Nutritional Status among under-5 Children of a selected slum in Dhaka city

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Abstract

Background : Malnutrition is a serious public health problem that has been linked to increase risk of morbidity and mortality. Child malnutrition causes 27% of child deaths in developing countries in 2015.

Objective : To estimate the nutritional status of under five children of a selected slum in Dhaka city.

Methodology : This was a descriptive cross sectional study and conducted among 100 under 5 children purposively selected at Agargaon slum in Dhaka city during January-2015 to July-2015. Anthropometric measurements were taken by using standard methods. Those were weight, height, MUAC. Information regarding age of children was taken from patient's birth certificates or hospital records. Nutritional status was estimated by calculating Z-score, weight for age, height for age, weight for height and mid upper arm circumference. Data were analyzed using SPSS version 16.

Results : Mean age of the study population was 32.95 months. Male was 52% and female was 48%. Regarding Anthropometric assessment according to weight for height Z-score, 39% were wasted moderately and 13% were severely wasted and height for age Z-score, showed 47% of children were stunted moderately and 14% children were severely stunted. According to weight for age Z-score, 46% of children were moderately underweight and 16% children were severely underweight. According to MUAC classification 43% of children were in border line and 16% were malnutrition.

Conclusions : Overall, nutritional status of the under 5 child of slum of Agargaon were not satisfactory.

Keywords : Under 5 children, Slum, Nutritional status, Anthropometry, Z-score, MUAC.

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Introduction

Malnutrition is the most common nutritional disorder in developing countries and it remains one of the most common causes of morbidity and mortality among children worldwide.[1] Nearly half of all deaths in children under 5 are attributable to under nutrition. Under nutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections and contributes to delayed recovery. In addition, the interaction between under nutrition and infection can create a potentially lethal cycle of worsening illness and deteriorating nutritional status. Poor nutrition in the first 1,000 days of a child's life can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school and work performance.[2] Good nutrition is the cornerstone for survival, health and development. Malnutrition is the underlying contributing factor in about 45% of all child deaths, making children more vulnerable to severe diseases. 5.9 million Children under the age of 5 died in 2015. Child malnutrition causes 27.9% of child deaths in developing countries in 2015.[3]

The three main indicators used to define under nutrition, are underweight, stunting and wasting, represent different histories of nutritional status to the child. That occurring primarily in the first 2–3 years of life in children. Linear growth retardation (stunting) is frequently associated with repeated exposure to adverse economic conditions, poor sanitation, and the interactive effects of poor energy and nutrient intakes and infection. Low weight-for-age indicates a history of poor health or nutritional insult to the child, including recurrent illness and/or starvation, while a low weight-for-height is an indicator of wasting (i.e., thinness) and is generally associated with recent illness and failure to gain weight or a loss of weight.[4] A good percentage of the population of Dhaka city is living in the slums.[1] In slum areas of Dhaka city there is a very high prevalence of malnutrition. The prevalence of stunting, wasting and underweight are 68.4%, 31.2% and 73.2%, respectively. The prevalence

of malnutrition is higher in Dhaka slums than the national average which is 49% for stunting, 17.5% for wasting and 56% for underweight, and indicates exceptionally high levels of malnutrition as judged against World Health Organization criteria.[3] Malnutrition is increasing rapidly among socio-economically deprived sectors of the developing countries where poverty, unemployment, literacy and ignorance are rampant.[2]

Methodology

This was a descriptive cross sectional study carried out during January-2015 to July-2015 at Agargaon slum of Dhaka city. A total 100 under-5 children were selected purposively according to inclusion criteria: i) those babies living in slum at least 6 months, ii)willing to participate and iii) 2 months to 5 years ages of children Exclusion criteria were – Seriously ill, mentally retarded and unwilling to participate in the study were excluded from the study.

Following parameters were studied: (1) Height: 2 months to 2 years of age by infantometer in lying position and after 2 years up to 5 years in standing position by stadiometer.

Height was recorded in standing position without foot wear; foot placed closed together, knees straight and heels, buttocks and shoulder in contact with the vertical wall. The child was held firmly with eyes looking straight up and the body held as straight as possible with the knees pressed straight. The height was measured to the nearest millimeter.

Weight: Weight was taken by electronic weighing machine. The child was asked to stand on the weighing machine with minimum clothing and without shoes and any weight in hands or touching or catching other things. Weight was recorded to the nearest grams.

Age: Asking parents or from birth certificate/ hospital records.

Mid Upper Arm Circumference (MUAC): MUAC is an easy and useful measurement. It was recorded by measuring tape. The middle of the left arm will be detected by the midpoint of a line between the tip of the acromion process of scapula and olecranon process of ulna. Then at the midpoint the measuring tape will be wrapped round gently but firmly avoiding compression of soft tissue keeping the arm in hanging and extended position at the side of the body, then the reading will be taken to the nearest 0.1 cm.

WHO classification was used for the assessment of malnutrition. Based on the age, body weight and height, a number of indices such as height-for-age, weight-for-age and weight-for-height have been suggested. The children were classified using three categories: 'underweight' (low weight-for-age), 'stunting' (low height-for-age) or 'wasting' (low weight-for-height). Charts of Anthpopmetric values are used for this study.

Underweight was defined as low weight-for-age and it reflects past (chronic) and present (acute) under nutrition. Children with z-scores <-2.00 are said to be underweight. Stunting is defined as a low height-for-age for children, and it measures the past (chronic) child under nutrition. Children with z-scores <-2.00 are said to be stunted. Wasting is defined as low weight-for-height for children, and it is a measure of current or acute under nutrition. Children with z-scores <-2.00 are said to be wasted.[3] Informed consent was taken from informant mother or care giver before taking data.

A questionnaire was prepared for data collection. All the collected data entered into the computer and analyzed with the help of SPSS (Statistical package for social science) windows programs version 16.

Results

It was found that, the age of the children ranging between 0.1 and 60 months. The mean age of the children were 32.95 months with standard deviation ± 9.91 months. Among them 19% of the children were in 01-12 month age group, 20% were in 13-24 month age group, 27 were in 25-36 months age group, 19% were in 37-48 months age group and 15% in 49-60 months age group. It was evident from the study that 52.0% study children were male and 48% were female (Table-I)

Table-I : Distribution of the children by age group and sex (n=100)

Age in months	Frequency	Percentage
01-12	19	19.0
13-24	20	20.0
25-36	27	27.0
37-48	19	19.0
49-60	15	15.0
Total	100	100.0

Mean ± SD= 32.95± 9.91 months.

Sex	Frequency	Percentage
Male	52	52.0
Female	48	48.0
Total	100	100.0

According to MUAC classification, 43.0% of study children borderline malnutrition and 16.0% were malnourished (Table-II)

Table: - II: Nutritional status of the children by MUAC classification

MUAC classification	Frequency	Percentage
Malnourished	16	16.0
Borderline	43	43.0
Normal	41	41.0
Total	100	100.0

According to Weight for Height Z-score, it was found that 39% of children wasted and 13% severe wasted. (Table-III)

Table- III : Nutritional status of the children by Weight for Height Z-score

Weight for Height Z- score	Frequency	Percentage
Not Wasted	48	48.0
Moderate Wasted	39	39
Severe Wasted	13	13.0
Total	100	100.0

According to Height for Age Z-score, it was found that 47% of children moderately stunted and 14.0% children severely stunted (Table-IV)

Table -IV : Nutritional status of the children by Height for Age Z-score

Height for Age Z- score	Frequency	Percentage
Severe Stunted	14	14.0
Moderate Stunted	47	47.0
Not Stunted	39	39.0
Total	100	100.0

According to weight for Age Z-score, it was found that 46% of children moderately underweight and 16.0% children severely underweight (Table-V)

Table-V : Nutritional status of the children by Weight for Age Z-score

Weight for Age Z- score	Frequency	Percentage
Severe Underweight	16	16.0
Moderate Underweight	46	46.0
Not Underweight	38	38.0
Total	100	100.0

Discussion

This descriptive cross sectional study was conducted with a view to determine the nutritional status of under five children from Agargaon slum. A total 100 children were studied. The age of the children was ranging between 01 and 60 months. The mean age of the children was 32.95 months with standard deviation ±9.91. This result was consistent with the study done in India by Swaroop Kumar Sahu et al.[5]

In the study of Halder B (2000)[6] male and female were 59% and 41%. According to statistical pocket Book of Bangladesh-2004, the male and female were 51.2% and 48.0%, which was almost similar to our present study where male and female were 52 and 48. Study conducted by Yasmeen S in Bangladesh male and female were found as 44% and 56%[7].

Dasgupta et al. (2015) assessed anthropometric indices on 100 under-5 children with standard anthropometric indices such as weight for age, weight for height, height for age, and mid upper arm circumference prevalence of malnutrition were 42% (underweight), 30% (wasting), 28% (stunting), and 48% (under nutrition), respectively.[8] Sultan-Uz-Zaman et al. (2015) conducted a study on malnutrition on children of 18 months. The prevalence of underweight, stunting and wasting was 24%, 36% and 8% respectively.[9] Popat et al. (2014) conducted a cross sectional study and found prevalence of underweight, stunting and wasting was 32.4%, 46.1% and 17.2% respectively.[10] In our study MUAC classification 43% of children were borderline and 16% were malnourished. This is similar to study in India by Dasgupta et al.[8]

Regarding Z-scores, it was found in the present study that, 39% children were moderate wasted 13% severely wasted 47% moderate stunted and 14% severely stunted, 46% moderately under weight and 16% severely under weight. Child Nutrition SURVEY-2000 (ages 6-71 months)[11,12] found in their survey that 51% of the children were moderately underweight and 13% severely underweight, 49% moderately stunted and 19% severely stunted and 12% moderately wasted and 1%severely wasted. According to Demographic and Health Survey- 1990-2000(ages 0-59 months)[11] it was found that 48% of the children were moderately underweight and 13% severely underweight, 45% moderately stunted and 18% severely and 10% moderately wasted and 1% severely wasted. These findings are similar with the current study findings.

Conclusion

In this study wasted, stunted and under nutrition were 13%, 14% and 16% respectively (severe form) and mild/moderate wasted, stunted and underweight were 39%, 47% and 46% respectively. This study with small sample size cannot represent the national nutritional status of under five children. A large scale study is required to obtain the real situation.

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