was used to find out the amount of essential nutrients intake by the respondents. The percentage of the rural and urban children deficient in the six major nutrients is given in Table 2. The table illustrates that 20.0 per cent rural children were deficient in Protein intake than the recommended amount (41g/ day). The average intake by the deficient respondents was 27g/day. 15.3 per cent of the respondents did not consume the recommended amount of Fat (25g/day). The average consumption of fat by these respondents was 18g/day. A majority of the respondents (96.0%) had deficient Carbohydrate consumption, average of 249 kcal/day compared to 390 kcal/day recommended. Energy deficiency was exhibited by 54.0 per cent of rural respondents. Calcium is an important nutrient for the children of this age as they are growing children and calcium is required for the building and growth of stature. However, 76.0 per cent of rural respondents exhibited calcium deficiency. The average intake of calcium was 229 mg/day inspite the recommended amount of 400mg/day. Also, 42.0 per cent of the rural respondents did not consume the daily recommended Iron (26 mg/day). Their consumption was limited to 16mg/day.

Among the urban children 6 per cent of the respondents exhibited deficient consumption i.e. only 34 g/day of their daily requirement of Protein (41 g/day). All urban respondents were well fed with Fats. Carbohydrate was one nutrient on which both rural as well as urban respondents were found deficient with about 53.3 per cent urban respondents missing the recommended daily carbohydrate consumption of 390 kcal/day. The average consumption of carbohydrates was 296 kcal/day by them. 11.3 per cent of the urban respondents did not consume the recommended daily Energy requirement, as over half of the children were lacking carbohydrate intake. Proteins, fats and carbohydrates together make up for the daily requirement of

energy. 1.3 per cent of the respondents were Calcium deficient and 70 per cent were not consuming the daily recommended amount of Iron (26mg/day). The average calcium and iron intake by the deficient urban respondents was 186mg/day and 16mg/day respectively.

## CONCLUSIONS

The future of the society depends on the quality of life of the children. Nutritional needs change throughout life, depending on genetics, rate of growth, activity and many other factors. Nutritional status is the condition of health of the individual as influenced by the utilization of nutrients. Nutritional needs also vary from individual to individual.

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