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Dietary Practices and Nutritional Status of Pre – School Children of Sivasagar, Assam

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***Abstract*— Malnutrition is pervasive in India, affecting large sections of the population. It includes primary energy protein malnutrition and micro nutrient deficiencies. Apart from malnutrition children in India usually suffer from other deficiency diseases and sometimes face death due to some specific diseases. The importance of nutrition during pre-school years has recently been realized all over the world. The present study is an attempt to study the dietary practices and nutritional status of pre-school children of 3-6 years from ten localities of Sivasagar town of Assam. Two hundred pre-school children were selected randomly and data were collected by using a standardized questionnaire. Information related to food habits, nutrient intake and anthropometric measurements were collected by using the questionnaire. The information revealed that the mean daily intake of most of the food items and amount of nutrients were lower than the RDA. The nutritional status of the pre-school children of Sivasagar town is although not very poor, it needs serious attention.**

***Keywords*— Malnutrition, recommended dietary allowances, nutrient intake, nutritional status.**

I. INTRODUCTION

Nutrition of Pre-School child is of paramount importance, because the foundation for life time health, strength and intellectual vitality is laid during this period. Child of today is a citizen of tomorrow and has valuable hand in nation building. Inadequate nutrition among the children leads to develop improper development of their body and mind, resulting into lower level of efficiency. Worldwide it is estimated that every fourth child is affected by protein energy malnutrition. Hundred and fifty million children under five years are under weight and 182 millions are stunted.

Pre – School Children are one of the most nutritionally vulnerable segments of the population. All children normal or special need certain basic provisions of life to grow up from the helplessness of infancy and childhood to become mature and independent adults.

In India nutritional status of young children varies from region to region due to differences in dietary habits, socio- cultural attributes, irrational practices, economic status etc. children find full expression of their growth potential where there are no constraints of socio-economic and dietary factors. Most children grow normally till about fourth or sixth months during which period they are fed almost exclusively on breast milk. Growth retardation sets in thereafter and reflects the cumulative effects of dietary inadequacy and frequent episodes of infections.

The pattern of growth and development of children indicates the health status of a community (Rao et al, 1976). The rate of physical growth is slow during pre-school years than in the first year of life but continues gradually. A steady gain in height and weight usually indicates good physical growth. For good physical growth there is an increased need for all nutrients. But the pattern of increase varies for different nutrients in relation to their role in growth of specific tissues.

Gopalan (1989) stated that in India, 20 percent of the children in their first year and 60% in their second year of life die of causes related to protein deficiency. Several studies have been carried out on food habits and nutritional status of pre-school children both in national and international level and to some extent at local level to understand the magnitude of malnutrition.

Rao et.al (1976) opined that about half of our 100 million children in the age group of 1-6 years suffer from deficiencies of calories and proteins, sub-standard height and weight, weakness and poor resistance to infections which are the results of early malnutrition.

It has been seen that most of the parents of the pre-school children lack nutritional awareness. Once the child starts going to school the attention of the parents are diverted to their school work and food becomes a secondary matter. As a result the nutritional needs of the children are often over looked. And growth retardation sets in.

The present study was undertaken on a group of pre-school children with the following objectives in mind.

- To assess the dietary practices of pre-school children of Sivasagar.
- To determine the dietary adequacy of nutrients in the diet of pre-school children.
- To assess the nutritional status of pre-school children of Sivasagar.

II. MATERIALS AND METHODS

A. Selection of sample

The present study was conducted on 200 pre-school children in the age group of 3-6 years using systematic sampling technique from ten selected localities of Sivasagar municipal area.

Collection of Data

In order to elicit information regarding socio-economic background, food habits, dietary pattern, anthropometric measurements of the children a schedule was constructed and revised for its maximum reliability.

24 hour dietary recall method was used to collect information related to dietary habits of the children. Food frequency questionnaire was used to collect information on the list of foods and groups of foods. Informations were collected on amounts of raw foods, cooked foods eaten by the children and also about left over foods by using local household measures. The items consumed were categorized as Cereals, pulses, green leafy vegetable, other vegetables, flesh food, milk and milk products fruits, sugar and jaggery etc.

From the amount of each item consumed by the children, the mean intake of food were calculated and compared with ICMR balanced diet (1989). Individual nutrient intake like protein, energy, calcium, iron, ascorbic acid etc. were calculated by using food composition tables of ICMR (1991) and then compared with recommended dietary allowances for their adequacy.

Anthropometric measurements were taken, which are considered to be valuable indicators of nutritional status. All the respondents were subjected for anthropometric measurements. The height, weight and mid upper arm circumference (MUAC), head circumference, chest circumference measurements were recorded by using standard procedure given by Jelliffe (1966). Average of the measurements were recorded and compared with the NCHS standards.

B. Analysis of Data

Nutritional status was assessed with the help of anthropometric indices weight for age (Gomez classification), height for age (waterlow's classification), chest/head circumference rates and mid upper arm circumference ratio.

Data related to dietary practices were analysed by using percentage, mean, standard deviation etc.

III. Results and Discussion

A. Socio-economic profile

The socio-economic profile reflected that majority of the respondents belonged to Hinduism (85%) followed by a meager percentage of Muslim (12%) and Christian (3%) population. About 81% of the respondents belonged to nuclear families and majority of them were of birth order below three Sixty Seven percent of the sample belonged to middle income group (Rs. 5000- Rs. 10,000 per month) while twelve percent belonged to high income group (above Rs. 10,000 per month) and about twenty one percent belonged to low income group (less than Rs. 5000/- per month) Fifty five percent of the respondents belonged to service class while 36 percent belonged to business families and only Six percent belonged to families engaged in agricultural activities.

B. Dietary profile

1) Conventional Meal Pattern

The conventional meal pattern of the respondents reflected that majority of the pre-school children had four meal pattern a day comprising breakfast, lunch and dinner and on school days they used to have tiffin at school. Dietary information revealed that majority of the respondents (74.0%) were non vegetarian and only 26% were vegetarian. Rice, as a staple food used extensively. Most of the respondents had breakfast before going to school. Breakfast comprised of rice, dal, potato, an egg or vegetables. Sometimes they take roti with milk. A small percentage (29%) of respondents consumed rice flakes or puffed rice or roasted rice flour with milk and banana as their breakfast. Inclusion of meat or fish in the meal ranged between thrice or four times a week. Consumption of egg was found to be a regular item in the diets of pre-school children.

2) Food consumption pattern

Data regarding food consumption pattern of the respondents were collected through 24 hour dietary recall method and average intake of different food groups are presented in table-1.

TABLE -1

DAILY MEAN INTAKE OF FOOD ITEMS BY PRE-SCHOOL CHILDREN.

Food groups (gms)	**RDA**	**Boys (η=100)**	**Girls (η=100)**
Cereals	270	185.25 (-31.38)	180.55(-2.12)
Pulses	35	25.07 (-44.28)	22.05 (-44.33)
Green leafy vegetables	50	25.80 (-48.40)	22.50 (-55.0)
Roots & tubers & other vegetables	50	55 (+10.0)	50 (Met RDA)
Fruits	60	35 (-41.66)	30 (-50)
Milk and Milk Product	250ml	250 (met RDA)	200 (-20)
Fats and Oils	25	15.50 (-38.0)	15.0 d(-40)
Meat, Fish and Egg	50	55 (+10.0)	50 (Met RDA)

RDA- Recommended Deitary Allowance (ICMR, 1989)

Figure in the parentheses indicate percentage of excess (+) over RDA and deficit (-) from RDA.

Table-1 shows the mean daily food intake of pre-school children of Sivasagar town of Assam. Data revealed that consumption of cereal was less than RDA for both boys & girls. The deficient consumption level was 31.38% for boys and 33.12% for girls respectively. Consumption of pulses and green leafy vegetable were less than RDA. The mean daily intake of pulse by both

boys and girls were 71.63% and 63% respectively of RDA. Although a variety of indigenous leaves including spinach, drumstic leaves. Amarnath etc are available in Assam, majority of the children did not consume these leaves. Amongst the consumption of roots, and tubers, potato was used extensively by all the studied children. Consumption of flesh foods are adequate for the respondents.

C. Nutrient intake pattern

Intake of key nutrients by the respondents, as analysed from their daily dietary composition comprising of different food groups are calculated and presented in table- II.

TABLE- II
DAILY MEAN NUTRIENT INTAKE OF PRE-SCHOOL CHILDREN

Nutrients	**Unit**	**Mean/SD**	**Boys (η=100)**	**Girls(η=100)**	**RDA**
Energy	K.cal	Mean- SD-	1112.005 99.543	1085.24 58.54	1690
Protein	gm.	Mean- SD	32.398 4.046	23.353 2.544	30
Calcium	mg.	Mean SD	349.62 67.33	298.45 15.42	400
Iron	mg.	Mean- SD	10.833 1.79	8.33 1.56	18
Theamine	mg.	Mean SD	0.77 0.15	0.71 0.14	0.9
Riboflavin	mg.	Mean- SD	0.58 0.17	0.51 0.15	1.0
Vitamin C	mg.	Mean SD	24.1 16.1	18.2 15.8	40

RDA- Recommended Dietary Allowance, ICMR (1989)

Data in table- II reflected that energy intake was deficient for both boys and girls. It was about 66 percent of RDA for boys and 64% of RDA for girls. This situation could be attributed by low intake of energy giving foods. Regarding protein consumption it was observed that in case of boys consumption was adequate and reached recommended level but for girls consumption level could fulfill about 78% of RDA. The mean daily intake of calcium could fulfill 87% of RDA for boys and about 75% of RDA for girls. Regarding intake of other nutrients it was observed that intake was lower than RDA for most of them.

D. Anthropometric profile

Mean anthropometric measurements of pre-school children are presented in table- III. It can be observed from the table that there was a steady gain in all body measurements with increasing age.

TABLE- III
COMPARISON OF HEIGHT, WEIGHT AND MUAC OF PRE-SCHOOL CHILDREN WITH NCHS STANDARDS

Anthropometric measurements	**Age (Years)**	**Boys (η=100)**		**Girls (η=100)**		**NCHS Expected ht. & Wt.**	
		Mean	SD	Mean	SD	Boys	Girls
Body weight (kg)	3	13.497	0.98255	13.740	0.955	15.7	14.6
	4	14.153	1.0664	13.980	0.7002	17.2	16.4
	5	17.222	1.0974	15.908	0.854	19.2	18.15
	6	18.5	0.447	17.833	0.683	20.7	19.5
Height (cm)	3	93.357	1.196	92.195	1.498	99.1	95.9
	4	95.140	1.147	95.035	0.925	104.7	103.3
	5	103.166	2.371	103.94	1.661	111.05	110
	6	112.68	1.466	111.083	1.497	116.1	114.6
MUAC (cm)	3	15.017	0.409	14.335	0.404	15.3	14.8
	4	15	0.286	14.680	0.509	15.5	15
	5	15.788	0.539	15.366	0.533	15.7	15.4
	6	16.36	0.392	15.45	0.520	16.2	15.7

E. Weight for age

Nutritional status of the studied children according to weight for age was calculated and presented in table IV.

TABLE IV
PERCENTAGE DISTRIBUTION OF CHILDREN (3-6 YEARS) ACCORDING TO GRADE OF MALNUTRITION (WEIGHT FOR AGE)

Nutritional status	**Boys (η=100)**	**Girls (η=100)**
Normal	84	65.7
Grade- I	16	34.3
Grade- II	-	-
Grade- III	-	-

Gomez classification was adopted (1956)

Table IV shows that 84% boys and about 66% girls had normal health status while 16% boys and 34.3% girls suffered from grade-I mal nutrition according to Gomez classification. There who no cases of grade II and grade III mal nutrition among the studied children.

F. Height for age :

Nutritional status of the children according to height for age classification is presented in table V.

TABLE- V
PERCENTAGE DISTRIBUTION OF PRE-SCHOOL CHILDREN ACCORDING TO HEIGHT FOR AGE CRITERIA (WATERLOW'S CLASSIFICATION) DEPICTING NUTRITIONAL STATUS

Nutritional status	**Boys (η=100)**	**Girls (η=100)**
Normal	89.5	76.4
First degree stunting/short	7.5	12.6
Second degree stunting	3	11
Third degree stunting/dwarf	-	-

- Waterlow's (1972) classification.
- N = Number of Children

Data in the table V revealed that percentage of children having good nutritional status was more in this classification than that of 'weight for age' classification.

G. Nutrition counseling

Nutrition counseling assumes special significance in the Indian context because the problem of malnutrition in India is mainly occurs due to ignorance, illiteracy, poverty and lack of knowledge regarding the value of foods.

In the present study poor knowledge of mothers regarding nutrition came to light during diet survey. Rigid dietary habits, food fallacies and food beliefs were

rampant in abundance and plays important role in food selection.

To make the mothers of the respondents aware about the importance of nutrition in early childhood, nutrition counseling sessions were organized in different parts of Sivasagar district. The main aims of the sessions were to make them aware about the role of nutrients in human bodies and to encourage them to prepare nutritious food for their children.

IV. Summary and Conclusion

A survey was conducted among pre-school children of Sivasagar town, with the objectives of assessing the dietary practices and nutritional status of three to six year age group. 200 pre-school children, 100 boys and 100 girls were selected for the study. Diet survey and anthropometric measurements were carried out. Results showed that diets were inadequate in most of the nutrients. Deficiency of major nutrients like energy, calcium, iron, thiamine etc. were common among the children. Diets were totally lacked in green leafy vegetables and pulses. Milk consumption was not satisfactory. Anthropometric assessment showed that the height, weight and MUAC were some what similar with the better socio-economic Indian children with a few exception. In conclusion the nutritional status of pre-school children of Sivasagar district of Assam is although not very poor, it needs serious attention.

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