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RESEARCH ARTICLE

NUTRITIONAL SURVEILLANCE OF UNDER 5 AGES CHILDREN OF SLUM IN DHAKA CITY, BANGLADESH

Md. Aynal Hoque[1,*], Hossain Sahid Kamrul Alam[2], Md. Abu Sayeed[3], Mohammed Abdullah Al Mamun[4] and A. T. M. Azharul Haque[5]

[1]Associate Professor and Head, Department of Paediatric Rheumatology, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh
[2]Associate Professor and Head, Department of Adolescent Paediatric, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh
[3]Assistant Professor, Department of Paediatric Cardiology, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh
[4]Associate Professor, Department of Paediatric Cardiology, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh
[5]Registrar, Department of Paediatric Rheumatology, Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh

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ABSTRACT

Background: Uncontrollable rapid growth of urban slum population, accompanied by poor nutritional status is a devastating problem. **Objective:** To observe the nutritional status among under-5 children in a selected slum of Dhaka city. **Methods:** This was a descriptive cross sectional study, conducted among 384 under-5 children who were randomly selected from Public Work Department (PWD) slum of Dhaka city. It was carried out during September-2018 to June-2020. Anthropometric measurements like wasting was determined from weight for height Z-score, stunting was determined from height for age Z-score, underweight was determined from weight for age Z-score and malnutrition was also assessed by Mid Upper Arm Circumference (MUAC). Data were analyzed using SPSS version 21. **Results:** According to MUAC classification 32% of children had mild/ moderate malnutrition and 9% had severe malnutrition. According to weight for height Z-score, it was found that 23% of children had mild/moderate wasting and 6% had severe wasting. According to height for age Z-score, it was found that 19% of children were stunted (mild/moderate) and 9% children were severely stunted. According to weight for age Z-score, it was found that 35% of children were underweight (mild/moderate) and 12% children were severely underweight. So 41% under-5 children were found malnourished, wasting was present in 29% children, stunting was found in 28% and underweight was found in 47%. **Conclusions:** Nutritional status of the under-5 child in PWD slum was below the normal level.

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INTRODUCTION

Human health, diseases, productivity, socio-economic development and quality of life index are directly related to nutrition. Nutrition for humans is considered as the foundation of health and health is the backbone of a nation Malnutrition is a serious public health problem that has been linked to increase risk of morbidity and mortality.

***Corresponding author: Md. Aynal Hoque**
Associate Professor and Head, Department of Paediatric Rheumatology, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh

On the other hand, malnutrition itself can have far-reaching impacts on the environment, and can induce a cycle leading to additional health problems and deprivation. It was found that more than a third of the world's children are affected by protein energy malnutrition (PEM), and the highest frequency of the indicators are wasting, stunting, and underweight among which 80% of the affected children are from Asia.[1]The nutritional problem in Bangladesh is well known where 69% of children are victim of any form of PEM and 12% children are severely undernourished.[2] PEM is a major cause for childhood mortality and morbidity in underdeveloped countries. Malnutrition is increasing rapidly among socio-economically deprived sectors of the developing countries where poverty, unemployment, illiteracy and ignorance are

rampant.[3]A good percentage of the population of Dhaka city is living in the slums.[4] The uncontrollable rapid growth of urban slum population, accompanied by poor nutritional status is a devastating problem. 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.[5]PEM is a major cause for childhood mortality and morbidity in underdeveloped countries. Socio-economic condition, maternal age and education status, immunization status, weaning practices, family size, housing etc. were significantly associated with severe PEM.[6]So this study was conducted to observe the nutritional status among the under-5 children in a selected slum of Dhaka city.

MATERIALS AND METHODS

This cross sectional study was carried out during September-2018 to June-2020 at Public Work Department (PWD) slum of Dhaka city, Bangladesh. A total 384 under-5 children constituted the study population. Children living in PWD slum at least 6 months, willing to participate and 2 months to 5 years of age were included. Seriously ill, mentally retarded and unwilling to participate in the study were excluded from the study. Nutritional status like wasting was determined from weight for height Z-score, stunting was determined from height for age Z-score, underweight was determined from weight for age Z-score and malnutrition also assessed by MUAC. For children 6 months to 2 years of age length was measured by infant meter in lying position and after 2 years up to 5 years height was measured in standing position by stadiometer without footwear, foot 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 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 was determined by asking parents and verified from birth certificate/hospital records. MUAC was recorded by measuring tape. The middle of the left arm was 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 was 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 was taken to the nearest 0.1 cm. A questionnaire was ready for data collection. Each questionnaire was minutely checked, verified and corrected on the spot following the interview. After completion of data collection, the data were consolidated, processed and edited to reduce the errors. The data were entered into the computer and analyzed by using SPSS version 21.

RESULTS

A total 384 under-5 children were studied. In distribution of malnutrition, severe malnutrition was 9%, mild/moderate malnutrition was 32% and no malnutrition was found in 59% children (Fig-1).

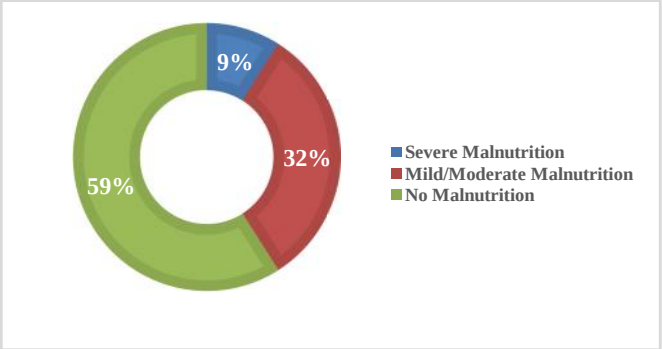

Fig. 1. Distribution of the children by malnutrition

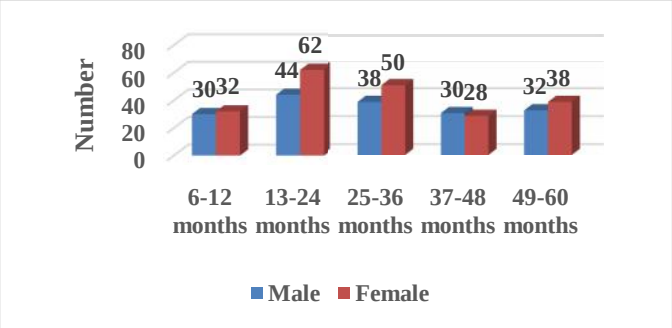

Fig. 2. Distribution of children by age & sex

It was found that, 6 months to 12 months age group children were 62, out of them 30 were male and 32 were female, 13 months to 24 months age group children were 106, out of them 44 were male and 62 were female, 25 months to 36 months age group children were 88 out of them 38 were male and 50 were female, 37 months to 48 months age group children were 58, out of them 30 were male and 28 were female, 49 months to 60 months age group children were 70, out of them 32 were male and 38 were female (Fig-2).

Table 1. Grades of malnutrition

Parameter	Indicator	Frequency	Percentage
MUAC	Severe malnutrition	33	09
	Mild/Moderate malnutrition	122	32
	No Malnutrition	229	59
	Total	384	100
Wasting	Severe wasted	23	06
	Mild/moderate wasted	90	23
	Not wasted	271	71
	Total	384	100
Stunting	Severe stunted	34	09
	Mild/moderate stunted	75	19
	Not stunted	275	72
	Total	384	100
Underweight	Severe under weight	46	12
	Mild/moderate under weight	134	35
	Not under weight	204	53
	Total	384	100

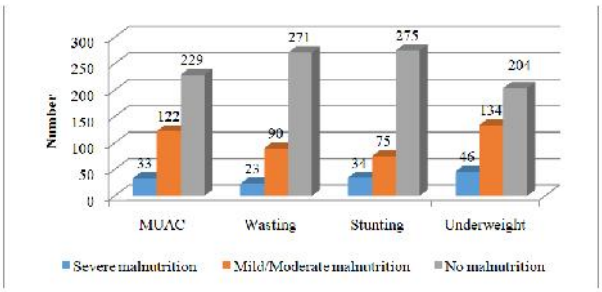

Fig. 3. Grading of malnutrition

According to MUAC classification, 9% of study children were severely malnourished, 32% were mild/moderate malnourished and 59% had no malnutrition. According to weight for Height Z-score, it was found that 06% of children were severely wasted, 23% mild/moderately wasted and 71% not wasted. According to Height for Age Z-score, it was found that 09% of children were severely stunted, 19% of children were stunted (mild/moderate) and 72% children not stunted. According to Weight for Age Z-score, it was found that 12%of children were severe underweight, 35% children mild/moderate underweight and 53% not underweight (Table-I and Fig-3)

DISCUSSION

In this study in an urban slum according to MUAC classification, 9% of study children were severely malnourished, 32% mild/moderate malnourished and 59% had no malnutrition. According to weight for Height Z-score, it was found that 6% of children were severely wasted, 23% mild/moderately wasted and 71% not wasted. According to Height for Age Z-score, it was found that 9% of children were severely stunted, 19% of children were stunted (mild/moderate) and 72% children not stunted. According to Weight for Age Z-score, it was found that 12%of children were severely underweight, 35% children were mild/moderate underweight and 53% not underweight. So 41% under-5 children were found malnourished, wasting was present in 29% children, stunting in 28% and underweight in 47%. Chaudhary et al.[7]conducted a community based cross-sectional study in the year 2016 to 2017 in a slum of Jaipur city, Rajasthan and found prevalence of wasting, stunting and underweight 10.5, 43.0 and 35.75% respectively. Gebre et al.[8] conducted a community based cross-sectional study on 840 children aged 6-59 months to assess the prevalence of malnutrition and associated factors among under-five children in pastoral communities in Northeast Ethiopia. The study found the prevalence of wasting, stunting, and underweight was 16.2, 43.1 and 24.8%, respectively. Senthilkumar et al.[9]conducted a study to assess determinants of malnutrition among children aged 0-5 years in a tribal community of Coimbatore district.

A total of 206 children aged 0-5 years were included in the study. Overall prevalence of malnutrition was found to be 51%. These 51% (105) malnourished children consisted of 41.3% underweight, of which 11.2% were severely underweight. Prevalence of stunting was 32.5%, of which 6.3% were severely stunted. About 21.8% children were wasted and 6.8% were severely wasted among them. Ahmed et al.[10] found in their study that stunting, underweight and wasting was 42%, 33.0% and 15% respectively. The sensitivity analyses resulted in the prevalence of stunting 40%, prevalence of underweight 33% and wasting rate equal to 19%. Dasgupta et al.[11] assessed anthropometric indices on 100 under-5 children and found prevalence of malnutrition were 42% (underweight), 30% (wasting), 28% (stunting), and 48% (under nutrition), respectively. Zaman SU. et al.[12] conducted a study on malnutrition on children of 18 months. The prevalence of underweight, stunting and wasting was 24%, 36% and 8% respectively. Popat et al.[13] conducted a cross sectional study and found prevalence of underweight, stunting and wasting was 32.4%, 46.1% and 17.2% respectively. Mamulwar et al.[14] conducted a study on malnutrition. The prevalence of underweight was 34.3%, stunting was 58.7% and wasting was 16.9%.This description cross sectional study was conducted with a view to determine the nutritional status of under five children of Public Work Department (PWD) slum. This study considered with the National Center for health Statistics (NCHS) of USA standard for classification of malnutrition. According to Statistical Pocket Book of Bangladesh- (2004)[15]. According to Z-scores the present study that, 6% of children were severely wasted, 23% mild/moderately wasted, 9% of children were severely stunted, 19% children stunted (mild/moderate), 12%of children were severely underweight, 35% children mild/moderately underweight. Child Nutrition SURVEY-2000 (ages 6-71 months)[16] 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) 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.[17] Those findings are similar with the present study. In case of wasting simillar findings were stated by Senthilkumar et al.[9], Ahmed et al.[10], Dasgupta et al.[11]. For stunting simillar findings were observed by Senthilkumar et al.[9], Dasgupta et al.[11] and Zaman SU. et al.[12]. In case of underweight simillar studies were performed Chaudhary et al.[7], Senthilkumar et al.[9], Ahmed et al.[10], Dasgupta et al.[11], Child Nutrition SURVEY-2000 (ages 6-71 months)[16], Demographic and Health Survey-1990-2000 (ages 0-59 months[17].Though the prevalence of malnutrition sharply decline in Bangladesh but still the prevalence of malnutrition is higher in Dhaka slums than the national average according to BDHS 2017-18, where the prevalence of stunting is 31%, wasting is 8% and underweight is 22%.[18]

Conclusion

It was observed from the study that, the nutritional status of under-5 children in PWD slum below acceptance level. So, the underlying factors causing malnutrition must be dealt with proper attention to improve nutritional status of under-5 children of slum area.

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