

Original Article

# Socio-demographic and immunization characteristics of siblings of children with severe acute malnutrition attending paediatric nutrition clinic of Ahmadu Bello University Teaching Hospital, Shika, Zaria

## ABSTRACT

**Introduction:** Severe acute malnutrition (SAM) is a disease of the developing world. Poverty and famine have escalated its prevalence. In Nigeria, the Boko Haram menace has resulted in an upsurge of internally displaced persons in need of food and shelter. It is estimated that about 16 million children are affected by malnutrition worldwide and accounts for two million deaths worldwide annually. Evidence suggests incomplete vaccination predisposes to malnutrition and its unwanted sequelae. Anecdotal findings show that most siblings of children with SAM were incompletely vaccinated and hence are at risk of SAM. The study thus aimed at assessing their socio-demographic characteristics and immunization to document their vulnerability to development of SAM. **Materials and Methods:** This was a cross-sectional study of socio-demographic characteristics and immunization status of siblings of children with SAM being rehabilitated in the Paediatric nutrition clinic of Ahmadu Bello University Teaching Hospital Shika Zaria, between March 2009 and September 2014. The information was directly obtained from the mothers of the children as they presented to the clinic and then recorded into a structured questionnaire. **Results:** The socio-demographic characteristics of 229 parents and immunization status of siblings of children with SAM were reviewed. Most family settings were monogamous (54.2%) and the majority of the fathers were semi-skilled labourers (26.2%). Only 76 (33.2%) of the mothers had some form of formal education while 153 (66.8%) were not formally educated. The majority of the subjects received BCG vaccine but only 56% and 55.5% of the subjects completed their DPT3 and oral polio 3 vaccinations respectively. **Conclusion:** The study showed that fathers of siblings of children with SAM were semi-skilled labourers while their mothers were predominantly stay at home and not formally educated with limited source of income. Furthermore, BCG vaccination was the most commonly received vaccine and it is recommended that concerted effort should be made towards improving vaccine delivery among siblings of children with SAM. Adult literacy and empowerment of mothers may help achieve improved immunization of siblings of children with SAM.

**Keywords:** Immunization, Nigeria, severe acute malnutrition, socio-demography

## INTRODUCTION

Severe acute malnutrition (SAM) is a serious health menace and accounts for up to two million under-five deaths annually worldwide. Globally, It is estimated that about 16 million children are affected<sup>[1,2]</sup> with the highest disease burdens in the African and South-East Asia World Health Organization Regions.<sup>[3]</sup> It has been associated with about 50–60% of under-five mortality in developing countries.<sup>[4,5]</sup> Famine, conflicts/war resulting in human displacements, loss of earnings are often contributory factors. It was estimated that about nine million people needed humanitarian aid in the Horn of Africa region due to

famine.<sup>[6]</sup> In Nigeria the conflict in North-east has resulted in a huge economic, humanitarian and health burden; while

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**Submission:** 6 June 2019 **Revision:** 28 November 2019  
**Acceptance:** 18 December 2019 **Published:** 5 February 2020

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**How to cite this article:** Mado SM, Alegbejo J, Aliyu I. Socio-demographic and immunization characteristics of siblings of children with severe acute malnutrition attending paediatric nutrition clinic of Ahmadu Bello University Teaching Hospital, Shika, Zaria. *Sub-Saharan Afr J Med* 2019;6:129-33.

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<b>Website:</b> <a href="http://www.ssajm.org">www.ssajm.org</a>	<b>Quick Response Code</b> 
<b>DOI:</b> 10.4103/ssajm.ssajm_15_19	

the conflict in the middle belt between farmers/herders has resulted in agricultural crisis, in the “food basket” of Nigeria. The underlined poverty affecting many Nigerians [7] in addition to the conflicts in both North-east, middle belt and recently North-west of the country might have contributed to food scarcity, hunger and overt severe acute malnutrition.

Parental ignorance in contributing to SAM is acknowledged. Their disposition towards childhood immunization also contributes to under-five morbidity and mortality. The relationship between measles and SAM is intertwined. About 3–4% of children with measles may develop SAM because of concomitant severe anorexia and prolonged diarrhoeal diseases which can lead to malnutrition<sup>[8]</sup> while SAM increases the fatality associated with measles because inadequate vitamin A store is a frequent finding in poor nutrition and studies have shown an association between vitamin A deficiency and increased mortality in children with acute measles infection.<sup>[8,9]</sup>

## MATERIALS AND METHODS

This was a cross-sectional study of socio-demographic characteristics and immunization of siblings of children with severe malnutrition being rehabilitated in the Paediatric Nutrition clinic of Ahmadu Bello University Teaching Hospital Shika Zaria, between March 2009 and September 2014. The socio-demographic characteristics of parents included parental education, occupation, religion, ethnicity and fathers’ number of wives. Data on immunization status of the children and number of children delivered by the mothers were also collected. The information was directly obtained from the mothers of the children as they presented to the clinic and then recorded into a structured questionnaire.

**DATA ANALYSIS** Data were entered into statistical software—Statistical Package for Social Sciences version 16 (SPSS Inc, Chicago Illinois USA). Categorical variables were presented as frequencies and percentages.

## RESULTS

The socio-demographic characteristics of 229 fathers of siblings of children with SAM are shown in Table 1 and 124 (54.2%) of the fathers were into monogamous marriage while 45.8% were into polygamy. The numbers of children delivered by the mothers were grouped. The majority

**Table 1: Social characteristics of the fathers of children with severe acute malnutrition**

Number of wives	Frequency	Percent
1	124	54.2
2	76	33.2
3	12	5.2
4	17	7.4
Total	229	100.0

**Table 2: Number of children delivered by the mothers of children with severe acute malnutrition**

Number of children delivered	Frequency	Percent
1-4	146	63.3
5-15	83	36.7
Total	229	100.0

**Table 3: Occupational status of the fathers of children with severe acute malnutrition**

Occupation	Frequency	Percent
Teacher	15	6.6
Security	5	2.2
Businessman	28	12.2
Student/unemployed	5	2.2
Senior public servant	34	14.8
Semi-skilled labourer	60	26.2
Unskilled labourer	79	34.5
Junior public servant	3	1.3

**Table 4: Educational level of mothers of siblings of children with severe acute malnutrition**

Level of education	Frequency	Percent
Tertiary	9	3.9
Secondary	13	5.7
Primary	54	23.6
None	153	66.8
Total	229	100.0

(63.3%) had between 1 and 4 children while the rest (36.7%) had between 5 and 15 children as in Tables 2 and 3.

Most of the fathers were unskilled or semi-skilled labourers while only 2.2% of them had no monthly earnings.

A total of 122 (53.3%) of the mothers were stay at home mothers while 107(46.7%) had some source of income. Majority 197 (86.0%) of parents (mothers/fathers) are predominantly Hausas and Fulani and Muslims. Other tribes included Jaba, Kadara, Kaje, Igala, Idoma, Mada and Yorubas who are predominantly Christians. The educational level of both mothers and fathers are shown in Tables 4 and 5.

**Table 5: Educational level of fathers of siblings of children with severe acute malnutrition**

Level of education	Frequency	Percent
Tertiary	49	21.4
Secondary	60	26.2
Primary	8	3.5
None	112	48.9
Total	229	100.0

Majority of the subjects received BCG vaccine and this was followed by DPT and oral polio 1 respectively. Only 56% and 55.5% of the subjects completed their DPT3 and oral polio 3 vaccinations respectively

## DISCUSSION

The proportion of fathers of siblings of children with SAM engaged in a monogamous marital lifestyle is slightly higher than those practicing polygamy. The possible reason for the slightly higher monogamous marital lifestyle among the fathers may be attributed to the level of education as significant proportion of fathers had either secondary or tertiary education. The practice of monogamous lifestyle was also reported by Otite.<sup>[10]</sup> He documented a gradual trend towards a westernized lifestyle of a nuclear family setting with a reduction in the number of children among Nigerians. The current study showed that most mothers delivered between 1 and 4 children indicating a small family size and the reason for this is not very clear as it could not be attributed to their level of education because about 67% of them were not formally educated. According to the 2006 census in Nigeria, about 72% of household had five persons<sup>[11]</sup> and the number of five persons per household however is similar to that reported in the 1999 and 2003 Nigerian Demographic and Health Survey. Orubuloye<sup>[12]</sup> in his submission attributed some of these demographic changes to the impact of improving maternal education and societal urbanization. Educated mothers are more likely to marry at a later age, and they may also be unwilling to marry into a polygamous setting and more likely to practice family planning and child spacing. The 2008 DHS data shows that poor educational achievement and unemployment rate are huge problems in Nigeria and north-west is the worst hit region<sup>[13]</sup> and may possibly explain why the majority of the fathers in our study were unskilled and semi-skilled. The insurgency of the Boko Haram has further escalated the already depreciating health indices.

About 46.7% of mothers in our study had some source of income and this observation was higher than the 12% reported by Igbedioh<sup>[14]</sup> in his study among women in Benue state, North-central Nigeria.

It is estimated that immunization could save about two million children from vaccine preventable diseases.<sup>[15]</sup> The immunization pattern of the children in this study showed a particular trend which was not different from those in the general population. BCG was the most received vaccine, followed by the first dose of the polio vaccine, then the first dose DPT, while measles was the least. This clearly showed that there were fewer tendencies of caregivers to repeatedly visit the vaccination centres for their children vaccination. This may be attributed to burn-out on the part of the caregivers, possibly due to prolonged waiting time, repeated non availability of vaccines at the centres (missed opportunities), or the practice of restriction of vaccinations by health workers to specific days of the week which may not be favourable to the caregivers. Concerted efforts from donor agencies and government in most developed countries have expanded their immunization coverage to almost 90%<sup>[16]</sup> but the story is different in most developing countries. The level of vaccine effectiveness and acceptance in most developing nations have exhibited a downward trend. In 2004, 80% DPT3 coverage was achieved in Nigeria, however we have witnessed a progressive decline in vaccine coverage falling down to 13–23%.<sup>[17]</sup>

According to the World Health Organization, a child is adjudged to be fully immunized if a dose of BCG, three doses of oral polio vaccine, three doses of penta-valent DPT-Hepatitis B vaccine-Hemophilus influenza type b vaccine; and a dose of measles vaccine have been administered. This should be given in the first year of life during five visits.<sup>[18]</sup> During the year under review, administration of Hepatitis B and Haemophilus influenza type b vaccine was not routine and therefore not analysed in this communication.

In the 2003 National survey the BCG acceptance was only 29.3%; while in 2011 this rose to 45%.<sup>[17]</sup> The BCG acceptance in this study was slightly higher than the EPI policy average of 80%;<sup>[17]</sup> however this figure was lower than the reported 99.55% from Enugu State but higher than 35.23% reported in Kano. Lower BCG acceptance rate of 46% was also reported by Orogade *et al.* from Zaria, Kaduna, Gusau, Abuja and Bida both in Northern Nigeria. This difference may be related to differences in the level of maternal education, and awareness of the usefulness of vaccination. More-so our study and that of Orogade *et al.*<sup>[19]</sup> were hospital based studies.

The national DPT3 coverage stood at 67.73% with south eastern Nigeria having a regional coverage of 91.18% while the lowest of 46.16% was reported in the north-eastern Nigeria;<sup>[17]</sup> however our study recorded 56% acceptance of

DPT3, this was similar to WHO-UNICEF estimate of 54% for Nigeria but lower than the 81% reported by Odusanya *et al.*<sup>[20]</sup> In their submission they attributed the influence of health facilities readily making vaccines available as a contributing factor to the increased acceptance rate.

Nigeria, India, Pakistan and Afghanistan were polio hot zones however immense contribution from Bill and Melinda; and Dangote Foundations have drastically reduced its transmission in Nigeria to the point of eradication. There had been tremendous increase in the oral polio vaccine coverage in Nigeria; this progressively increased from 55% in 1990 up to 73.95% in 2010.<sup>[17]</sup> However south-east Nigeria has a regional coverage of 86% while the north-eastern Nigeria has the lowest coverage of 60.2%. However our study showed that 55.5% of the children had received the third dose of oral polio. Measles has a reciprocal relationship with malnutrition and mortality is heightened in children with malnutrition that contract measles.<sup>[8,9]</sup> The WHO-UNICEF estimate for measles coverage stands at 66% for India, 85% for Ghana while it is 62% for Nigeria;<sup>[19]</sup> our study recorded 44.1% which was lower than the National average and the 74% reported by Odusanya *et al.*,<sup>[20]</sup> but similar to the regional average of 47.15% recorded in the south-southern part of Nigeria but higher than the 16.48% reported in Kano in north-western Nigeria.<sup>[17]</sup>

#### LIMITATION OF THE STUDY

None of the findings among variables were statistically significant possibly being a descriptive study.

#### CONCLUSION/RECOMMENDATION

This study showed that fathers of siblings of children with SAM were semi-skilled labourers while the mothers were predominantly stay at home and not formally educated mothers with limited source of income. Furthermore, BCG was the most commonly received vaccine and less than half of the children received measles vaccine. It is recommended that concerted effort should be made towards improving vaccine delivery. Adult literacy and empowerment of mothers may help achieve improved immunization of siblings of children with SAM. There should be a future study on the outcome of the siblings of children with SAM to assess the impact of nutrition counselling education on the mothers.

#### Acknowledgement

We will like to appreciate all the caregivers who participated in this study.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

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