Dietary Habits of Primary School Children in Chamoli District of Uttarakhand

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ABSTRACT

Children are the supreme assets of any nation; they are the one who shape tomorrow. Children are the generation of hope. Nutritional status of children reflects the overall development of the community. Proper nutrition is crucial for the appropriate growth and development of the children. Food habits acquired during early years of life tend to persist into adulthood and form the basis of health. Hence there is a need to correct dietary habits of children so as to ensure that they can live healthy lives as adults. The prime objective of the study was to assess the dietary intake of primary school children. The study was conducted in two blocks of Chamoli district of Uttarakhand. The sample consisted of 270 children in the age group of 5-9 years. The results of study revealed that food consumed daily by all the subjects included cereals, pulses, fats and oil and sugar and jaggary. Consumption of milk and milk products, roots and tuber and other vegetable were more frequent in comparison to meat and poultry and fruits. Daily intake of energy in all age group of children was comparatively low than RDA, it ranges between 77-85 per cent of RDA. Daily intake of protein was high as compare to RDA in all age groups except in children of 6 year which was 87.2 per cent of RDA. Among all the nutrients calculated the daily intake of iron, β–carotene and ascorbic acid was comparatively low than RDA.

Key Words : Dietary habits, Primary School children

INTRODUCTION

Nutrition in childhood is the basis for survival and good health in adulthood because health of an adult is determined by the nutritional status during childhood and nutritional status of the child is reported to be the result of interplay among diet, infection, social, environmental and economic variables. Inadequate nutrition among the children leads to improper development of their body and mind resulting into lower level of efficiencies. Thus the progress of the country largely depends on the health standard oh the citizens. Nutritional deficiencies are the most serious and are commonly seen in children; hence the growth and development levels of children have been used to understand the nutritional status of the population (Stephenson *et al.*, 1980).

A number of nutritional surveys have been conducted in recent years in different parts of India by the government and non-government agencies. Information regarding the dietary pattern, nutrient intake, and nutritional anthropometrical and clinical signs of nutrient deficiencies of hill primary school children is very scanty especially their coverage of hill population in Garhwal region is negligible. The hill region requires special attention because of their difficult terrain and topography and inadequate infrastructure.

From nutritional point of view primary school children between 5-9 years of age should also be considered as vulnerable group because they are also of growing age and improper nutrition during this age may be one of the

important deciding factors to be the lifelong health of the individual. Nutritional status is the condition of health of an individual as influenced by nutrient intake and utilization in the body. According to Sachdeva *et al.* (2003), nutrient is one of the major environmental factors responsible for the maintenance of physical growth and mental development. Adequate nutrition is one of the key factors which help each person to attain his/her full potential as an adult and it depends to a great extent on the quality and quantity of food.

Proper nutrition is crucial for the appropriate growth and development of children. Good nutrition is the base of good health. However, most people are ignorant of the proper ways and means to maintain good health and nutrition. Food taboos and antiquated food beliefs and practices that have been passed on for generations have always been a great barrier in modifying eating behaviors or habits. Functional illiteracy related to malnutrition and the poor learning environment in rural setting and among disadvantaged urban groups are among the ecological factors that maintain the vicious cycle leading to malnutrition (Mittal *et al.*, 2007).

The school age period is nutritionally significant because this the prime time to build up body stores of nutrient in preparation for rapid growth of adolescence. This period is quite vulnerable and considered to be special risk group. A child's overall development including health and nutritional status is solely/wholly dependent on his/her mother's health and nutritional status in utero to birth and later on her other characteristics as literacy status, awareness and economic status. Malnutrition during this period can interfere with school performance, impairs body function, working ability and physical growth (Kumari and Jain, 2005 and Kulsum *et al.,* 2008).

Objective of the study:

1. To assess the dietary intake of primary school children.

METHODOLOGY

Locale of study :

The present study was conducted in primary schools of Narayan bager block and Tharali block that are situated in Chamoli district. Chamoli is an upper Himalayan district in Uttarakhand state. Chamoli district extends from 29°-54ˡ to 31°-08ˡ north in latitude and 78°-54ˡ to 80°-08ˡ east in longitude and it covers an area of 9,125 sq km.

It was planned to take sample from the primary

schools administered/ recognized by Basic Shiksha Adhikari (BSA) of Chamoli district of Uttarakhand.

Sample:

The sample consisted of 270 children of the 7 primary schools. The sample children were in the age group of 5-9 year. Both purposive and multi stage random sampling technique were used for the study. Out of thirteen districts in Uttarakhand, Chamoli district selected purposely as it was convenient for the researcher. For the selection of the subjects' multi stage random sampling was followed. There are nine blocks in Chamoli district, two blocks namely Narayan bager and Tharali was selected and then total 7 primary schools were selected randomly from the selected blocks. Then total 270 children were selected in the age group of 5-9 years. Out of 7 primary schools, 4 primary schools were government and 3 were private schools. Out of 270 children, 106 children were from government primary schools and 164 children were from private primary schools. After the selection of subjects the survey was also conducted at household level, to study the socioeconomic status of their families.

Dietary assessment:

For the dietary assessment, food consumption frequency and percent adequacy of daily nutrient intake of children were calculated. and results are summarized in the following table.

RESULTS AND DISCUSSION

Table 1 shows the food consumption frequency of primary school children of 5-9 years. It is clear from the table that the food consumed daily by all the subjects included cereals, pulses, fats and oil and sugar and jaggary. Regarding the consumption of milk and milk products, 86.67 per cent of children consumed the item daily and 13.33 per cent consumed it 4-6 times per week. 91.48% children were non vegetarian whereas 8.52% children were vegetarian. 32.59 per cent of non vegetarian consumed meat and poultry occasionally whereas 43.70 per cent and 15.18 per cent children consumed it 1-2 times per week and 2-4 times per week, respectively.

31.11 per cent children consumed green leafy vegetable daily, 38.15 per cent consumed it 4-6 times per week and 18.15.26 per cent consumed it 2-4 times in a week whereas only 12.59 per cent consumed it 1-2 times per week. The majority of children (77.04 %) consumed roots and tuber daily and only 22.96 per cent consumed

Table 1 : Food consumption frequency of 5-9 year primary school children (N=270)						
Food groups	Daily	4-6 t/w	2-4 t/w	1-2 t/w	Occasionally	Never
Cereals	270	-	-	-	-	-
Pulses	270	-	-	-	-	-
Milk and milk products	234	36	-	-	-	-
Meat and poultry	-	-	41	118	88	23
Green leafy vegetable	84	103	49	34	-	-
Roots and tuber	208	62	-	-	-	-
Other vegetable	182	62	22	4	-	-
Fruits	79	89	58	44	-	-
Fats and oils	270	-	-	-	-	-
Sugar and jaggary	270	-	-	-	-	-

4-6 t/w = 4-6 times per week
2-4 t/w = 2-4 times per week
1-2 t/w = 1-2 times per week

it 4-6 times per week. Regarding the consumption of other vegetables 67.41 per cent children consumed it daily, 22.96 per cent consumed it 4-6 times in a week and 8.15 per cent children consumed it 2-4 times in a week whereas only 1.48 per cent children consumed it 1-2 times in a week. Regarding the fruit consumption, 29.25 per cent children consumed it daily, 32.96 per cent children consumed fruits 4-6 times in a week. Whereas, 21.48 per cent and 16.29 per cent children consumed it 2-4 times in a week and 1-2 times in a week respectively. Handa *et al.* (2008), in Allahabad district also found adequate intake of almost all food groups among school going children of 7-9 years.

In a similar study carried out in Pune city of India it was revealed that 50% children were non vegetarian and around 6% children were purely vegetarian. Around 70% children consumed milk daily though a majority insisted that milk is their last preferred food. Only 5% children consumed green leafy vegetables daily. Snacks, fast food and processed food were the most preferred food by children (Mukherjee and Chatuvedi, 2017).

The results of percent adequacy of daily nutrient intake of children in all age groups are shown in Table 2 to 6.

Mean nutrient intake and percentage of RDA met is shown in Table 2 for 5 year old primary school children. It is clear from the table that the intake of energy, fat, calcium, iron and folic acid was almost equal to RDA whereas the intake of protein, thiamin and riboflavin more than RDA. Only the intake of niacin, β-carotene and ascorbic acid was less than RDA among these the intake of β-carotene is very low as compared to RDA.

It is evident from Table 3 that among 6 year old primary school children the intake of energy, iron and folic acid is adequate and is almost equal to RDA whereas the intake protein, fat, calcium, thiamin and riboflavin were higher than the recommended dietary allowances. The intake of niacin and ascorbic acid was comparatively less than RDA whereas the β-carotene intake was very low with the respective RDA.

Table 2 : Daily nutrient intake of 5 year old primary school children (N= 22)			
Nutrients (unit/day)	Mean intake	RDA	Percentage of RDA met
Energy (kcal)	1118.5±51.45	1350	82.85
Protein (g)	23.92±1.84	20.1	119.0
Fat (g)	24.32±2.14	25	97.28
Calcium (mg)	594.25±17.30	600	99.0
Iron (mg)	9.92±1.05	13	76.31
Thiamin (mg)	0.8±0.10	0.7	114.28
Riboflavin (mg)	0.9±0.17	0.8	112.5
Niacin (mg)	7.15±0.56	11	65.0
Folic acid (µg)	93±3.86	100	93.0
β-carotene (µg)	504.32±17.90	3200	15.76
Ascorbic acid (mg)	25.5±2.60	40	26.1

Table 3 : Daily nutrient intake of 6 year old primary school children (N= 51)			
Nutrients (unit/day)	Mean intake	RDA	Percentage of RDA met
Energy (kcal)	1147.25±34.79	1350	84.98
Protein (gm)	24.9±1.70	20.1	123.88
Fat (gm)	25.07±1.97	25	100.28
Calcium (mg)	645±43.0	600	107.5
Iron (mg)	10.57±0.95	13	81.31
Thiamin (mg)	0.82±0.06	0.7	117.14
Riboflavin (mg)	0.92±0.06	0.8	115.0
Niacin (mg)	7.18±0.05	11	65.27
Folic acid (µg)	94.5±3.23	100	94.5
β-carotene (µg)	516.02±13.56	3200	16.12
Ascorbic acid (mg)	26.1±1.82	40	65.25

Table 4 : Daily nutrient intake of 7 year old primary school children (N= 73)			
Nutrients (units/day)	Mean intake	RDA	Percentage of RDA met
Energy (kcal)	1311.25±28.04	1690	77.59
Protein (g)	28.47±1.48	29.5	87.2
Fat (g)	26.42±1.48	30	88.0
Calcium (mg)	655±32.84	600	109.17
Iron (mg)	11.05±0.86	16	69.06
Thiamin (mg)	0.83±0.06	0.8	103.75
Riboflavin (mg)	0.92±0.11	1.0	92.0
Niacin (mg)	7.20±1.16	13	55.38
Folic acid (µg)	97±4.70	120	97.0
β-carotene (µg)	532.97±11.30	4800	11.10
Ascorbic acid (mg)	26.37±1.90	40	65.92

Table 5 : Daily nutrient intake of 8 year old primary school children (N= 60)			
Nutrients (units/day)	Mean intake	RDA	Percentage of RDA met
Energy (kcal)	1368.25±22.13	1690	80.96
Protein (g)	32.65±2.05	29.5	110.68
Fat (g)	27.37±1.55	30	91.23
Calcium (mg)	655±16.34	600	109.17
Iron (mg)	12.37±1.16	16	77.31
Thiamin (mg)	1.02±0.22	0.8	127.5
Riboflavin (mg)	0.97±0.17	1.0	97.0
Niacin (mg)	7.65±0.64	13	58.84
Folic acid (µg)	122±7.88	120	101.67
β-carotene (µg)	543.97±18.31	4800	11.33
Ascorbic acid (mg)	27.0±2.10	40	67.5

Data in Table 4 shows the daily nutrient intake of 7 year old primary school children. Table shows that among 7 year old children the intake of energy, protein, fat, iron, riboflavin and folic acid was adequate whereas the intake of niacin, β-carotene and ascorbic acid was inadequate. Among these the intake of β-carotene was very low as compared to the RDA; the percent adequacy of β-

carotene intake was 11.10. Only the intake of calcium and thiamin was more than respective RDAs

Data in Table 5 shows the daily nutrient intake of 8 year old primary school children. It is clear from the table that among 8 year old children the intake of energy, fat, iron and riboflavin was almost equal to RDA whereas the intake of protein, calcium, thiamin and folic acid was

Table 6 : Daily nutrient intake of 9 year old primary school children (N= 64)			
Nutrients (unit/day)	Mean intake	RDA	Percentage of RDA met
Energy (kcal)	1398±27.91	1690	82.72
Protein (g)	33.57±1.93	29.5	113.8
Fat (g)	28.17±1.0	30	93.9
Calcium (mg)	682.75±33.37	600	113.8
Iron (mg)	12.52±1.22	16	78.25
Thiamin (mg)	1.04±0.19	0.8	130
Riboflavin (mg)	1.01±0.10	1.0	101
Niacin (mg)	7.68±0.62	13	59.07
Folic acid (µg)	124.5±6.61	120	103.75
β-carotene (µg)	548.52±14.20	4800	11.42
Ascorbic acid (mg)	27.62±2.24	40	69.05

more than RDA. The per cent adequacy intake of niacin and ascorbic acid was 58.84 and 67.5, respectively whereas for β-carotene intake the per cent adequacy was 11.33.

Data in Table 6 shows the daily nutrient intake of 9 year old school children. It is clear from the table that among 9 year old primary school children the intake of energy, fat and iron was almost equal to RDA whereas the intake of protein, calcium, thiamin, riboflavin and folic acid was more than RDA. Only the intake of niacin, β-carotene and ascorbic acid was less than RDA, among these the intake of β-carotene was very low as compared to RDA.

Conclusion:

Based on the findings of the study it can be concluded that food consumed daily by all subjects included, cereals, pulses, fats and oil and sugar and jaggary. Consumption of milk and milk products, roots and tuber and other vegetable were more frequent in comparison to meat and poultry and fruits.

Daily intake of energy in all age group of children was comparatively low than RDA, it ranges between 77-85 per cent of RDA. Daily intake of protein was high as compare to RDA in all age groups except in children of 6 year which was 87.2 per cent of RDA. Whereas the range of daily intake of fat in all age groups of children was between 88-100.28 per cent of RDA. Daily intake of calcium in 6-9 year of children was high than RDA, it ranges between 107.5-113.8 per cent of RDA whereas in 5 year children the intake of calcium was adequate (99.0 per cent of) to RDA. Regarding the daily intake of iron, in all age group of children the intake was below the RDA. It ranges between 69-78 per cent of RDA.

Regarding the consumption of daily intake of B-complex vitamins, the daily intake of thiamin in all age group of children was high than RDA (103.75-130 % of RDA). Whereas the daily intake of riboflavin was also high in all age group except 7 and 8 year children. Daily intake of niacin was low as compare to RDA in all age group of children; it ranges between 55-65 per cent of RDA. Regarding the daily intake of folic acid, it was almost equal to RDA in 5-7 year children whereas it was comparatively high than RDA in 8 and 9 year children. Among all the nutrients calculated the daily intake of β–carotene and ascorbic acid was comparatively low than RDA. Regarding the daily intake of β–carotene, it was very low than RDA among all age group of children (11.10-16.12 % of RDA). Whereas the daily intake of ascorbic acid was also found to be comparatively low than RDA children in the children of 6-9 year, it ranges between 65.25-69.05 per cent of RDA. Daily intake of ascorbic acid in 5 year children was very low in comparison to RDA (26.1 % of RDA). Regarding food consumption of children, the intake of cereals, pulses, fats and oil and sugar were daily. Consumption of milk and milk products, roots and tuber and other vegetables were more frequent than green leafy vegetables and fruits. The daily intake of all nutrients of children was adequate except β–carotene and ascorbic acid, which were very low in comparison to RDA. Therefore it is recommended to increase the intake of yellow fruits, citrus fruits and green leafy vegetables.

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