Nutritional Status of Pre-schoolers of Slum Dwellers in Shillong Citty, Meghalaya

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ABSTRACT

The diets and nutritional status of slum children in India is far away from being satisfactory. The nutritional status of slum children is worst amongst all urban groups and is even poorer than the rural average. 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. The present study was conducted on pre-school children of slum dwellers of Shillong city, Meghalaya to find out their nutritional status useing anthropometry. The nutrient intake was more or less adequate than the recommended dietary allowances. So the prevalence of malnutrition is not so severe among the preschoolers of Meghalaya.

Key words: Nutrient Intake; Nutritional status; Slums;

Good nutrition is the fundamental basic requirement for maintenance of positive health. A proper diet is essential from the very early stages of life for growth, development and active life. A child's nutrition begins from conception itself i.e. right from the intrauterine life of the child. As in other developing nations, undernourishment is a burden on considerable percentage of population, the most vulnerable being the youngest of this country (*Chatterjee and Saha, 2008*).

Pre-school children are our future citizens and form an important segment of the Indian population. They contribute to the vital human potential and impart strength to the national economy and development. The period of pre-school or early childhood begins after babyhood and continues upto the age of six year old. This is a very critical period of child growth and development. Physical growth is important as it meant the progressive development of various parts of the body their capacity to function. The rate of physical growth may be determined by some external and internal factors like nutrition, fatigue, rest, exercise, work, heredity, illness and secretion of the ductless and endocrine glands. So, if the required balance diet is not given to a child, his/her health will deteriorate. Similarly, hard work, lack of

hygienic conditions of living may cause disease and adverse effects on the general health. In pre-school year, the child is very much an important part of the immediate family. Whatever happens to him or her affects the other members of the family, and vice versa. Therefore "child health" has to be "family health". It depends upon the family's physical and social environment, which includes the lifestyle, customs, traditional habits and the child bearing and child rearing practices are greatly influenced by this. 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 (*Ghosh and Shah, 2004*). Studies show an increase in the prevalence of malnutrition in families with more than 4 children. In short, fewer children would mean better nutrition, better health care, less morbidity and lower infant mortality (*Park, 1994*).

People living in slums are more susceptible to diseases because they are economically poor, illiterate

and cannot approach hierarchical level and the population rate is such that they are bound to be poor. Widespread poverty in slums, resulting in chronic and persistent hunger in children especially of pre-school going and infants is one of the major problems of people living there. Hence this research is an attempt to study the prevalence of malnutrition among the pre-school children in Shillong city of Meghalaya.

METHODOLOGY

The present study was conducted on 200 preschool children between the age group of 1-6 years from 5 different (40 children each) slum of Shillong city of Meghalaya (lies between 25034^0 N latitude and 9103^0 E longitude at an attitude of 1496 mts. above the sea level) during 2004-2005. The samples were selected by random sampling method. A questionnaire was formulated to elicit information regarding socio-economic profile like educational level of parent, family income, size and dietary pattern of the child. Anthropometric measurements namely height, weight and mid upper arm circumferences (MUAC) were recorded for all two hundred subjects, Measurements of standing height were taken with shoes off and body straight, standing against anthropometric rod and measured nearest to 0.1 cm. A weighing balance was used to measure the weight in kilogram nearest to 0.1 kg with minimum clothing and without shoes. A narrow flexible non-stretch fiberglass tape was used to measure the mid upper arm circumference (MUAC) in centimeter nearest to 0.1 cm. The correlation coefficient (r) between nutrient intake vs height, weight and mid upper arm circumference was also calculated so as to study the relationship between these parameters.

RESULTS AND DISCUSSION

Background Information of the Selected Respondents : Majority of the samples (100%) are non-vegetarian and consumed rice daily. According to their monthly income, majority (72.5%) were belong to Rs. 3,500 and above/month and 9.5 per cent are from middle-income group (Rs 3,200-3,500/month), while 18.0 per cent from the economically weaker sections. Out of 82.5 per cent literate mother, 46.5 per cent mother's educational standard was found as secondary. About 57.5 per cent mothers were doing small-scale business. Regarding family size 90.5 per cent belong to nuclear families and 42.5 per cent of the preschoolers having family size of 5 members.

Dietary Pattern : Proteins play an important role in many biochemical, biophysical and physiological process in the body and form muscles and other tissues and vital body fluids like blood. Perusal of Table 1 showed that the maximum (54.0%) respondent was found between 2 to 4 year, followed by 4-6 year of age and only 3.5 per cent pre-school children found less than 2 year of age group. The protein intake was found significant (P=05) and it was increases 13.5 per cent in 2 year of age group. Maximum protein intake (25.06 g) was recorded in 2-4 yr age group of pre-school childrens, however they are taking 3.6% less protein intake as per the recommended dietary allowances (RDA).

Similarly, energy is used to build our body, to keep it functioning, to enable it to carry our various daily routine works, to keep it warm and to break down the food into usable components. The total energy requirement of various age groups can also be expressed

Table 1 : Distribution of respondents according to nutrient intake

Age group (year)	Respondents found (%)	Protein intake (g)		Energy intake (K. Cal)		Fat intake (g)	
		Mean ±SD	Deficit (%)	Mean ±SD	Deficit (%)	Mean ±SD	Increase (%)
Up to 2	3.5	24.96±2.69 (22.0)	-13.5	1046.1±92.5 (1240.0)	15.6	38.11±4.70 (25.0)	52
2-4	54.0	25.06±2.35 (26.0)	3.6	1165.9±94.6 (1420.0)	17.9	39.16±4.89 (25.0)	57
4-6	42.5	24.43±2.42 (30.0)	18.6	1472.2±82.8 (1690.0)	12.9	38.68±4.31 (25.0)	55
R-value		0.1231*	-	0.3643*	-	0.2194*	-

(Figures given in parenthesis are representing recommended dietary allowances)

* Significant at 5% level of siginificance. .

in terms of basal energy requirement values. Energy intake, according to the age group was also found significantly (P=0.05) better in 4-6 yr of age group as comparison to the other age group and recorded maximum 1472.15 (k cal), followed by 1165.99 (k cal) energy intake of the children respondents belonging to age group 2 to 4 years. It is very surprising, because they are taking 18.6 per cent less protein than the other age group of pre-school going children. Maximum deficit of energy was observed in 17.9 per cent in age group 2 to 4 years of the children respondents. Fat is important of diet and serve a number of functions in the body. It is a concentrated source of energy and it supplies per unit weight more than twice the energy furnished by either protein or carbohydrate. Presence of fat in the diet is important for the absorption of fat-soluble vitamins like vitamin A and carotene present in the diet. Fat oxidized in the body cells to supply the energy, the body uses all the time the great concentration of energy in fat. Distribution of children respondents according to fat intake age wise was observed that 39.16 g fat intake of the respondents were having age 2 to 4 years and 38.68 g fat intake in 4 to 6 years age group, maximum variation 4.89 in 2 to 4 years age group, fat intake be found significant (P=0.05) between the respondents with their age group. According to age group the fat content of the respondents increases. The fat content of the children respondents in all age group were more compared with RDA, due to the non-vegetarian food habit. In general people are not rearing domestic animal for milk purpose in Shillong. They use to slash them only for food purpose, thus most of the mothers give fat rich diet like non-veg. and butter to their children.

Amirthaveni and Barikor, (2002) also conducted similar study in Mylliem block of Meghalaya and observed the nutrient intake was more or less adequate except in few nutrient viz., protein, energy, fat and iron and concluded malnutrition in this region is not so severe especially among the pre-school children. *Mishra et. al. (2005)* also reported that in regard of iron and calcium 90 per cent of the preschool slum children were consuming below 50 per cent of the recommended dietary allowances.

Anthropometric Measurements : Table 2 indicated that maximum average height (100.17cm) was found in 4-6 year age group, followed by 2-4 year of age group i.e., 91.44 cm. Overall analysis revealed that the height was increasing significantly (P=0.05) according to different age group. Weight is commonly used indicator of body size and it reflects the level of food intake, its deficiency appears to the best indicator of prevalence of PEM in the children of all age groups. It is clear from Table 2, the maximum average weight (16.91 kg) of the respondents was having 4-6 year of age group, followed by 2-4 year (13.44 kg) of age group. Weight also increases significantly (P=0.05) according to different age group. Maximum average mid upper arm circumferences (18.94 cm) were found in 4-6 year of age group, followed by 15.32 cm in 2-4 year, while it was found minimum (11.98 cm) in up to 2 year of age group. Maximum variation of mid upper arm circumference was found in 4-6 year of age group. *Bhan and Kaur (2004)* conducted a cross-sectional study on urban pre-school boys to assess their nutritional status through anthropometric measurements. The results showed that height, weight, chest and head circumference of the sample were higher than ICMR standards for all age groups, while mid arm circumference was lower. Heights and weights were marginally lower than the 50th percentile of NCHS standards. Weight for age and mid arm circumference for age appeared normal.

Jyothilakshmi and Jamuna (2004) found that a child's overall development including health and

Table 2: Distribution of respondents according to anthropometric measurements

Age group (year)	Respondents found (%)	Height (cm)		Weight (kg)		Mid upper arm circumference (cm)	
		Mean ±SD	r-value	Mean ±SD	r-value	Mean ±SD	r-value
Up to 2	3.5	76.29±4.99	0.441*	10.64±0.60	-0.031	11.98±2.11	0.424
2-4	54.0	91.44±7.27	0.286*	13.44±2.46	0.471*	15.32±2.43	0.489*
4-6	42.5	100.17±10.08	0.112	16.91±1.71	0.427*	18.94±10.02	0.026*
Total	100.0	94.62	0.536*	14.82	-0.738	16.74	0.279*

* Significant at 5% level of siginificance. .

Table 3 : Correlation coefficient (r) between nutrient intake and anthropometric measurements

Nutrients intake	Height (cm)	Weight (kg)	Mid upper arm circumferences (cm)
Protein (g)	-0.1050	-0.1079	0.0806
Fat (g)	0.0121	0.2316*	0.1996*
Energy (k cal)	0.5310*	0.7524*	0.6360*

* Significant at 5% level of siginificance.

nutritional status is solely/ wholly dependent on her mother's health and nutritional status. Literacy status, awareness and economic status also affect the health of child. Improving women's nutritional status and empowering them with education, knowledge and economic position is very essential. *Kapur et al (2005)* studied the feeding practices, dietary intake and growth pattern of children of 9-36 months of age, in an urban slum of Delhi. The results showed that the intake of cereals, pulses, roots, green leafy vegetables, other vegetables, fruits, sugar, fats and oils among children was grossly inadequate. The nutrient intake for energy was 56 per cent of the current RDA. Anthropometrics analysis revealed that the children were grossly under nourished.

Correlation coefficient (r) between nutrient intake and anthropometric measurements : Pearson's coefficient (r) between nutrient intake and anthropometric measurements are shown in Table 3. The relationship between these parameters was found to be significant at 5 per cent level of significance concluded that according to energy of the respondent's increases height, weight and mid upper arm circumference was also increases. Fat of respondents increases when they gain weight because weight and fat was positively correlated to each other. Fat and mid upper arm circumference of the respondent's had significantly positive correlation (P = 0.05) to each other, hence according to fat, mid upper arm circumference was also increase.

CONCLUSION

The present study was conducted on pre-school children of slum dwellers of Shillong city to find out their nutritional status. The method used for assessing the nutritional status was anthropometry. About 200 pre-school children were selected for the study from five different slums of Shillong. The results showed that height, weight and mid upper arm circumference of the sample increased with age. The nutrient intake was more or less adequate than the recommended dietary allowances. So the prevalence of malnutrition is not so severe among the preschoolers of Meghalaya.

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