

Severe Acute Malnutrition Infants from Six Months to Thirty Six Months Old Toddlers in Edward Francis Small Teaching Hospital, Banjul, The Gambia

Michael Paul K Mendy, Pedro Hernandez

Department of Pediatrics, School of Medicine and Allied Health Sciences, University of The Gambia, Banjul, The Gambia

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Abstract

Severe acute malnutrition (SAM) is a common condition that kills children and intellectually maims those who survive. Childhood under-nutrition still remains one of the most serious public health problems in many countries, more especially low- and middle-income countries and it has been reported that annually death of children in developing countries is about 1.7-3.6 million due to severe acute malnutrition (SAM). An observational, descriptive, ambispective, time prevalence hospital based cross-sectional study, using a quantitative close ended design tool was used. Samples include all infants from 6 months infants to 36 months old toddlers admitted to the paediatric special care unit at Edward Francis Small Teaching Hospital (EFSTH) and folders from record office. A structured questionnaire was used to collect data from caregivers. The major risk factors of SAM include poor education, ethnic of the respondent, poor feeding habits such as poor breastfeeding and early introduction to water. There is a strong association between marital status and early introduction to water (X^2 ; $P=0.017$), marital status and early introduction to house-hood feeding (X^2 ; $P<0.05$) and number of feeding times and occupation (X^2 ; $P<0.05$). It was concluded that prevention of SAM should be through promotion of maternal formal education, maternal nutrition, breastfeeding, significance of complementary feed and women empowerment. Policy making and health-care review should address all the risk factors of SAM.

Corresponding Author: michaelmendy72@gmail.com (Michael Paul K Mendy)

INTRODUCTION

Severe acute malnutrition is a serious public health problem, and a challenge to clinicians.¹ Although now rare in industrialized countries, severe acute malnutrition is unfortunately still common throughout the developing world and is a key contributor to both global childhood morbidity and mortality.^{2,3,4,5} Childhood under-nutrition still remains one of the most serious public health problems in many countries, more especially low- and middle-income countries and it has been reported that annually death of children in developing countries is about 1.7 and 3.6million due to severe acute malnutrition (SAM) and moderate acute malnutrition, respectively.⁶ According to the UNICEF conceptual framework, the causes of under nutrition among children under five years are classified in three categories (1) immediate causes which consist of, inadequate food intake and disease. (2) underlying Causes which consist of: household food insecurity, inadequate mother and child care, and inadequate health and environmental care. (3) basic causes which includes: political and economic structures, and socio-cultural environments.⁷ In Nigeria, the under-5 mortality rate decreased from 201 deaths per 1,000 live births in 2003 Nigeria Demographic and Health Survey (NDHS) to 128 deaths per 1,000 live births in the 2013 NDHS.⁸

In The Gambia, the steadily increasing rate of acute malnutrition among children under five in The Gambia is alarming not only at the peak of the lean season, but also in post-harvest periods. Chronic poverty and limited access to quality health services as well as poor access to clean drinking water and sanitation in rural areas are critical drivers of appalling levels of child mortality and malnutrition in The Gambia. The nutrition situation is particularly dire in Central River, Upper River and of recent Lower regions. The 2012 National Nutrition Survey found that Kuntaur, Janjanbureh and Basse have higher global acute malnutrition rates above the 10% WHO “serious” threshold. The February/ March 2014 Surveillance Report also confirmed that the prevalence of wasting (13.5%) is more prominent in Central River Region (CRR) than in any other region

followed by Lower River Region (LRR) 12.1%. Kuntaur also has the highest proportion (30.7%) of stunted children with severe stunting at 8.2%.⁹

There are numerous studies reporting the risk factors of severe acute malnutrition from resource-poor nations published in these past years. However, a study on risk factors associated with severe acute malnutrition in infants between the ages of six months and 36 months old toddlers (6 months-36 months) has never been done in The Gambia. Purpose of this study is to contribute to the reduction of severe acute malnutrition in The Gambia by assessing its characteristics in Edward Francis Small Teaching Hospital (EFSTH). General objective of this study is to assess the risk factors of severe acute malnutrition among infants aged 6 months to 36 months old toddlers at EFSTH. Specific objective of this study is to identify the most common age group involve within this age range and to assess the relationship of the socio-demographic factors and feeding habit of these age categories by the caregivers.

METHODS

An observational, descriptive, ambispective, time prevalence hospital based cross-sectional study was used to carry out this study. Data was collected from the medical records of EFSTH paediatric department and the paediatric special care unit in EFSTH. The sample include all infants from 6 months infants to 36 months old toddlers admitted to the paediatrics special care unit at EFSTH admitted from June 1st to November 30th 2018. Inclusion criteria: all infants with age 6 months to 36 months old toddlers with severe acute malnutrition admitted in EFSTH special care unit. Exclusion criteria: all infants outside the above age range and that were not admitted in the special care unit of EFSTH.

The study was conducted using patient's records from the Paediatrics' records office of EFSTH and from direct questioning from caregivers. The information needed was obtained by using a structured data collection tool that consist of the patients' socio-demographic and clinical data. A form of questionnaire was used to guide the filling

of the needed information. The data collected were analyzed using Microsoft excel and SPSS data base version 20. It was presented to statistician for analysis and then represented on charts and tables. Both sets of data from qualitative and quantitative variables will be interpreted separately. Ethical approval for the study was sought from the Ethical Review Committee of EFSTH before the research was conducted. Letter of approval was written to the EFSTH record department in order to be able to access the paediatrics folders needed for data collection. Both parents and patients identities, especially names were not used during data collection thus maintaining maximum confidentiality throughout the period of the research.

RESULTS

During the study, from June 2018 - November 2018, socio-demographical variable was collected in the pediatrics department of EFSTH. Data were collected from 30 severe acute malnourished children. These data include: age of patients, sex of patients, residence of caregiver, educational background of caregiver, number of children of caregiver, ethnicity of patients, religion of caregiver, occupation of caregiver (Table 1).

From table 1, the majority of children are between 1 and 2 years old. The majority of caregivers have no formal education. Caregivers generally have 2 children. These children come from the Madinka tribe. Most caregivers were generally a housewife and most of them were from the urban areas.

Many aspects can be seen from the eating habits of children at EFSTH. These aspects include: age at which household food were given, those involved in feeding them, the number of times they were fed. Half of the children were introduced to water after 3 months. In contrast, the other half was introduction to water after 6 months. Generally, the children were given food by servants (66.7%). The children were not reduced to certain foods (96.7%). There were no difficulties in obtaining food (93.3%) (Table 2).

Demographic factors can be related to several aspects, including: age of water introduction (Table 3), age of house hold food introduction (Table 4),

Tabel 1. Socio-Demographic Variable

Characteristic	n	%
Gender :		
-Male	14	46.7
-Female	15	50.0
-Not indicated	01	03.3
Age of child:		
-Between 6months and 1yr	09	30.0
-From 1yr to 2yr	16	53.3
-From 2yr to 3yr	04	13.3
-Not indicated	01	03.3
Educational level:		
-None	13	43.3
-Primary	07	23.3
-Junior Secondary	04	13.3
-Senior Secondary	00	00.0
-Tertiary institution	00	00.0
-Not indicated	06	20.0
Number of children of the caregivers:		
-One child	03	10.0
-Two children	11	36.7
-Three children	05	16.7
-Four children	05	16.7
-Five and above children	01	03.3
-Not indicated	05	16.7
Ethnicity of Patiens:		
-Mandinka	12	40.0
-Wolof	06	20.0
-Fula	05	16.7
-Manjaku	02	06.7
-Jola	04	13.3
-Others	01	03.3
Religion of Ceregiver:		
-Islam	29	96.7
-Christianity	01	03.3
-Others	00	03.3
Occupational of the Caregivers:		
-Civil servant	00	00.0
-Farmer	05	16.7
-Trader	05	16.7
-Housewife	19	63.3
-Others	01	03.3
Residence of the caregiver:		
-Urban	17	56.7
-Rural	11	36.6
-Not indicated	02	06.7

and the number of times a child fed (Table 5). The marital status of caregiver is a demographic factor that influences the age of weater introduction ($p = 0.017$) and also the age of household food introduction. Conversely, occupation of caregiver is a demographic factor that affects the frequency with which children get food.

DISCUSSION

The Socio-demographic Factors

The socio-demographic data shows that out of 30 cases, ($n=15$; 50%) were female, $n=14$; 47.7%) were male, and ($n=1$; 3.3%) of the cases had no sex indicated as shown on table 1; chart 1 of the socio-demographic factors. This is contrary to the research like in South-east part of Nigeria among pre-school children which revealed that more males (59.6%) were affected compare to females (40.4%).^{10,11,12}

The most common age group affected is in the category of one (1) year to two (2) years accounting for ($n=16$; 53.3%) of the cases. ($n=9$; 30%) of these cases were between 6 months and 1 year, and ($n=4$; 13.3%) were in the category between the age of 2 years and 3 years. The mean age is 1 year 10 months old (22months) as shown on table 1 of the socio-demographic variables and chart 2. This is unlike other researches which revealed that the prevalence of SAM is much commoner in infants from age range 6months to 12 months.¹³

There were ($n=12$; 40%) of toddlers whose caregivers were Mandinka, ($n=6$; 20%) were Wolof, ($n=5$; 16.7%) were Fula, ($n=2$; 6.7%) were Manjaku, ($n=4$; 13.3%) were Jola and ($n=1$; 3.3%) are in the other tribes not mentioned above. See table 1 of the socio-demographic variables.

There were ($n=29$; 96.7%) of the infants and toddlers were born to Muslim parents, and ($n=1$; 3.3%) were born to Christian families. There were none of the parents belonging to a different religion other than Christianity and Islam. The higher percentages the correspondent children being Mandinka and Muslims may be due to the fact the Mandinka have a higher population in The Gambia than any other tribe and 95% Islam. There was ($n=17$; 56.7%) of

Table 2. Showing The Feeding Habit

Variable	N	%
Age of water introduction:		
- After 3 months	13	43.3
- After 6 months	13	43.3
- Don't know	04	13.3
House hood feed		
- 3 months	01	03.3
- 6 months	05	16.7
- 1 year	11	36.7
- After 1 year	10	33.3
- Don't know	01	03.3
- Not yet introduced	02	06.7
Number of feeding by Caregiver:		
- Two times	01	03.3
- Three times	23	76.7
- More than three times	06	20.0
Feed given by caregiver:		
- Yes	20	66.7
- No	10	33.3
Feeding supervision:		
- Yes	05	16.7
- No	05	16.7
- Total of those who don't feed	10	33.3
- Missing system	20	66.7
Restriction from certain food:		
- Yes	01	03.3
- No	29	96.7
What food restriction:		
- Cassava based food	01	03.3
- Missing system	29	96.7
Difficulty of acquiring Food:		
- Yes	02	06.7
- No	28	93.3
What food difficulty:		
- Availability	01	3.3
- Affordability	01	3.3
- Total	02	6.7
- Missing system	28	93.3

Table 3. Association of The Demographic Factor and Age of Water Introduction

No	The Demographic Factor	p value
1	Age of caregiver	0.351
2	Residence of caregiver	0.286
3	Marital status of caregiver	0.017
4	Number of children of the caregivers	0.193
5	Ethnic background	0.765
6	Religion of caregivers	0.508
7	Occupation of caregivers	0.610

Table 4. Association of The Demographic Factor and Age of Household Food Introduction

No	The Demographic Factor	P Value
1	Age of the caregiver	0.689
2	Residence of the caregiver	0.719
3	Marital status of caregiver	0.000
4	Number of children of caregiver	0.193
5	Ethnic background	0.765
6	Religion of caregiver	0.508
7	Occupation of caregiver	0.150

Table 5. Association of The Demographic Factor and Number of Times a Child is Fed

No	The demographic factor	P value
1	Age of caregiver	0.967
2	Residence of caregiver	0.797
3	Marital status of the caregiver	0.059
4	Number of children	0.677
5	Ethnic background of caregiver	0.792
6	Religion of caregiver	0.854
7	Occupation of caregiver	0.000

the caregivers who resides in the urban regions and (n=11; 36.6%) from the rural regions while (n=2; 6.7%) residence was not recorded.

As shown in table 1 of the socio-demographic variables, there were (n=13; 43.3%) of the caregivers

had no formal education, (n=7; 23.3%) attained a primary education, (n=4; 13.3%) attained junior secondary education and (n=6; 20%) of cases had their educational level not recorded. None of them completed senior secondary education and

there was none who attended a tertiary education. This gives a cumulative percentage of 79.9% poor educational background. This is consistent with many researches which revealed that poor maternal education is significantly associated with severe acute malnutrition.^{14,15,16,17,18} A research done at Sukur in Pakistan revealed that 80% of caregivers had poor education.^{16,19}

There were (n=3; 10%) of the caregivers have only one child, (n= 11; 36.7%) had two children, and (n=5; 16.7%) had three children. (n=5; 16.7%) had four children and (n=1; 3.3%) had five or more children and there were (n=5; 16.7%) of the caregivers had their number children not recorded. See table 1. In this research, most of the caregivers had two children which is optimal unlike other findings which revealed that malnutrition is associated with high child birth or more than four children among caregivers, which accounted for 66.7%.¹⁹

From table 1, there were (n=19; 63.3%) of caregivers who were housewives or house-helps who were not employed, farmers and petty traders accounted for (n=5; 16.7%) each. None was a civil servant, of course most if not all civil servants are highly educated in this country and there 3.3% of other occupations not mentioned in the questionnaire. A study done in India revealed that 12.2% of working class looked for feed substitute which is a risk to severe acute malnutrition.¹⁴

Feeding Practice

Feeding practices were found to be approximately generally the same among the caregivers that were interviewed. Combining all information collected from the folders and direct questioning, out of 32 cases, less than half of the population of cases practiced timely introduction to water: (n= 13; 43.3%) after three (3) months, (n=13; 43.3%) after six (6) months and (n=4; 13.3%) do not know when exactly they introduced their children to water intake. This finding is consistent with other researches which show that there is a general poor exclusive feeding among mothers or caregivers in Saudi Arabia.^{20,21,22}

In the last 20 year, breastfeeding was the

primary feeding habit for children up to 2 years with an exclusive breastfeeding for 6 months.²³ It was reported that exclusive breastfeeding rate fell lower than recommended by WHO. The duration of breastfeeding dropped from 24 months in 1967 to 12.5 in 1996 as reported by Khoja. Exclusive breastfeeding was also affected, for it dropped from almost 100% in 1967 to 33% in 1998 for children less than 4 months.^{23,24,25} There were (n=1; 3.3%) of the correspondents introduced their children to house-hood food at three (3) months, (n=5; 16.7%) at six months and (n=11; 36.7%) at one (1) year, (n=2; 6.7%_ of them were not yet introduced to the house-hood feed during the study and (n=1; 3.3%) of them do not know exactly when they introduced their children to the house-hood feed.

Most of caregivers feed the children three (3) times a day (n=23; 76.7%), only (n=6; 20%) feed their children more than three and (n=1; 3.3%) feed their children two times a day. Most of the caregivers feed their children by themselves (n= 20; 66.7%) and the remaining percentage does not (n= 10; 33.3%). Out of this percentage half of them do not supervise the feeding (n= 5; 16.7%). There is only (n=1; 3.3%) of the correspondents restrict their children from certain food (cassava-based food) and only (n=2; 6.7%) have difficulty in acquiring food due to accessibility and affordability.

Impact of Caregiver's Background Characteristics

It is expected that the background characteristics of study respondents will influence the feeding practices regarding their children. A chi-square test was performed to establish any association between caregiver's background characteristics and the feeding practices they employ vis-à-vis feeding their children. Table 4 and 5 reveal an association between caregiver's background and caregiver's age and the number of children caregiver has. There is an association between marital status and the first introduction of water to child as a feeding practice (X²: P=0.00 which is P<0.05).

There is no association of all the other social factors: caregiver's age, ethnicity, religion and

occupation and the first introduction of household foods as a feeding practice by caregivers. This may be due to the small sample size and some missing data. Contrary to other findings which show that there is an association between caregiver's ages, ethnicity, religion and occupation to the first introduction to water.¹⁰ Early introduction to water is a marker of poor exclusive breastfeeding. A case control study in rural part of India shows that there is association between exclusive breastfeeding less than 4 months with poor maternal education.²⁵

CONCLUSION

In this study, SAM is seen to be associated with poor education, (n= 7; 43.3%) without any formal education, (n= 4; 23.3%) with a primary education and (n= 16; 13.3%) with a junior level education which account for at least (n= 17; 79.9%) caregivers with poor education. The ethnicity is also seen to be associated; Mandika predominantly affected, no employments constituting a significant percentage of house-help (63.3%). The most affected children are in the age category of 12 months to 24 months which accounted (n= 16; 53.3%). There is also a significant percentage of children from 6 months to 12 month (30%). From this it is seen that child age from 6 months to 24 month (2 years) are at risk accounting a combined percentage of 83.3%. Poor feeding habit like poor exclusive breastfeeding and infrequent feeding. Introduction to water after 3 months has a significant percentage (n= 13; 43.3%) and (n= 23; 76.7%) of the correspondent feed their children three times a day.

RECOMMENDATIONS

Based on the finding from this study, the following below are recommended were consist of maternal education and woman empowerment. Education on feeding habits, exclusive breastfeeding should be encouraged. Women should be taught to breastfeed their children frequently at least every 2 hours not by demand or only when the child cries. They should also

be taught about the importance of complementary feeding. This can be done through campaigns, antenatal visit and post natal visits. All caregivers with their children admitted should be taught thoroughly on nutrition and breastfeed. They should be aware of the causes and risk factors of SAM.

It is observed that 79.9% of all the caregivers who had their children admitted on SAM had no formal education or only a secondary school education and there was no civil servant among the caregivers. Therefore, women education should be encouraged by the government because this will increase their autonomy and self-confidence.

Against the background of findings, the recommendation made can be used for policy making and reviewing of the current health care system and practice. Other studies should be done for longer period and using more cases to really ascertain the risk factors of SAM. There are only few studies done on issues concerning severe acute malnutrition.

LIMITATIONS OF THE STUDY

The study will only focus on the infants and toddlers that have sought medical attention at the Edward Francis Small Teaching Hospital. Those that have not sought medical attention were not be accounted for. The study was limited to the Edward Francis Small Teaching Hospital. Hence, other health institution was be included because of time constrain. There were missed information from the folders which were very important for the research. Finally, the institution chosen and the sample size will limit the generalization of the findings.

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