Nutrition Profile of Pre-School Children of Dhaka University Employee

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ABSTRACT

This study makes an attempt to investigate the nutritional status and socio-economic condition of employees in Dhaka University. The target population was the under- five children of the employees. For this purpose, a cross sectional study was conducted in two areas (Shibbari and Ambagan) inhabited by employees of Dhaka University. Nutritional status was determined anthropometrically and biochemically (hemoglobin estimation). Anthropometric measurements were compared with that of NCHS standard. Prevalence of stunting (H/A), wasting (W/H) and underweight (W/A) was 26.8%, 23.4% and 37.8% respectively. Taking both H/A and W/H into consideration, 55% children could be considered as 'normal' at all. According to MUAC measurement , 22.5% children were malnourished using the cut off point 13.5 cm. Prevalence of anemia was 49.34% and mean haemoglobin level was 10.91g/dl (A2.02). Prevalence of anemia was highest (84.6%) in the age group of 7-11 months. Most of the employees (37.8%) earned Tk. 3000-4499 per month. Whereas 29.2% of the employees earned Tk. 1500-2999 per month. Rest of employees earned Tk. 4500/- and above per month. Almost equal number of employees completed primary (26.3%) and secondary (26.8%) level of education, whereas 17% of the employees were illiterate.

Key words : University employees, Nutritional status, Hemoglobin level.

Introduction

Malnutrition is a problem of society in all spectra of life, which is the result of excessive or inadequate intake of specific nutrients. The existing nutrition situation in Bangladesh[1,2] reveals that the extent and magnitude of undernutrition is alarming. Undernutrition is not only the major public health problem, but also detrimental to overall national and socio-economic development of this country. In Bangladesh like other developing countries, undernutrition results from convergence of multiple factors such as economic, social, behavioral, environmental, entrance to health

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facilities etc. Investigation[3] reveals that poverty is the keypoint of all direct and indirect causes of undernutrition. Under-5 children and pregnant mothers constitute a major vulnerable segment of the population from the nutritional stand point. Undernutrition is the biggest contributor to child mortality in the developing countries. Furthermore, those malnourished children who survive may physically and mentally debilitated, perhaps irrepairably.

Children belonging to low income group suffer from various grade of protein energy malnutrition (PEM) ranging from mild degree of growth retardation to severe forms of kwashiorkor or marasmus. It is the interaction of inadequate dietary intake and repeated infection that is responsible for the severe impairment of growth and development during the pre-school years seen in the lower income population of nearly all developing countries.[4] Iron deficiency anaemia is more prevalent in developing countries and among poor population.[5,6,7] It particularly affects young children and pregnant women. Anemia results from low body iron store which may be due to inadequate dietary intake, blood loss and malabsorption of iron. In addition to anaemia, the major manifestations of iron deficiency are impairment of cognitive functions, attentiveness, and work capacity. According to Nutrition Survey of Bangladesh in 1983, 73% of children are anaemic.

In view of severe poverty and high rate of illiteracy that prevail in our country, the present study was undertaken to determine the magnitude of malnutrition with special reference of protein energy malnutrition (PEM) and mutritional anaemia amongst under-5 children of University employee.

Materials and Methods

A cross sectional study was conducted in two areas (Shibbari and Ambagan) inhabited by the employee of Dhaka University. Nutritional status and socio-economic status of the under-5 children were studied. The study was conducted during June 1994 to February 1995. The nature and purpose of the study was explained to the guardians of the children. After having the approval of the guardians, a list of household having children between 0-5 years was prepared. Initially 240 guardians were interested and finally 209 guardians participated in this study. Only one child from each family was selected randomly. For hemoglobin estimation only 152 children cooperated in blood collection.

To obtain relevant information regarding dietary practice, general health and socio-economic status, a precoded questionnaire was developed. The questionnaire was

pretested in another area of similar socio-economic status and was modified as required. Anthropometric data (Height, Weight, Mid-upper arm circumference) were recorded using standard instrument and were compared with data from NCHS standard.

Household, demographic and socio-economic charactoristics were noted by interviewing the household head or a responsible member of the family. Haemoglobin level of blood was estimated by cyanmethemoglobin method[8,9] using a commercially available kit (Boehrizgier Mannheim, Germany). Less than 11g of haemoglobin per dl was considered as anemia.

Results

A total of 209 children aged between 0-60 months were studied in the investigation. Table 1 shows the demographic and socioeconomic characteristics of the families studied. Of the total population, 45.9% were boys and 54.1% were girls. Percentage of children in age group of <12 months, 12-23 months, 24-35 months, 36-47 months and 48-60 months were 14.4%, 21.5%, 13.4%, 16.7% and 34% respectively.

Table 1 also shows the distribution of children according to the family size. Most of the children (46%) belonged to medium sized family (5-7 members), whereas 36.8% of the children came from small (3-4 members) families compared to 17.2% from big families (> = 8 members).

Table 1. Demographic and Socio-economic characteristics of the study population

Characteristics	Sex		Total
Age group(months)	Male	Female	
<12	12 (40.0)	18(60.0)	30 (14.4)
12-23	24 (53.3)	21(46.7)	45 (21.5)
24-35	14 (50.0)	14(50.0)	28 (13.4)
36-47	12 (34.3)	23(65.7)	35 (16.7)
48-60	34 (47.9)	37(52.7)	71 (34.0)
Total	96 (45.9)	113 (54.1)	209 (100)
Family size	Number		Percent
3-4	77		36.8
5-7	96		46.0
>=8	56		17.2
Level of education	Fathers (%)		Mothers (%)
Illiterate	17.0		36.8
Primary	26.3		26.3
Secondary	26.8		25.8
SSC (completed)	13.9		8.1
HSC(completed)	7.2		1.9
Graduate & above	8.6		1.0
Monthly Income (Tk.)	Number		Percent (%)
<1500	1		0.5
1500-2999	61		29.2
3000-4499	79		37.8
4500-5999	36		17.2
6000& above	32		15.3

Information on formal educational qualification of the parents (Table 1) represents that about equal number (26.3%) of the parents completed primary as well as secondary level of education. On the otherhand, 36.8% of the mothers and 17% of the fathers were illiterate. Among the fathers, 13.9% completed S.S.C and 7.2% completed H.S.C level of education. Whereas 8.6% of the fathers were graduate.

Table 1 depicts that monthly income of most (37.8%) of the families were within Tk. 3000-4499. Nearabout one-third (29.2%) families earned Tk. 1500-2999 per month. On the other hand, 17.2% families earned Tk. 4500-5999 per month. Rest of the families (15.3%) earned Tk. 6000/- and above per month.

Table 2 presents the anthropometric measurement of the children. Mean height, weight and MUAC (Mid-upper arm circumference) for the overall children were 87.6A1.2cm, 11.3A1.6 Kg and 14.4A1.3cm respectively.

Table 2. Anthropometric measurements of the children by age and sex (n=209)

Age (month)	No.	Weight (kg)		Length/height (cm)		Mid-upper-Arm circumference (MUAC)	
		Mean	KSD	Mean	KSD	Mean	KSD
Male							
<12	12	6.4	K1.3	65.4	K5.6	13.7	K1.3
12-23	24	9.0	K1.1	77.0	K3.8	13.5	K0.8
24-35	14	10.9	K1.0	84.7	K4.1	14.8	K1.0
36-47	12	13.4	K1.9	95.5	K4.5	14.6	K0.9
48-60	34	14.1	K2.2	101.3	K7.2	15.0	K1.1
0-60	96	11.3	K1.6	87.6	K1.2	14.4	K1.3
Female							
<12	18	6.3	K1.4	64.4	K5.9	13.4	K0.7
12-23	21	8.7	K1.5	75.9	K5.5	14.1	K1.3
24-35	14	11.4	K1.4	86.5	K3.6	15.2	K1.2
36-47	23	11.8	K1.5	91.4	K6.0	14.3	K1.0
48-60	37	13.7	K1.5	101.1	K4.7	14.7	K0.9
0-60	113	10.9	K1.5	86.8	K5.1	14.4	K1.4
Total	209	11.3	K1.6	87.6	K1.2	14.4	K1.3

Growth retardation represented in Table-3 indicates that the prevalence rate (37.8%) of underweight (Weight/Age) is more than the prevalence rate of wasting (Weight/Height) and stunting (Height/Age). Rate of stunting (26.8%) was more than the rate of wasting (23.4%). Most of the stunted children (39.2%) belong to the age group 24-35 months. On the otherhand, the prevalence of wasting was highest (31%) in the age group 48-60 months.

Table 4 shows that overall 77.5% children were nutritionally normal using MUAC as an indicator. Among all the children 6.7% were severely malnourished and 15.8% were moderately malnourished.

Table 3. Prevalence of malnutrition (growth retardation) according to age group

Age (month)	No. of children	Prevalence (%)		
		Wasting W/H	Under weight W/A	Stunting H/A
<12	30	20.0(6)	20.0(6)	6.7(2)
12-23	45	22.2(10)	40.0(18)	33.3(15)
24-35	28	14.3(4)	28.6(8)	39.2(11)
36-47	35	20.0(7)	45.7(16)	31.4(11)
48-60	71	31.0(22)	43.7(1)	24.0(17)
Total	209	23.4(49)	37.8(79)	26.8(56)

Number in the parenthesis indicates the number of the children

Table 4. Percent distribution of children by different categories of MUAC

MUAC(cm)	Number	Percent
<12.5 (severe)	14	6.7
12.5 - 13.4(moderate)	33	15.8
=>13.5 (normal)	162	77.5
Total	209	100.0

Prevalence of anaemia and mean haemoglobin level of the children are shown in Table-5. Mean blood haemoglobin level of the children was 10.91A2.02g/dl and the range was 9.68 to 11.95g/dl. About half of the children (49.34%) were anaemic (<11g Hb/dl). Most of the anaemic children (84.6%) belonged to the age group 7-11 months. The rate of anaemia was also high (75.9%) for the children aged 12-23 months. Haemoglobin level of the children are positively related to maternal education and negatively related to family size (Table 6 & Table 7).

Table 5. Prevalence of anaemia and mean haemoglobin level of the children according to age group (n=152)

Age group (month)	No. of children	Hb level (g/dl)		Prevalence of anemia
		Mean	KSD	
<6	6	9.95	2.43	66.7 (4)
7-11	13	10.14	1.83	84.6 (11)
12-23	29	9.68	1.97	75.9 (22)
24-35	20	10.04	1.98	65.0 (13)
36-47	27	11.23	1.70	40.7 (11)
48-60	57	11.95	1.63	24.6 (14)
Total	152	10.91	2.02	49.34 (75)

Number in the Parenthesis indicates the number of the children.

Table 6. Effect of maternal education on haemoglobin level of children

Educational Level of mothers	Blood Hb level (g/dl)		Total
	<11.00 g/dl anaemic	>=11.0 g/dl non-anaemic	
Illiterate	32 (57.1)	24 (42.9)	56 (36.8)
Class I-V	21 (56.8)	16 (43.2)	37 (24.3)
Class VI-X	17 (40.5)	25 (59.5)	42 (27.6)
SSC or more	5(29.4)	12(70.6)	17 (11.2)
Total	75 (49.3)	77 (50.7)	152 (100.0)

Number in parenthesis indicates percentage of the children.

Table 7. Distribution of anaemic children with respect to family size

Hb level (g/dl)	Family size (Member)			Total
	3-4	5-7	>=8	
<11.00 g/dl (Anacemic)	21 (41.2)	34 (48.6)	20 (64.5)	75 (49.3)
>=11.00=g/dl (non-anaemic)	30 (58.8)	36 (51.4)	11 (35.5)	77 (50.7)
Total	51 (33.60)	70 (46.0)	31 (20.4)	152 (100.0)

Number in the parenthesis indicates percentage of the children.

Discussion

The present study represents the nutritional status of under-5 children of employees in Dhaka University (excluding officers). Prevalence rate of under nutrition was lower than that reported by Bangladesh Bureau of Statistics (BBS), 1992. Taking both height for age (stunting) and weight for height (wasting) into consideration, 55% of the children could be classified as 'nutritionally normal', whereas the percentage of normal children reported by BBS (1992) is 31%. Percent prevalence of underweight (W/A) is lower (37.8%) than that reported (68.3%) in BBS 1992. Rate of stunting (H/A) is also lower (26.8%) as compared with the figure reported by Nutrition Survey of Bangladesh 1983 and BBS (1992) in which the rate of stunting was reported to be 57% and 64.2% respectively. But the prevalence rate of wasting (23.4%) is slightly higher than that reported in BBS 1992 and Nutrition Survey in Rural Bangladesh, 1983. This may be due to the fact that the subjects in the present study, do not represent the whole country. Again they came from urban service holder families having the benefits of mass media and medical facilities at door step. These communities are conscious about family planning and immunization. It was found that 67% families practiced family planning, 66% families vaccinated their children and 65% families dewormed their children.

Regarding blood hemoglobin level, about half of the children (49.3%) were anaemic. In Nutrition Survey of Rural Bangladesh during 1977 and 1983, prevalence of anaemia was 82% and 73% respectivoly. The prevalence rate of anaemia was highest (46.4%) for the children of 7-11 months and lowest (24.6%) in age group 48-60 months. Young children need iron for rapid growth. Due to inadequate absorbable iron during weaning period children from low socio-economic status are more likely to suffer from anemia. High prevalence of anaemia in this specific age group may be due to the fact that supplementary food for the children were insufficient to fulfil their greater demand of hematopoietic nutrients. Due to inappropriate supplementary

food, unhygienic environment and other socio-economic factors, the prevalence of anemia is highest in the age group 7-11 months and prevalence of malnutrition (growth retardation) is highest after age 7-11 months.

The present study observed that nutritional status (growth achievement and blood Hb level) of the children are positively related to family income, mothers' level of formal education and negatively related to family size (Table 6 & Table 7), though the relationship are not statistically significant. Similar findings was also reported by Ahmed[11] et al (1992). They reported that children from larger families had significantly lower haemoglobin level than the children from smaller families. Maternal formal education plays an important role in child care and utilization of health care facilities.

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