

Parental Knowledge of Malnutrition as a Cause of Infant and Child Mortality Rate in Torbu Community, Sierra Leone

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Abstract: Malnutrition is a significant public health problem over the world, with severe impact in developing countries, including Asia and Africa. This paper present to assess malnutrition as a cause of infant and child mortality rate in Torbu community in Bo city, Sierra Leone. We used a community-based cross-sectional survey. A total of 80 mothers with children of under five years were selected using convenience sampling from the different divisions of Bo city. The findings showed that 48 (60%) of the respondents have never been sensitized nor have any knowledge about Malnutrition, of which 16 (50%) were informed via radio while 50 (63%) were not aware of any nutrition facility around the community. Besides, 56 (70%) of the respondents did not practice exclusive breastfeeding, 64 (80%) fed their children on only carbohydrates mainly in the form of rice, and 26 (32.5%) had one meal per day. 64 (80%) reported their children to have been admitted due to malnutrition (with mainly protein-energy malnutrition), while over a half 46 (57%) reported having lost a child to malnutrition. Thus, we recommended more nutrition education to address the poor Infant and Young Child Feeding (IYCF) practices as well as targeted health interventions to mitigate the devastating effects of child malnutrition in the district.

Keywords: Parental knowledge, Malnutrition, Child mortality, Bo city.

INTRODUCTION

Child malnutrition remains a significant public health problem in African regions [1]. It is the most common cause of mortality and morbidity in children with nearly 3.1 million child deaths annually [2]. Child malnutrition is a single proximate cause of mortality in many countries [3], accounting for approximately 45% of child deaths globally [4].

A high proportion of malnourished children live in Africa and parts of Asia region. In 2017, UNICEF reported that wasting continued to threaten 50.5 million children under five globally [5]. Worldwide, 149 million children below five years of age were affected with stunted in 2019, of which 50 million were wasted [6,7].

In previous studies, child health and nutrition's status was associated with many factors such as parental education, access to health services, breastfeeding, and income situation of families [8].

According to the earlier published reports, child mortality is determined by a combination of biological, environmental, behavioural, and socioeconomic factors [9]. Nutrient adequacy is most commonly evaluated in terms of child growth and development [10].

Knowledge towards child nutrition and mothers breastfeeding infant within 1 hour of birth and continuing for at least two years is essential for infant survival. Besides, it also provides adequate nutrition for the neonate, safe and age-appropriate solid nutrients, and it reduces overall neonatal mortality and by extension, under-five mortality [10]. Therefore, effective breastfeeding or exclusive formula-feeding are required during the 12 weeks of life [11], where most health interventions are required for children during the first two years of life [12].

Sierra Leone experiences a malnutrition burden among its under-five population. As of 2013, the national prevalence of under-five overweight is 8.8%, which has decreased slightly from 9.4% in 2010. The national prevalence of under-five stunting is 37.8%, which is greater than the developing country average of 25%. Sierra Leone's under-five wasting prevalence of

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9.5% is also higher than the developing country average of 8.9%. In Sierra Leone, 47.2% of infants under six months are exclusively breastfed; this is well above the Western Africa average of 30.8%. The country's 2015 low birth weight prevalence of 14.4% has decreased slightly from 17.2% in 2000 [1].

Despite the general decrease in the prevalence of undernutrition, a considerable number of children below five years still die mainly due to preventable poor IYCF practices in particularly Sierra Leone. The study thus aimed to assess malnutrition as a cause of infant and child mortality rate in Torbu community, Bo City, Sierra Leone.

MATERIALS AND METHODS

Study Design

This was a descriptive cross-sectional community-based study conducted between the periods of August 2015 to December 2015.

Study Area

The study was carried out in Bo district, the second-largest city in Sierra Leone, the largest city in the Southern Province by geographical location (Figure 1). The city is located in Southern Province of Sierra Leone, and It is the second-most populous district in Sierra Leone with an estimated population over 175,000, based on the 2015 national census. Bo district is an urban centre and lies approximately 160 miles east south-east of Freetown and about 44 miles to Kenema.

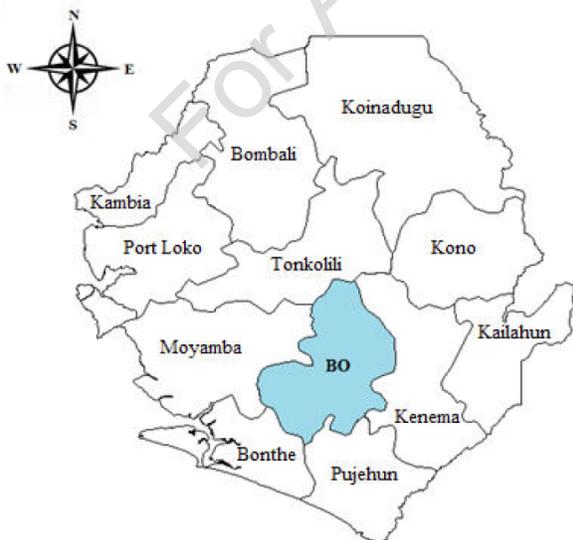


Figure 1: Geographic location of Bo District, Southern Province of Sierra Leone.

Sample Selection and Populations

The study population were selected for Bo city, the most affected area by malnutrition. The total of 80 mothers with children below five years was collected from the household of Torbu community, a slum area in Bo city. Due to the limited resources and critical health status for the region, we used a convenience sampling method to assess malnutrition as a cause of infant and child mortality rate in Torbu community, Bo city, by using structured questionnaire and face to face interview. The questionnaire was first pretested for its validity and relevance.

Statistical Analysis

The collected data were analysed by SPSS (v. 22.0, Chicago, Illinois, USA) and was used to conduct the statistical analyses. Percentage and frequency distribution were calculated for study parameters.

Ethical Approval

A letter of permission was collected from the Department of Environmental Health Sciences Njala University Bo Campus. The local authorities provided permission for collecting the data at the household level. Informed consent was obtained from the parents after explaining the purpose of the study. Confidentiality was assured to all informants, and their anonymity was guaranteed as no nomenclature or identification of the parent or study participant child was collected during the interview.

RESULTS

Demographic Distribution of Respondents

The respondent's age ranged from 13 to ≥ 31 years. The majority of mothers were married 48 (60%), 14 (17.5%) Divorced, 10 (12.5%) were widows, and 8 (10%) were single. Most of the respondents of Temne tribe 38 (47.5%), 24 (30%) were Mende, and few were other tribes. Over half of the respondents, 68 (85%) were Muslims, and only a few 12 (15%) were Christians. Out of these, 62 (77.5%) were illiterate, 9 (11.2%) stopped at the secondary school level, 7 (8.8%) primary level of education and 2 (2.5%) did voluntary tertiary. Majority of the investigated respondents are doing petty trading as their occupation 56 (70%), 18 (22.5%) are doing farming/gardening, 4 (5%) and 2 (2.5%) are teachers and health workers respectively. Most mothers have 5-6 children 38 (47.5%), 20 (25%) have above 6 children,

16 (20%) have 3-4 children and 6 (7.5%) have 1-2 children (Table 1).

Table 1: Demographic distribution of Respondents (N=80)

Study variable		Frequency (%)
Age	13-18	11 (13.8)
	19-24	13 (16.2)
	25-30	20 (25)
	Above 30	36 (45)
Marital Status	Single	8 (10)
	Married	48 (60)
	Divorced	14 (17.5)
	Widow	10 (12.5)
Ethnic Group	Sherbro	4 (5)
	Limba	8 (10)
	Temne	38 (47.5)
	Mende	24 (30)
	Others	6 (7.5)
Religion	Muslim	68 (85)
	Christian	12 (15)
Educational Level	Primary	7 (8.8)
	Secondary	9 (11.2)
	Voluntary/Tertiary	2 (2.5)
	Illiterate	62 (77.5)
Occupation	Petty Trading	56 (70)
	Farming/gardening	18 (22.5)
	Teacher	4 (5)
	Health Worker	2 (2.5)
Number of Children	1-2	6 (7.5)
	3-4	16 (20)
	5-6	38 (47.5)
	Above 6	20 (25)

Knowledge about Malnutrition among Respondents

Out of the 80 mothers, 32 (40%) of them confirmed to have been sensitized on malnutrition and 48 (60%) of them have never been sensitised. Of the 32 (40%) sensitised, 16 (50%) of the respondents were sensitised through the medium of radio, 8 (25%) hospital/clinic, 5 (15.6%) community and 3 (9.4%) in other ways. 30 (37%) of the respondents know of a malnutrition facility, and 50 (63%) of them did not know of any malnutrition facility. Out of the 30 (37%) that know of a malnutrition facility, 12 (40%)

of them said they did weight for height service, 9 (30%) mid-upper arm circumference (MUAC) service, 6 (20%) supplementary feeding service and 3 (10%) of them refer if the case is severe. From those that have adequate knowledge of malnutrition facility 4 (13.3%), of them said they have no proper facility 8 (26.7%), and partially effective 12 (40%). Out of the 30 respondents that know of malnutrition facility, 6 (20%) said the reception is hasty, 9 (30%) is encouraging, and 15 (50%) said the reception is average (Table 2).

Table 2: Knowledge about Malnutrition among Respondents

Variables	Frequency (%)
Have you at any time been sensitised on malnutrition?	
Yes	32 (40)
No	48 (60)
If Yes, means of sensitisation	
Radio	16 (50)
Hospital/Clinic	8 (25)
Community	5 (15.6)
Others	3 (9.4)
Do you know of any facility in your locality where malnutrition issues are dealt with?	
Yes	30 (37)
No	50 (63)
If yes, what are the services carried out there	
They do weight for height	12 (40)
They do mid upper arm circumference (MUAC)	9 (30)
Supplementary feeding	6 (20)
Refer, if malnutrition condition is severe	3 (10)
How do you rate the effectiveness of that facility	
Effective	4 (13.3)
Not effective	8 (26.7)
Partially effective	12 (40)
Others	6 (20)
Reception of staff in that facility	
Hastily	6 (20)
Encouraging	9 (30)
Average	15 (50)

Household Food Security and Practice by Respondents

Based on household heads, 48(60%) of them said their husband/partner is the breadwinner of the house,

24 (30%) are themselves, and 8 (10%) are other people. In terms of food preparation, 64 (80%) of them eat carbohydrates, 8 (10%) eat protein only, 6 (7.5%)

Table 3: Household Food Security and Practices of the Respondents

Variables	Frequency (%)
Who is the breadwinner of the house	
Husband/ partner	48 (60)
Self	24 (30)
Others	8 (10)
What type of food do you normally prepare as meal	
Carbohydrate only	64 (80)
Proteins only	8 (10)
Proteins, Carbohydrate and vitamins	6 (7.5)
Others	2 (2.5)
Number of meals available in the household per day	
Once	26 (32.5)
Twice	24 (30)
Thrice	8 (10)
Irregular	22 (27.5)
What food do you usually give as weaning food	
Rice	64 (80)
Milk	12 (15)
Others	4 (5)
Do you ultimately carry exclusive breastfeeding?	
Yes	24 (30)
No	56 (70)
For how long you breastfeed your children (Month)	
0-6	6 (7.5)
7-12	24 (30)
13-18	18 (22.5)
19-24	22 (27.5)
Above 24	10 (12.5)
Do you normally give egg or meat to your children	
Yes	8 (10)
No	72 (90)
If yes, how often per day	
Irregular	6 (66.7)
Twice	0 (0)
Thrice	2 (33.3)
If no, what's the reason	
Cannot afford	48 (66.7)
Cultural reasons	24 (33.3)

eat protein, carbohydrates, vitamins and 2 (2.5%) eat other foods. More than quarter 26 (32.5%) of mothers had one meal per day, 24 (30%) had two meals per day, 8 (10%) had three meals per day and 22(27.5%) had irregular meal per day.

Majority of mothers 64 (80%) give rice to their children as weaning food, 12 (15%) give milk, and 4(5%) give other food as weaning food. Only 24 (30%) of mothers carry out exclusive breastfeeding, and 56 (70%) did not carry out exclusive breastfeeding. 6 (7.5%) of mothers breastfeed their children between the periods of 0-6 months, 24 (30%) between 7-12 months, 18 (22.5%) between 13-18 months, 22 (27.5%) between 19-24months and 10(12.5%) above 24 months. From food given, 8 (10%) usually give egg/meat to older children and 72 (90%) of them did not provide egg/meat to older children. Of the 8(10%) mothers that usually gave egg/meat to older children, 6 (66.7%) give egg/meat irregularly per day, and 2 (33.3%) give egg/meat thrice per day. Of the 72(90%) respondents that did not usually give egg/meat to older children, 48 (66.7%) said they could not afford to buy it, and 24 (33.3%) is because of cultural reasons (Table 3).

Disease Frequency on Malnutrition

Majority of mothers 64 (80%) said their child has ever been admitted and 16 (20%) said their child has never been admitted as a result of food disorder/ malnutrition. Of the 64 (80%) that their child has been admitted as a result of food disorder/malnutrition, 1 (1.6%) said was obesity, 10 (15.6%) was marasmus, 20 (31.3%) was kwashiorkor, and 33 (51.5%) was due to protein-energy malnutrition. More than half of mothers reported that 46 (57%) of their child had died of food disorder/malnutrition and 34 (43%) said their child had never died of food disorder/malnutrition. Out of 46 (57%) that reported their child/children had died of food disorder/malnutrition, 18 (39.1%) of them said only one child has died, 16 (34.8%) said two children have died, 10 (21.7%) said three children have died, and 2 (4.4%) said above 3 children have died. Of the 46 (57%) respondents that said their child/children had died of food disorder, 3 (6.5%) said they died within 0-6 months, 5 (10.9%) died within 7-12 months, 6 (13%) died within 13-18 months, 12 (26.1%) died within 19-24 months and 20 (43.5%) died above 24 months (Table 4).

DISCUSSION

Most of the respondents were above 30 years, with over half of them were married, and the majority of

ethnicity were the Temne's. Religion was also another attribute that was investigated among respondents in which the majority was Muslims. Most of the mothers were illiterate, and the majority of them embark on petty trading as their occupation showing that it was a market area dominated study.

Table 4: Disease frequency due to Malnutrition

Variables	Frequency (%)
Have any of your children been admitted as result of food disorder / malnutrition	
Yes	64 (80)
No	16 (20)
If yes, indicate the type(s) of food disorder	
Obesity	1 (1.6)
Marasmus	10 (15.6)
Kwashiorkor	20 (31.3)
Protein energy malnutrition	33 (51.5)
Have any of your children died of food disorder / malnutrition?	
Yes	46 (57)
No	34 (43)
If yes, at what age?	
0-6 months	3 (6.5)
7-12 months	5 (10.9)
13-18 months	6 (13)
19-24 months	12 (26.1)
Above 24 months	20 (43.5)
Number of children died from food disorder	
One	18 (39.1)
Two	16 (34.8)
Three	10 (21.7)
Above 3	2 (4.4)

The study assessed the number of children in the household is as high as 5-6 children. The size of the household determines resource allocation including food, as supported by previous studies which have revealed a significant association between the number of children in the family and the children's nutrition status [13,14].

Majority of the mothers did not know nor been sensitised on malnutrition, yet mothers/ caretakers' play a vital role in preventing child malnutrition. This is supported by Amsalu and Tigabu's study, which showed that "underweight was significantly associated with the parent level of education on malnutrition" [15].

Out of those that knew, the most common source of information was radio, which implies the radio could be the most appropriate media for mass nutrition sensitisation.

Most respondents were found not to know about any malnutrition facility. For those that know about the facility, most said they do weight for height service. Reviewing the effectiveness of the facility, the majority said the facility is not effective. Considering the reception of the facility, staffs are at average in terms of reception. This highlights the gaps in nutrition service-delivery that need to be addressed.

Most mothers reported that the father is the breadwinner of the households, yet most of them had ever had one of their malnourished. This is opposite to the Nnyepi *et al.* findings which showed that "children who are raised by guardians (brother, sister, uncle, aunt, or other relative besides the biological mother) had a greater risk of malnutrition than children raised by their biological mothers" [16]. The study noted carbohydrates as the most fed food for children compared to proteins and other foods. This is a bad feeding practice, since children need more of the proteins to support tissue and organ development, as supported by current evidence [13, 17].

Most respondents had an only meal a day and did not give egg/meat to their children, this implying inadequate food access, as most of the households cannot afford nutritious foods. This is mainly due to parents' unemployment which in turn has led to household food insecurity and insufficient access to food. This directly affects nutrient intake, increasing the risk of severe malnutrition among children [17, 18]. The study revealed that majority of mothers did not carry out exclusive breastfeeding and gave rice as weaning food to their children. This as well affects the nutritional adequacy among infants, as exclusive breastfeeding is the only complete food for infants below six months, after which complementary feeding should be initiated [19, 20].

The study found that most of the children had been admitted as a result of food disorder/ malnutrition inadequate nutrition due to poor feeding practices compromises the children's immunity to defend against diseases, as supported by previous studies [21, 22]. Protein-energy malnutrition is the most common nutrition-related complication that children are admitted for. This due to the noted poor feeding practices coupled with other childhood diseases, both rendering

children to severe acute malnutrition [18, 23]. The study also noted high mortality due to malnutrition, and this is in line with UNICEF, which highlights malnutrition as a leading cause of under-five mortality in developing countries [7, 23]. This calls for a target response to address malnutrition and its effects [24, 25] if the UN's Sustainable Development Goal of "Zero hunger" is to be achieved.

The current study had limitations; for example; it used a small sample size which affects the representativeness and reliability of the results. Therefore similar research should be conducted on a large sample of under-five children to detect the effects of some of the factors that could not be assessed by the current study.

The results of this study indicate that child malnutrition in Torbu community, Bo City is multifaceted and requires multi-sectoral, multidisciplinary and multi-level action to alleviate it. This study has discovered that there are basic, underlying and immediate causes that act at various levels of society and which contribute to the occurrence of child malnutrition and mortality in Torbu community, Bo City. There is a need for targeted health and nutrition education as well as sensitisation to address the poor IYCF practices among the mothers in the region. In addition, there is a need to improve the livelihoods of families to improve access to nutritious foods and other health resources. The implication for Public Health is that more research should be undertaken on this topic in Sierra Leone.

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CONFLICT OF INTEREST

None.

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