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Prevalence of Severe Acute Malnutrition in Children Admitted to the Emergency Paediatric Unit at a Tertiary Centre in North Central Nigeria

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Abstract

Background: Malnutrition is of major public health concern worldwide. The prevalence of severe acute malnutrition/wasting is increasing nationally and globally. The aim of this study is to determine the prevalence of Severe Acute Malnutrition (SAM) at Dalhatu Araf Specialist Hospital, Lafia Nasarawa State.

Methods: This was a cross-sectional prospective study. All children admitted between the months of June to October 2016 had their anthropometry taken. All children 6 months to 60 months with SAM based on the WHZ score were identified and a pre-designed proforma was administered to obtain information from the parents of children with SAM.

Results: SAM was present in 44.4% of all admitted children. No child above the age of 36 months had SAM and 84.8% of all SAM patients were less than 24 months old. Most mothers (72.9%) of the children with SAM were unemployed and (55.9%) had no formal education. Only 18.6% of these mothers practiced exclusive breastfeeding and as many as 62.7% of the children with SAM had been introduced to complementary feeds before 6 months of age.

Conclusion: This is the first time a very high prevalence of SAM has been reported in Nasarawa State. The absence of exclusive breastfeeding, early commencement of complementary feeds and lower educational status were prevalent among mothers of children with SAM.

Introduction

Malnutrition in its various forms is of major public health concern worldwide. Malnutrition is one of the largest risk factors for disease globally [1]. Weight for height index describes the current nutritional status. Children with weight for height z score (WHZ score) of <-2 have moderate acute malnutrition or wasting while WHZ score of <-3 is severe wasting [2]. The severe and most lethal form of malnutrition "Severe Acute Malnutrition" (SAM) is defined by weight for height z score (WHZ) of <-3 Z Score or a mid-upper arm circumference of <11.5 cm or presence of edema [2-4].

SAM affects 19 million children worldwide, most of these population live in Sub-Saharan Africa and South East Asia and 10% of the global SAM population live in Nigeria [5]. Severe acute malnutrition contributes to almost half of all deaths among children under 5 years worldwide and in Sub-Saharan Africa, a mortality rate of 10 to 40% has been reported in hospitalized SAM patients [4,6].

The Nigerian Demographic Health Survey (NDHS) carried out in 2013 reported the national prevalence of wasting as 18%, with the prevalence of SAM highest in the northwestern and northeastern states [2]. As such, eleven states in the northeastern and northwestern parts of Nigeria now have established centers for the management of SAM [5]. The prevalence of SAM in Nasarawa state in north central Nigeria

in the 2013 NDHS was 3.5% [2]. Nasarawa state was, therefore, not listed as one of the high burden states in Nigeria. Another study previously carried out in Nasarawa state in 2012, had reported a prevalence of 10.6% [7].

This study aims at describing the prevalence of SAM in Nasarawa state and to determine if the trend is increasing. This study also aims to determine if there's a need for Nasarawa state's inclusion in the list of high burden states of SAM, in Nigeria.

Materials and Methods

This was a cross-sectional descriptive study carried out in Dalhatu Araf Specialist Hospital, (DASH) a tertiary center in north-central Nigeria which serves Lafia and other neighboring Local Government Areas (LGAs). Ethical approval from the Ethics and Research Committee was obtained.

This was a prospective study was carried out from June 2016 to October 2016. All children admitted to the emergency pediatric unit during this period were included in the study population. Weight, height was measured and weight for height z (WHZ) score calculated for each child.

Children with WHZ score >-1 to +1 were classified as normal, those with a WHZ score <-1 to >-2 were classified as mild malnutrition, while those with a WHZ score of <-2 to >-3 were classified as

moderate malnutrition. Children with a WHZ score of <-3 were identified to have SAM/severe wasting.

From the group of children with SAM, further information on the parental socio-demographic factors, a number of children in the household, immunization and breastfeeding history, age at commencing complementary feeds were obtained using a pre-designed proforma.

The data was collected and entered into the 2013 Microsoft Excel Spreadsheet and then imported into Statistical Package for Social Sciences (SPSS) version 16.0. Results were summarized into tables and charts.

Results

A total of 133 children were seen during this study period. More males (51.9%) than females (48.1%) were admitted. Most of the children (45.1%) were in the 12 to 24 months age group. Few children (12.8%) were between ages 37 to 60 months (Table 1).

Characteristics	Frequency n=133	Percent (%)
Sex		
Male	69	51.9
Female	64	48.1
Age group (months)		
0-11	40	30.1
12-24	60	45.1
25-36	16	12
37-48	2	1.5
49-60	15	11.3

Table 1: Age and gender distribution of children.

Of the 133 children admitted, only 13.5% had normal nutrition and as much as 44.4% had SAM (Figure 1).
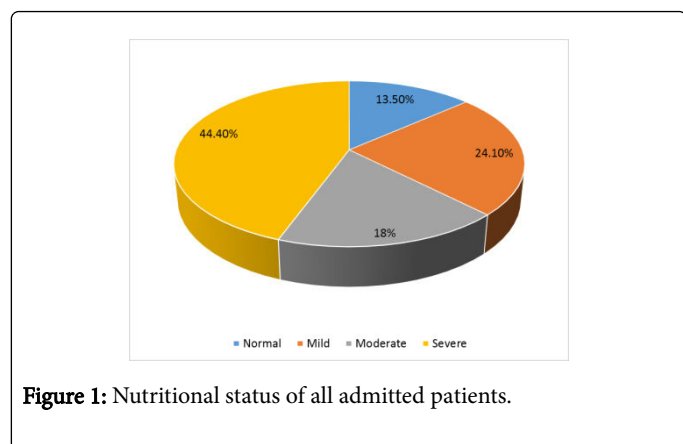

Figure 1: Nutritional status of all admitted patients.

84.8% of all SAM patients were less than 24 months old. No child had SAM between the ages of 37 and 60 months. More males (54.2%) than females (45.8%) had SAM (Table 2).

Age group category	Nutritional Status			
	Normal N (%)	<-1SD to <-2SD N (%)	<-2SD to <-3SD N (%)	<-3SD N (%)
0-11	1 (5.6)	11 (34.4)	7 (29.2)	21 (35.6)
12-24	9 (50.0)	10 (31.3)	12 (50.4)	29 (49.2)
25-36	3 (16.7)	2 (6.3)	2 (8.3)	9 (15.3)
37-60	5 (27.8)	9 (28.2)	3 (12.5)	0 (0.0)
Sex				
Male	12 (66.7)	16 (50.0)	9 (37.5)	32 (54.2)
Female	6 (33.3)	16 (50.0)	15 (62.5)	27 (45.8)

Table 2: Nutritional status by age group and gender.

Most mothers were unemployed (72.9%) and had no formal education (55.9%) (Table 3).

Characteristics	Frequency	Percent
Mothers Occupation		
Unemployed	43	72.9
Employed	2	3.4
Business	14	23.7
Fathers occupation		
Unemployed	16	27.1
Employed	15	25.4
Business	28	47.5
Mothers education		
Nonformal	33	55.9
Primary	16	27.1
Secondary	8	13.6
Tertiary	2	3.4
Fathers education		
Nonformal	20	33.9
Primary	15	25.4
Secondary	15	25.4
Tertiary	9	15.3
Parental marital status		
Married	58	98.3
Widowed	1	1.7
Household size		
≤5	19	32.2
06-10	31	52.5

>10	9	15.3

Table 3: Socio-demographic characteristics of parents of children with SAM.

Only 44.1% of the children with SAM had received any vaccination, and only 18.6% were exclusively breastfed. 62.7% of the children with SAM were commenced on complementary feed before 6 months of age (Table 4).

History	Frequency	Percent
Immunized		
Yes	26	44.1
No	33	55.9
Exclusively Breastfed		
Yes	11	18.6
No	48	81.4
Age at introduction of complementary food		
<6	37	62.7
6	13	22
>6	5	8.5
Unspecified	4	6.8

Table 4: Feeding pattern and immunization among children with SAM.

57.6% of the children with SAM were discharged, 10.2% died and 32.2% were discharged against medical advice.

Discussion

The prevalence of severe acute malnutrition in this study was high. This finding is higher than all previous reports of SAM from Nasarawa state. This could be due to a number of factors.

It is well known that prevalence data from large cross-sectional surveys tend to miss cases and underestimate the numbers affected [8]. In our study, the prevalence of malnutrition was studied only in our hospital. However, our hospital solely provides secondary as well as tertiary health care to all children in Lafia local government and many other neighboring and distant local governments in Nasarawa State. There is only one other tertiary health care facility in Nasarawa State. This explains not only the high prevalence obtained in our study but also reflects the true prevalence of severe acute malnutrition in Nasarawa State.

It is also noteworthy that a previous study carried out in our hospital in 2012, had reported a prevalence of 10.1%, while the NDHS 2013 survey reported a prevalence of SAM in Nasarawa State to be 3.5%. This further supports the argument that large cross-sectional prevalence surveys tend to underestimate numbers affected. The increasing trend of SAM in our center (10.1% to 44%) is in agreement with an increasing trend of wasting (11% to 18%) from 2003 to 2013 as reported by the NDHS 2013 survey. Another reason that could explain the high prevalence obtained in our study was the absence of community-based management of malnutrition centers (CMAM) in Nasarawa State at the time our study was carried out. This meant that children with SAM had no other options for healthcare.

In our study, only 13.5% of the children had normal nutrition using the WHZ scores. About 42% of the children had either mild (<-1 to >-2 z score) or moderate (<-2 to >-3 z score) malnutrition. This reflects a general state of malnutrition in children in Nasarawa State.

In our study, 84.8% of the children with SAM were less than 24 months old. This finding is similar to a previous study done that reported that 85% of children with SAM were less than three years old [9]. It is also in keeping with a National survey that reported that children less than 2 years old accounted for 75.6% of children with SAM [10].

In our study, only 18% of children with SAM were exclusively breastfed, 62.7% were introduced to complementary feeds before the age of 6 months, while 55.9% had no immunization. It is a well-known fact that failure to practice exclusive breastfeeding reduces breast milk consumption and contributes significantly to malnutrition [11,12]. Furthermore, it has been reported that early introduction of complementary foods and other sub-optimal complementary feeding practices can lead to growth faltering and has been described as a risk factor for undernutrition in children in developing countries [13-15]. The most effective interventions that can significantly reduce acute malnutrition in the first two years of life include quality child feeding practices, disease prevention, and control programmes [15]. These facts may explain why most of the children with SAM in our study were less than 24 months old.

In our study, 55.9% of the mothers had no formal education and 72.9% of the mothers were unemployed. This may explain the low prevalence of exclusive breastfeeding (18%) in our study. This is consistent with previous studies which have shown that lower levels of maternal education are significantly associated with poor breastfeeding practices [16,17]. A significant association has also been demonstrated between lack of breastfeeding and unemployment among mothers [16].

Over 70% of mothers of children with SAM in our study were unemployed and 56% had no formal education. This is in keeping with previous studies where statistically significant relationships were reported to exist between wasting and lower educational status as well as between wasting and lower socioeconomic status among mothers [18].

In our study 57.6% of the children with SAM were discharged, 10.2% died and 32.2% were discharged against medical advice. A previous study done in the same hospital in 2012, reported that 62.6% were discharged, 16.8% absconded, 7.6% Discharged Against Medical Advice (DAMA), while 13% had died [7]. There is an increasing trend in patients discharged against medical advice. This is worrisome. Although we did not explore the reasons for this in our study, it has been previously reported that patient factors, dissatisfaction with the hospital environment and medical staff are the main reasons for DAMA [19].

Our results are also in keeping with previous studies which have shown that mortality among hospitalized children with SAM is as high as 10% to 40% in Sub-Saharan Africa [4,6].

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Conclusion

This is the first time a very high prevalence of SAM has been reported in Nasarawa State. The absence of exclusive breastfeeding, early commencement of complementary feeds and lower educational status were prevalent among mothers of children with SAM.

Recommendations

This study should help guide policymaking and programs aimed at reducing the burden of SAM in Nasarawa State.

Emphasis should be placed on educating mothers on the benefits of exclusive breastfeeding, timely introduction of complementary feeds and immunization.

In the long term, female education and empowerment will help reduce the burden of malnutrition as well as improve the overall health of the Nigerian child.

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