

## Nutritional Status of Children of Under-5, Attending a District Hospital – A Secondary Level Care Hospital

\*Mustafa M,<sup>1</sup> Mustafa M,<sup>2</sup> Islam T,<sup>3</sup> Khan IS<sup>4</sup>

To explore the nutritional status, its type and degree of malnutrition, a cross-sectional descriptive study was carried among the children of under 5 years of age at Gazipur District Hospital. Children of under 5 years old came to OPD during the period 2012 were taken as sample. In total 820 sample were studied, who were taken randomly on working days. Nutritional status was assessed through anthropometric measurement, haemoglobin estimation, intestine parasites infection and socio demographic data from the parents through face to face interview. Study shows that according to Gomes classification 34% were suffering from mild (1<sup>st</sup> degree) 16% moderate (2<sup>nd</sup> degree) and 2% severe (3<sup>rd</sup> degree) malnutrition. As per Welcome classification under weight, marasmus, marasmic kwashiorkor and kwashiorkor were 19%, 3%, 0.5% and 0.5% respectively. Stunted 19% and wasted 12 % were evident as per Water low classification. Based on mid arm circumferences (Wolanski standard) 37% were malnourished and 17% were severely malnourished. 82% of children having Hb level < 11 mg/dl were malnourished and 18% have Hb level >11 mg/dl, the finding is statistically significant  $p < 0.001$ .

[Dinajpur Med Col J 2017 Jan; 10 (1):146-150]

**Key words:** Nutritional status, Children of under-5

### Introduction

**N**utrition is a dynamic process of utilization of food by living organization for maintenance of vitality and production of energy. Millions of lives affected by malnutrition in the world, though safe and nutritionally adequate food is the individual right, is the world declaration adopted in 1992 with aim of eliminating hunger and to reduce all form of

malnutrition.<sup>1</sup> Malnutrition is one of the major causes of child morbidity and mortality in least and under developing countries like Bangladesh.<sup>1</sup> The Global plane of action for nutrition adopted in the international council and priorities were given to nutritionally vulnerable groups i.e. infants, young adults, pregnant women, nursing mother, disables, elderly with in poor household.<sup>1</sup>

1. \*Dr. Munmun Mustafa, Lecturer, Department of Community Medicine, Bangladesh Medical College, Dhaka
2. Dr. Md. Mustafa, Professor, Department of Community Medicine, Medical College for Women & Hospital, Dhaka
3. Dr. Taslima Islam, Professor, Department of Physiology, Medical College for Women & Hospital, Dhaka. [taslimasoheli@gmail.com](mailto:taslimasoheli@gmail.com)
4. Dr. Indira Sufia Khan, Associate Professor, Department of Physiology, Medical College for Women & Hospital, Dhaka

\*For correspondence

In Bangladesh, 26% children are undernourished, 46% of the children suffer from moderate to severe underweight, 43% of children under 5 are stunted.<sup>2</sup> One in five pre-school age children are Vit-A deficient and one in two are anaemic.<sup>3</sup> Malnutrition is the child disorder resulting from an inadequate diet intake or failure to absorb or assimilate dietary elements. Also defines as the pathological condition resulting from a relative or absolute lack or excess of one or more essential nutrition.<sup>4</sup> The entire problem of malnutrition may be macro or micro occurs when dietary energy or nutrient intake are insufficient, excessive or imbalanced. Iron deficiency is the common problem in the world and it affect more than 2 billion people mainly by parasitic infection and insufficient diet intake.<sup>5,6</sup> 210 million school going children suffering form iron deficiency anaemia in the world and prevalence of higher 58.4% in Asia and Africa 49%.<sup>7</sup> 60 million children of school age suffering from IDD worldwide.<sup>8</sup> An important cause of child blindness is vitamin A deficiency and 85 million school-aged children are at risk of ARI and other infection.<sup>9</sup> Environmental factor plays vital role for high morbidity and mortality among the children.<sup>10</sup>

Malnutrition is a multifactoral health problem, bio-pathogenic infection, cultural, behavioral, economical and environment factors, influence the malnutrition. For decade great-effort had been done to improve the child nutrition, yet it seems to be serious health problem under 5 children in Bangladesh.

Aim of this small study was to explore the present nutritional status of under 5 children is rural based community.

## Methods

A descriptive cross-sectional study conducted among the under 5 children attending OPD of Gazipur District Hospital to assess the nutritional status. Children under 5 year who came from rural areas were included in the sample and those from urban and semi-urban were excluded form the sample on all working days in year 2012. Total sample sizes were 820. A pre-tested questionnaire was used for data collection. A weight machine was used for weighting child weight and a measuring tape for measuring the height and mid-arm circumference (MAC). Haemoglobin estimation was done through Shahil's method. Stool sample were collected through plastic pot and saline-iodine smear was prepared and examined it under microscope for parasites. Data on patient's education level, sanitation condition, housing, age, and sex were collected through face to face interview of the parents. Collected data were checked for omission, in consistency errors and were analyzed by computer using SPSS program.

## Results

It was revealed in the study that Children of age group 24 to 36 months comprise the highest percentage 30% followed by 12-23 month 29% (Table I). Nutritional status according to Gomes classification 279 (34%) were mild, 131 (16%) moderate, 16 (2%) severe malnourished and 394 (48%) were with normal nutritional state (Table II). Nutritional status of under- 5 children were normal in 77%, under weight is 19%, marasmic 3%, marasmic Kwashiorkor and kwashiorkor 5% each according to Welcome classification (Table III). Water low classification showed that 69% were normal, stunted 19% and wasted 12% (Table IV). As per MAC (mid arm circumstanes) 377 (46%) of children were normal, 303 (37%) were malnourished and 140 (17%) were severely malnourished (Table V). As per Gomes classification 426 children under 5 year of age

were suffering form different degree of malnutrition of which 34% (145) children were in the age group of 24-36 months and 30% (128) between 48 to 60 months, that is between 4 to 5 years of age (Table VI). Table VII shows 75% (320) malnourished children are belong to illiterate mother and 60% (255) were living in kucha dwelling (Table VIII). Maximum children 82% have Haemoglobin level < 11 mg/dl (Table IX). Figure 1 shows 60% of the responded had parasitic infection in the stool.

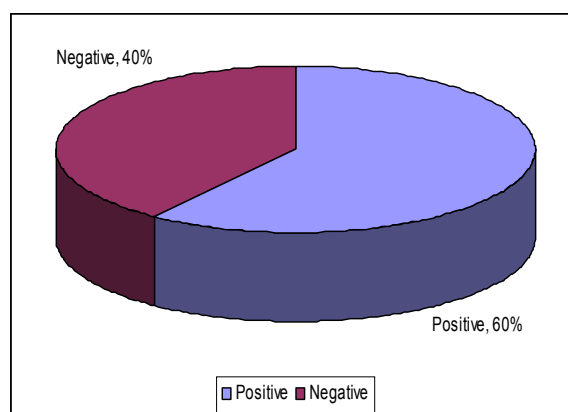


Figure 1. Pie chart distribution of stool examination for intestinal parasites

Table I: Age distribution of the Children (n=820)

Age in Month	No. of Children	%
12-24	238	29%
24-36	246	30%
36-48	205	25%
< 60	131	16%
Total	820	100%

Table II: Distribution of nutritional status of under-5 children by applying Gomes classification (n-820)

Nutritional status	No. of Children	%
Normal	394	48%
Mild (1 <sup>st</sup> degree)	279	34%
Moderate (2 <sup>nd</sup> degree)	131	16%
Severe (3 <sup>rd</sup> degree)	16	02%
Total:	820	100%

Table III: Distribution of nutritional status of under 5 children as per Welcome classification (n-820)

Nutritional status	No. of Children	%
Normal	631	77%
Under weight	156	19%
Marasmus	25	3%
Marasmasic	4	0.5 %
Kwashiorkor	4	0.5%
Total	820	100%

Table IV: Distribution of nutritional status of under 5 children according to Water low classification (n-820)

Nutritional status	No. of Children	%
Normal	566	69%
Stunted	156	19%
Wasted	98	12%
Wasted & Stunted	-	-
Total	820	100%

Table V: Distribution of children according to mid-upper arm circulation (MAC) (n-820)

MAC	No. of Children	%
>14 (Normal)	377	46%
14-12.5 (Malnutrition)	303	37%
<12.5 (severe malnutrition)	140	17%
Total	820	100%

Table VII: Malnutrition of children according to their age groups as per Gones classification (n-426)

Age-group (months)	No. of Children	%
12-24	21	5%
24-36	132	31%
36-48	145	34%
<60	128	30%
Total	820	100%

Table VII: Relation of mother's education and malnutrition of children (n=426 as per Gomes classification)

Level of Education	No. of Children	%	Significant
Illiterate	320	75%	p<0.05
Primary	43	10%	
Secondary	21	5%	
Higher	8	2%	
Secondary > HSC	4	1%	
Total	426	100%	

Table VIII: Relationship of housing condition and malnutrition of children (n=426 as per Gomes classification)

Housing condition	No. of malnutrition Children	%	Significant
Kucha House	255	60	p<0.001
Semi Pucca	128	30	
Pucca	43	10	
Total	426	100%	

Table IX: Estimation of Hb level among the children (n=820)

Hb level	No. of Children	%	Significant
< 11 mg/dl	672	82%	p<0.001
> 11 mg/dl	148	18%	
Total	820	100%	

## Discussion

This is cross sectional description type of study conducted among the under-5 rural children attending Gazipur Zilla Hospital in 2012. Total sample size was 820. The study assessed the nutritional status of under-5 rural children and also to determine the type and degree of malnutrition among them. Nutritional status was assessed by measuring anthropometric measurement (high weight & MAC) estimation of Haemoglobin level, intestinal parasitic infestation and socio-demographic characteristics. Main bulk of sample was in age groups of 24-36 and 12-24 months of age 30% & 29% respectively

(Table I). Mainly 75% mothers were illiterate which was a significant ( $p < 0.05$ ) for the causation of malnutrition, which may be due to low family income, ignorance and social prejudice. Mother's education plays an important role in the nutritional status of the children. Most of the malnourished children belong to the illiterate mother which is higher than study of L Logus Nigeria study (60%).<sup>11</sup> Maternal education and nutritional status of children was found statistically significant ( $p < 0.05$ ).

Parasitic infestation is an important cause of malnutrition among the children. They cause malabsorption of food nutrient, diarrheal disease and take nutrient from the host, thus leads to malnutrition. There was significant ( $p < 0.001$ ) association between Hb level and nutritional status. Low level of Haemoglobin (less than 11 mg/dl) found in 82% of under 5 children and parasitic infection was 60% in stool smear in this study, is a worsen indication of poor sanitation and lack of hygiene practice. According to Gomes classification it was found in the study that 52% under 5 children were malnourished, out of which 34% suffering from 1<sup>st</sup> degree, 16% from 2<sup>nd</sup> degree and 2% from 3<sup>rd</sup> degree, which is more than findings (17.7 1<sup>st</sup> degree, 5% 2<sup>nd</sup> degree) of the national survey of Rural Bangladesh 1976, and lower than the findings 40% 1<sup>st</sup> degree, 47% of 2<sup>nd</sup> degree and 6% of 3<sup>rd</sup> degree of Child Nutritional Survey in 1992, Bangladesh.<sup>12,1</sup> These finding indicates some improvement in the nutritional status of under- 5 in this study in comparison the study of Chowdhury DS.<sup>13</sup>

Nutritional status of the under 5 children were 19% underweight, 3% marasmic and 0.5% was marasmic kwashiorkor and Kwashiorkor respectively in this study as per Welcome classification, which were less than the finding of Khan QMS et al and Talukder MOWK et al, revealed better child nutrition

in this study.<sup>14,15</sup> It was evident that 19% under 5 children were stunted and 12% wasted (Water low classifications) which is much less than the report of Bangladesh Bureau of Statistic (BBS) 2011, where stunted was 41%. Living standard has an impact in child nutrition status, this study revealed that 60% under 5 children were suffering from malnutrition living in kucha house, 30% in semi pucca house. A significant relationship was evident ( $P < 0.001$ ) between nature of housing & nutritional status was found.

### Conclusion

Though it was a very small starting, yet it revealed a weighted scenario of child nutrition status of rural Bangladesh. Although some improvement was noted, yet it is a burning issue in public health. Factors of malnutrition already been well recognized and most of them are preventable. So, mother's education, uplift of socio-economical condition, family planning and prevention of communicable disease are necessary for improvement of child health.

### References

1. FAO & WHO, Final report of the conference. International conference on nutrition, Rome, Italy, Dec 1992, Page: 1-55.
2. The state of the world's children 2011. Available from: <http://www.unicef.org/source2011/main-report>. EN 02092011.
3. High malnutrition in Bangladesh prevents children from becoming 'Tiger'. Available from: <http://www.gainhealth.org/pressrelease>.
4. K Park. Parks textbook of preventive and social medicine. 21<sup>st</sup> ed. 2011. Publisher M/S Banarashi Bharot 1167 Prem Nagar, Jabalpur, 48200 (MP) India Chapter 10, p. 476-79.
5. Brook C, N Carmish. Factors affecting female participation in seven developing countries. DFID. 1997.
6. Hal A, Drake L, Bundy D. Public health measures to control belmont infection. In Nutritional anamias U. Ramakrisnan (Ed). CRC press. Society of tropical Medicine and hygiene 2001: 92: 254-261.
7. Acc/Scn nutrition of the school-age child. SCN news, 1998; 16: 3-25.
8. Huda SN, Grentha-Mcgregors, Rahman Kas, Tamkins AM. Biochemical hypothyroidism secondary to iodine deficiency is associated with poor school achievement and cognition in Bangladeshi children. Journal of nutrition 1999, 129: 9860-87.
9. Ahmed F. Vitamin A deficiency in Bangladesh: A review and recommendation for improvement. Public health nutrition 1999; 2(1): 1-14.
10. UNICEF/IRC. A manual of school sanitation and hygiene. NY 1998:S5.
11. Abidoye RO. Effect of urbanization on the nutritional status of primary school children in Lagos-Nigeria. Early Child Development and Care 1997; 137(1): 123-31.
12. Kabir MS. A study on consumption of safe water for domestic purpose in rural area of Bangladesh. NIPSOM dissertation. 1991.
13. Chowdhury DS. Nutritional status of children under 5 years of age in a slum area of Dhaka city. NIPSOM dissertation 1986.
14. Khanam S, et al. Factor contributing to PEM in urban Dhaka, Bangladesh. Journal of Child Health. 12(2): 95.
15. Talukder MQK, et al. Nutritional status of under-3 children admitted patient-report of a study done at nutrition unit, Dhaka Shishu Hospital, Bangladesh Shishu Hospital Journal 1974; 1: 81-82.