



A Case Study on Severely Acute Malnourished (SAM) Patients in Lakshmipur General Hospital, Bangladesh

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Authors' contributions

This work was carried out in collaboration among all authors. All the authors contributed equally in designing, conceptualization, study implementation, analysis and draft preparation. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Background: Childhood malnutrition remains as one of the major health concerns in Bangladesh though the country has been a leading figure in tackling childhood malnutrition all over the world in the last couple of decades. Despite of unprecedented development, the childhood malnutrition in this country is very prevalent and severe stunting of 9% is among the major indicators which articulates the whole scenario. Therefore this case study attempted to find out the severity of severely acute malnourished (SAM) patients admitted to Lakshmipur Sadar Hospital, Bangladesh by considering their relationship with their socioeconomic, knowledge and facilities they could afford.

Methods: This was a case study of 7 SAM patients who admitted to this hospital during the period of April-June 2018. Data was analyzed in Emergency Nutritional Assessment (ENA) software to calculate and WHO reference was used to compare. A questionnaire was used to collect background information from caregivers.

Case Presentation: The age of the SAM patients were between 6-36 months while they were getting treated in hospital in acute and rehabilitation phase; 4 of them had pitting edema. All the

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patients were severely underweight (WAZ<-3sd), stunted (HAZ<-3sd) and 4 of them were severely wasted (WHZ<-3sd). All the patients had common symptoms of a SAM patient, the mother's basic nutritional knowledge and socioeconomic conditions were found to be poor and therefore were having very limited opportunities of healthcare facilities.

Conclusion: Though more in-depth research is required to have any proper conclusion; however this case study does warrant a strong issue towards improvement of nutritional knowledge, socioeconomic conditions and healthcare access and utilization which in turns affect the nutritional status of the poor babies. Proper targeted and context specific intervention is, hence, necessary to improve the nutritional status of the severely malnourished children.

Keywords: Childhood malnutrition; severely acute malnourished; underweight; overweight.

1. BACKGROUND

Malnutrition still considered as one of the most important causes of child morbidity and mortality in most parts of the world especially in the developing world [1]. Malnutrition which is known as a silent killer that is underreported, under addressed, and as a result under prioritized because of its multifaceted link up which seems to have no direct solution. Due to malnutrition 300 and 5 children die in every hour and minute of every day respectively. One study estimated that there are nearly 20 million severely acutely malnourished children in the whole world. The most affected area are found in South Asia and Sub-Sahara Africa. The report also revealed that, approximately one million children die from severe acute malnutrition in every year in the developing countries, about greater than 25% of children under five are undernourished that accounts about 143 million children [2].

According to World Health Organization (WHO), severe acute malnutrition (SAM) defined as 'a very low weight for height, by visible severe wasting, or by the presence of nutritional edema'. Wasting in children aged 6–59 months is defined as weight for height < -3 Z scores of the median, according to WHO growth standards, and/or a mid-upper arm circumference (MUAC) < 115 mm [3].

According to Save the Children report of Bangladesh in 2012, resulted that the number of stunted children in the poorest quintile of the population were two times the same in the richest quintile mentioned in Das et al. [4]. According to the Bangladesh Demographic Health Survey (BDHS) Report 2017, 31% children are stunted and among them 9% are severely stunted, 22% underweight and 8% were wasted [5]. Bangladesh is trying very hard to reduce malnutrition and managed to achieve some success though this rate varies according to different section of society including children

living in remote areas [6]. In resemblance to Bangladesh, India and Sub-Saharan Africa also suffers from SAM with dire consequences for morbidity, mortality, poor productivity with low economic freedom [7].

Major contributing factors for severe malnutrition are poor child-feeding practices, infectious disease, poor hygiene and sanitation [8]. Co-existing infection increases the risk of death among severely malnourished children [9]. Internationally, 55 million children under the age of five are estimated to be wasted, of whom 19 million (35%) are severely wasted or severely malnourished [10].

The goal of this study was to indicate the severe acute malnutrition in terms of different indicators of malnutrition, to assess the magnitude of severity, to examine the association of child malnutrition with chosen demographic and socio-economic factors and the level of treatment they were in the hospitals. District wise data of SAM patients, their management and SAM patients' socioeconomic characteristics are unavailable, therefore, this study will enable to have a brief idea about SAM patients' physiological characteristics, their socioeconomic status and how hospitals around here manage these patients. It also tried to find out the relationship with the severity of severe acute malnutrition of the children to their parent's socioeconomic, knowledge and facilities they could afford. Though the study was performed in a small scale, however, the idea will surely put some insight for further research into this very important area of research.

2. METHODS

This is a case study of 7 SAM patients who were admitted to this hospital during the period of April-June 2018. Data was analyzed in Emergency Nutritional Assessment (ENA) software to calculate and WHO reference was

used to compare. A different questionnaire was used to collect background information. Apart from anthropometric and clinical information collected, some other information which also taken from the participants were as follows:

There were three categories of information used in the study. These were –

2.1 Mother's Nutritional Knowledge

The mother's nutritional knowledge was justified by the questionnaire that contained the basic knowledge of nutrition, hygiene and sanitation. Each question carried 1 mark and score of >80% considered as Good, 60-79% as Average and <60% as Little knowledge. Questions include:

- Do you know about the balanced diet?
- Do you know about exclusive breastfeeding?
- What is the source of your drinking water?
- Do you use soap or hand wash after using the toilet and before handling foods?

2.2 Socioeconomic Status

Socioeconomic status or condition was justified by calculating their income. Income was categorized based on author's discretion since it was difficult to find any scale. It was also classified as –

- High income: >20,000 BDT (BDT: Bangladeshi Taka)
- Moderate income: 10,000-20,000 BDT
- Poor income: <10,000 BDT
- Very poor income: <5,000 BDT

2.3 Healthcare Facilities

A healthcare facility was measured by the distance of their nearest hospital, clinic or any health complex where they could take proper health facilities. It was also classified as:

- Yes: Where the health complex, clinic or hospital was near about 10 km.
- No: Where the health complex, clinic or hospital was far, above 10 km.

3. CASE PRESENTATION

Table 1 describes the physical characteristics of the children and the variables that were interconnected with the severe acute malnutrition. Here, the table shows that there were five mothers whose nutritional knowledge was little and only two mothers that had average

knowledge and therefore, not found any mother that had good nutritional knowledge. The socioeconomic conditions were not well, all of them came from lower socioeconomic spectrum. And therefore, most of them didn't have much to spend on healthcare facilities, few had some access but it didn't provide the proper treatment facilities and the fortune it might cost. The table also describe the common type of symptoms SAM patients had and they were seen to be in acute and rehabilitation phases.

Table 2 described the malnutrition status (underweight, stunting and wasting) of patients considered for the study and the result revealed that almost all of them were more or less severely malnourished and probably that is why they were in hospitals. However, as with percent of median, if the patient has any pitting edema the weight for height Z-score (WHZ) and other indicators involving weight are not useful in determining nutritional status (underlined results) and such children are automatically defined as having severe acute protein-energy malnutrition regardless of his or her z-score. Therefore from this definition it could be stated that patients who had edema were SAM patients (4 of them) and other three didn't have edema but they were severely malnourished in most of the indicators.

4. DISCUSSION

From the study, it is revealed that 4 out of 7 patients were severely wasted and all of them were severely underweight which warranted a therapeutic hospitalization. Though significant improvement and effort have been put together for the reduction of child malnutrition in Bangladesh, yet this situation remained alarming and various complex factors might have contributed to this phenomenon and some of them been included in this study.

According to Demographic Health Survey reports, competitive figures have been observed in some South Asian countries; stunting, wasting, and underweight were, respectively, 48%, 19.8%, and 42.5% in India; 44.8%, 10.8%, and 30% in Pakistan; and 40.5%, 10.9%, and 28.8% in Nepal [11]. Where ICDDR's Centre for Nutrition & Food Security baseline survey in Bangladesh showed that under nutrition is high among young children, 41% of children were found stunted, 33% underweight and 11% wasting. In Bangladesh, there are about 43% of pre-school age children are stunted and 17%

Table 1. Basic socio-demographic and clinical features of the SAM patients

No.	Sex	Age (months)	Height (cm)	Weight (kg)	Phase they have	Edema present or absent	Dietary treatment with	Mother's nutritional knowledge	Socio-economic conditions	Health care facilities	Complications
1	Female	24	65	5.9	Rehabilitation phase	Absent	F-100 diet	Little	Poor	No	Fever, Infection in mouth
2	Male	8	54	3.8	Rehabilitation phase	Absent	F-100 diet	Average	Poor	No	Diarrhea
3	Male	14	63	5.1	Acute phase	Present	F-75 diet	Average	Very poor	Yes	Fever with cold
4	Male	6	50	2.1	Acute phase	Present	F-75 diet	Little	Poor	No	Pneumonia
5	Female	25	71	6.3	Acute phase	Present	F-75 diet	Little	Poor	Yes	Fever, Diarrhea
6	Female	36	79	7.8	Acute phase	Absent	F-75 diet	Little	Very poor	Yes	Infection
7	Female	8	51	2.9	Rehabilitation phase	Present	F-100 diet	Little	Poor	No	Fever, Pneumonia

Table 2. Anthropometric assessment of SAM patients

Age (months)	Height (cm)	Weight (kg)	Edema	Underweight (Z-score)	Stunting (Z-score)	Wasting (Z-score)
24	65	5.9	Absent	Severely underweight (- 5.235)	Severely stunted (-6.424)	Moderately wasted (-2.337)
8	54	3.8	Absent	Severely underweight (- 6.256)	Severely underweight (-7.534)	Normal (-1.374)
14	63	5.1	Present	Severely underweight (-5.514)	Severely underweight (-6.074)	Severely wasted (-3.575)
6	50	2.1	Present	Severely underweight (-8.242)	Severely underweight (-8.241)	Severely wasted (-5.161)
25	71	6.3	Present	Severely underweight (-4.932)	Severely underweight (-4.756)	Severely wasted (-3.476)
36	79	7.8	Absent	Severely underweight (-4.518)	Severely underweight (-4.216)	Moderately wasted (-2.95)
8	51	2.9	Present	Severely underweight (-6.851)	Severely underweight (-7.513)	Severely wasted (-2.362)

Reference: According to WHO Standards 2006 (Z score: <-3sd score considered as severe)

severely stunted, 13% of them are wasted and 1% severely wasted and 48% of them are underweight with 13% severely underweight found. The report indicate that the roles of child malnutrition rise very rapidly from 6 months of age and reach their peak among weaning age children (6 to 23 months of age) who are considered as nutritionally most vulnerable. In our study, all of the patients are found underweight and 4 patients are found severely wasted where this result is correlated with the above data.

The South Asia region has among the highest burdens of SAM, with Bangladesh experiencing a SAM prevalence of 3% according to NIPORT, 2009. A prevalence of 1% has been indicated as a threshold for the crisis because of high associated mortality [12].

Babies who were very small in size at birth had two times higher risk of being stunted than those who were large in size at birth. Prevalence of wasting and underweight were remarkably high among low birth weight children. There is a significant relationship between wasting and underweight status of under five children with mother's body mass index. Children of well-nourished mothers had a low risk of being underweight compared to children of acute malnourished mothers. There may be many reasons behind it, such as- illiteracy of mother, family income, insufficient breast milk or proper breastfeeding, mother's health condition etc. [13]. From the study it was found that mother's poor education and nutritional knowledge might have effect on their child's nutritional status since their children were found severely malnourished and they also belonged to poor economic poor which may facilitate poor healthcare access. The study had some limitations which includes very small sample size, not having enough questions to validate mother's nutritional knowledge and not using standard methods to assess economic access and healthcare facilities. This study findings merely provides some unstandardized results of severely malnourished children and some of the basic information of their parents which might have effect in their poor health outcome that needs to be study further in larger scale.

5. CONCLUSION

This case study tried to present the physiological vulnerability of the SAM patients and possible associated factors and revealed a rude scenario

of poor nutritional knowledge of the mothers and caregivers, poor socioeconomic conditions they were living in and the miserable level of healthcare access and utilization in small scale which might get true in bigger picture as well. Proper policies and programs to screen and improving the situation, hence, are necessary if these poor souls had to overcome from their misery.

CONSENT AND ETHICAL APPROVAL

This study was conducted by maintaining all the ethical guidelines, received ethical permission from Noakhali Science and Technology University and hospital administration also complied with the arrangements. All the participants (caregivers) consent was taken accordingly.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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