



Breastfeeding Practices and Associated Factors among Mothers of Children Aged 6-23 Months in Konduga Local Government Area, North East Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author AMA conceived, designed the study and conducted the statistical analysis. Initial draft was done by author AMA and approved by all authors.

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ABSTRACT

Aims: To assess knowledge and practices of breastfeeding as well as identify associated factors among mothers of children aged 6-23 months in Konduga Local Government Area (LGA) in Borno State, Nigeria.

Study Design: A descriptive cross-sectional study was conducted among mothers of children aged 6 to 23 months.

Place and Duration of the Study: The study was conducted in Konduga LGA of Borno State, Nigeria in August, 2018.

Methodology: The study focused on 224 mothers of children aged 6-23 months that have ever assessed the health facility for Micronutrient Powder (MNP) supplementation for their index child. A semi-structured interviewer-administered questionnaire was used to assess socio-demographic characteristics of respondents, knowledge of breastfeeding and their practices of breastfeeding. A point was assigned to correct response to each of the two questions used to assess breastfeeding

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practices, and respondents with two points were categorized as those with effective breastfeeding practice. Data were analyzed using descriptive statistics, Chi-square test and logistics regression, with the level of significance set at 0.05.

Results: A total of 224 respondents were approached for interview and 218 responded, giving a response rate of 97%. Forty-six (21%) of the respondents knew that it is not appropriate to give semi-solid food or water to child that is 4 months old, and 98 (45%) knew that breastfeeding should not be discontinued for a child that is one year of age. Sixty-one (28%) of the respondents practice effective breastfeeding, which was significantly predicted by having formal education (AOR=14.0, 95% CI= 4.0 – 48.6), having a spouse that is educated (AOR=6.0, 95% CI= 2.1- 17.6) and having a male child (AOR=3.2, 95% CI= 1.3 – 8.0).

Conclusions: The study findings suggest that effective breastfeeding practice is low among the study participants particularly among the less educated and those having a female child. Interventions targeted at strengthening Infant and Young Child Feeding counseling in the health facility and community are recommended.

Keywords: Effective breastfeeding; morbidity; mortality; children aged-6-23 months; mothers.

1. INTRODUCTION

Promotion of Exclusive Breastfeeding (EBF) and continued breastfeeding up to 2 years by mothers remains among the most cost effective strategies to reduce child morbidity and mortality in resource limited settings [1]. Previous studies have shown the important roles of breastfeeding to include for growth, immunity and prevention of illness in infants [2,3]. According to previous finding, increasing breastfeeding to optimal levels could reduce all child mortality in developing countries by 13% [3]. In the World Health Organization (WHO) report on Global Health Risks; suboptimal breastfeeding was ranked as the second largest risk factors of death and Disability Adjusted Life Years (DALYs) for children under five years of age [4], and accounted for the loss of 47.5 million DALYs in 2010 [5]. Sub-Saharan Africa including Nigeria is among the countries with the highest proportion of disease burden associated with suboptimal feeding.

For the past years, United Nations Children's Fund (UNICEF) and WHO have promoted effective breast feeding practices that include timely initiation of breastfeeding within the first hour of birth, exclusive breastfeeding to the age of 6 months and continued breastfeeding up to 24 months in addition to appropriate complementary feeding as important strategies to reduce child morbidity and mortality [6]. Different programmes such as the Baby-friendly Hospital Initiative (BFHI), Community Integrated Management of Childhood Illness (C-IMCI) and Infant and Young Child Feeding (IYCF) were implemented to promote these breastfeeding practices [7].

Despite the initiation of BFHI and other programmes that promote breastfeeding practices, a UNICEF 2018 report still revealed that only about two fifths of infants 0-5 months of age worldwide are exclusively breastfed, and slightly more than two-thirds are introduced to solid foods in a timely manner [6]. According to the UNICEF global database 2018, East Asia and pacific have the lowest EBF rate of 22% worldwide, with west and central Africa having a rate of 33% [6]. In Nigeria, while early initiation of breastfeeding after delivery is on the increase at the health facility, sustained practice of EBF once the mothers return home has remained low [8,9]. Previous studies that examined data from several parts of the country have continued to show very low rates of EBF despite good levels of awareness [8,9].

Several factors such as mother's knowledge and attitudes towards exclusive breastfeeding, family pressures, maternal level of education, knowledge, attitude, socio-cultural tradition, maternal age, marital status, family income/social class, place of delivery, and time of initiation of first breastfeeding have been previously cited as influencing the current breastfeeding rate in Nigeria and other Africa countries [10,11]. Most of these studies were done predominantly in North West and South of Nigeria. Evidence on the practice and determinants of good breastfeeding practices is limited in the North Eastern part of the country where the lowest proportion (67.1%) of women who commenced breastfeeding within 24 hour of birth was reported compared to other geopolitical zones [12]. Thus, this study assessed knowledge and practice of effective breastfeeding (that include early initiation of breastfeeding and continuous

breastfeeding up to 2 years) as well as the associated factors among mothers of children aged 6-23 months in Konduga LGA, Borno State, Nigeria.

Findings from this study will further enhance understanding of the practice of effective breastfeeding and associated factors which may be a necessary step to help improve IYCF practices among mothers in order to reduce infant and young child morbidity and mortality. Findings from this study can also be used as a basis for the design and implementation of future breastfeeding promotion programmes.

2. MATERIALS AND METHODS

2.1 Study Area

The study was conducted in Konduga LGA or district, Borno State Northeast Nigeria. Borno state was formed in 1976 with the capital in Maiduguri. Konduga LGA is one of the 27 LGAs of the state located in the Central Senatorial District with an area kilometer of 6,065.89 km² and a population of 233,736 in 2018 that was projected from the 2006 census population [13]. The LGA headquarter is at Konduga town about 25 km to southeast of Maiduguri and an area of 5,855 km². The primary languages are Hausa, Shuwa, Arabic, Kanuri and Wandala/Malgwa.

There are a total of 11 wards in the LGA and 7 were accessible in 2018. Twenty-five (25) government Primary Health Care (PHC) facilities are located in the 11 wards to provide essential PHC services. Among the wards that were accessible, 7 PHC facilities located in four wards conducts IYCF and Micronutrient Powder (MNP) programme. These facilities include, Auno, Jakana, Njimtilo, Pompommari, 1000 housing estate, 777 housing estate and Konduga Mother and Child Health (MCH) facilities. The MNP programme is incorporated into the IYCF guidelines which is used to counsel caregivers at the facility and community with the aid of a counseling card. The caregivers are counsel on IYCF practices by the PHC staff at the facility and provided with MNP for food fortification of children aged 6 to 23 months, while follow-up on usage of the product is done by community volunteer through IYCF Mother Support Group (MSG) meetings conducted in the community.

2.2 Study Design and Participants

A descriptive cross-sectional study design was conducted in the month of August, 2018. The study participants were mothers of children aged 6-23 months residing in the community. This category of mothers was selected because their index child is within the window period of continuous breastfeeding to 24 months [6]. Caregivers who have received MNP earlier were included in the study while those who refused to participate in the study or ill during the study period were excluded. Data were obtained using a semi-structured interviewer-administered questionnaire and piloted in a neighboring LGA before obtaining data in the study sites.

2.3 Sample Size and Sampling Technique

A minimum sample size of 384 participants was estimated to be interviewed using the single proportion sample size formula; where the confidence level of 95%, type 1 error (α) of 0.05, critical value of 1.96 and prevalence of 51% of caregivers that used the recommended sachets of MNP in a study in Benue State, Nigeria by Korenromp et al. [14] were used. Each household represented a sampling unit while the units of enquiry were members of the household who are caregiver of children 6-23 months of age.

Respondents were selected using multistage sampling method. In the first stage, two wards were selected from four wards currently conducting MNP distribution program in Konduga LGA using simple random sampling by balloting. In the second stage, three communities were randomly selected from the wards; two communities from Auno ward and one from Jakana were selected. During the third stage, the numbers of households in each house were counted and houses were numbered in the community to determine the sampling frame. Given that a mother of children aged 6-23 months is to be selected per household and per house to meet up the sample size, a systematic random sampling technique was used to select each house in the community. The first house was selected by simple random sampling from a list of buildings 1 to K and subsequently, every Kth building was selected until the sample size was reached. The K factor was determined from the formula $K = N/n$, where N is the total house in the communities and n is the total house required to meet up the sample size. A household (which represent one or more people living in the same dwelling and also sharing meals or living

accommodation) was selected per house using table of random numbers. In household where there is more than one mother with children 6-23 months of age, a mother was selected by simple random sampling technique by balloting.

2.4 Data Collection and Management

The survey was aimed primarily to assess compliance with continual use of micronutrient powder among caregivers of children aged 6-23 months however; data on breastfeeding practices were also obtained. The questionnaire contained data on socio-demographic characteristics, knowledge of breastfeeding and child feeding practices.

Effective breastfeeding practice was determined using two-item questions, with a point assigned to each of the response that was positive or in line with recommended guideline. Two questions that include; when breastfeeding was initiated and when it was discontinued for the index child were used to determine effective breastfeeding practice as done in previous studies on initiation of breastfeeding among women after childbirth in Baghdad, Iran [15]. Participants with effective breastfeeding practices were those who scored 2 points.

Data were entered using Statistical Package for the Social Science (SPSS) version 20 software, and analyzed with both SPSS and online OpenEpi software. Frequency tables were generated as well as graphs. Independent variables such as age, marital status, education completed by respondents and spouse, occupation, ethnic group, income, age and sex of child and knowledge of breastfeeding were cross-tabulated with the dependent variable, being effective breastfeeding practice. The level of significance was determined to be p-value of less than 0.05. The Chi-square test was used to identify factors influencing respondents' breastfeeding practices. The predictors of effective breastfeeding practices were identified using logistic regression analysis. Variables significant at $p < 0.2$ on the bivariate analysis were included in the logistic regression analysis to estimate the adjusted odds ratio as conducted in previous study [16].

2.5 Ethical Approval

Ethical approval for the study was obtained from the Ethical Review Committee of the Borno State Ministry of Health. Written informed consent was

obtained from the participants before the interview was conducted. Confidentiality of data obtained was ensured by identifying the questionnaires with numbers instead of names, and every data obtained was safely locked and protected from third party.

3. RESULTS

3.1 Socio-Demographic Characteristics of Respondents

A total of 224 respondents were approached for interview and 218 responded giving a response rate of 97%. One hundred and twenty-six (57.8%) of the respondents resided in Jakana community followed by those who lived in Auno community 49 (22.5%) (Table 1). The mean age of respondents was 29.3 ± 8.0 years with 73 (33.5%) between the age of 30-39 years. Majority 191 (87.6%) of the respondents and their spouse 188 (86.2%) have no formal education. The mean age of respondents' index child was 11.8 ± 4.6 months and 139 (59.6%) of the children were males (Table 2).

3.2 Knowledge of Effective Breastfeeding among Respondents

In Table 3, 46 (21.1%) of the respondents knew that it is not appropriate to give food or water to child who is 4 months old, and 98 (45%) knew that breastfeeding should not be stopped for a child who is one year of age.

3.3 Breastfeeding Practices Reported by Respondents

As shown in Table 4, 95 (43.6%) of the respondents recounted that they breastfed their index child immediately after birth, while 130 (59.6%) have stopped breastfeeding their index child (Table 4). The main reasons respondents gave for discontinuing breastfeeding was: breast milk was not forth coming from the breast 105 (80.8%), followed by the feeling that the child can sustain on food 18 (13.8%). In general, 157 (72%) of the respondents practiced effective breastfeeding.

3.4 Factors Influencing Effective Breastfeeding Practice among Respondents

Table 5 shows factors that influenced and predicted effective breastfeeding practice among the respondents. Significantly, higher proportion

(77.8%) of respondents and spouse (60.0%) who have completed a formal level of education practiced effective breastfeeding compared to those with no formal education (respondents =20.9%; spouse=22.9%) ($p < .001$). Higher proportion (40.4%) of respondents who are non-Kanuri by tribe have practiced effective breastfeeding compared to those who are Kanuri (24.6%) ($P = .03$). More respondents (31.3%) whose income were <25000 naira have good breastfeeding practice compared to those (11.1%) whose income were $\geq 25,000$ naira ($p = .01$).

Multivariate logistic regression analysis showed the odds of practicing effective breastfeeding was 14 times more among respondents who have formal level of education compared to those without formal education (AOR=14.0, 95% CI= 4.0 – 48.6), 6 folds more among those whose spouse have formal education compared to those whose spouse did not have formal education (AOR=6.0, 95% CI= 2.1- 17.6), and 3 folds among those whose index child were male compared to those whose index child were female (AOR=3.2, 95% CI= 1.3- 8.0) (Table 6).

4. DISCUSSION

We assessed the knowledge, practice and factors associated with effective breastfeeding in a LGA of Borno State, Nigeria. The results of this study confirm that the likelihood of mothers practicing effective breastfeeding practice is hampered by socio-demographic characteristics and knowledge of breastfeeding [8].

In our study, less than half of the respondents had adequate knowledge of timely initiation of breastfeeding and when breastfeeding should be stopped for a child, which is low compared to reports in Abba city in Saudi Arabia [17] and Calabar, Nigeria [18], and related to previous studies in Kware, Sokoto [10] and Gwale, Kano States [19] northern parts of Nigeria similar to the part of the country where this study was carried out. The variation in sampling technique, sociocultural status of study participants, healthcare delivery systems, and economic status of study participants may have accounted for the differences in findings.

The early initiation of breastfeeding, preferable immediately after birth has been promoted through BFHI that is currently conducted in the study area and across facilities in Nigeria. This study observed that more than half of the

respondents initiated breastfeeding within one hour after birth. This finding is similar to that reported among mothers in Sokoto [10] and Lagos [20] States, and higher than that reported in Kano [19]. The result of this study may be a reflection of better awareness and acceptance of the tenets of the BFHI in the population as previously suggested [21].

Table 1. Socio-demographic characteristics of respondents [N=218]

	Number of respondents	Percentage (%)
Site		
Jakana.	126	57.8
Auno	49	22.5
Pompommari	43	19.7
Age at last birthday (years)		
<20	46	21.1
20-29	65	29.8
30-39	73	33.5
40-49	34	15.6
Education completed		
No formal education	191	87.6
Primary education	27	12.4
Education spouse completed		
No formal education	188	86.2
Primary	22	10.1
Secondary	8	3.7
Religion		
Christian	5	2.3
Islam	213	97.7
Ethnic group		
Kanuri	171	78.4
Fulani	24	11.0
+Others	23	10.6
Occupation		
Housewife	210	96.3
Trading	3	1.4
Farmer	5	2.3
Occupation of spouse		
Farmer	119	54.6
Trading	24	11.0
Driver	13	6.0
No job	42	19.3
*Others	20	9.2
Income		
<25000	182	83.5
25000-50000	29	13.3
50000-100,000	7	3.2

* Mechanic, Teacher; +=Yoruba, Marigi, Hausa

Table 2. Demographic characteristics of respondents' index child [N=218]

	Number of respondents	Percentage (%)
Age of child (months)		
6	28	12.8
7-12	102	46.8
13-23	88	40.4
Sex of index child		
Male	130	59.6
Female	88	40.4

Table 3. Knowledge of effective breastfeeding among respondents [N= 218]

	Number of respondents	Percentage (%)
A child should be given food or water by 4 months old		
Yes	169	77.5
No	46	21.1
Don't know	3	1.4
Breastfeeding should be stopped for a child when he or she is one year old		
Yes	93	42.7
No	98	45.0
Don't know	27	12.3

Table 4. Breastfeeding practices among respondents

	Number of respondents	Percentage (%)
How long after birth was breast milk given to the index child [N=218]		
Immediately	95	43.6
Within one hour	32	14.7
After one hour	51	23.4
After a day	40	18.3
Breastfeeding has been stopped [N=218]		
Yes	130	59.6
No	88	40.0
If yes, why was breastfeeding stopped (N=130)		
Breast milk is not forth coming from the breast	105	80.8
The child can now eat food	18	13.8
I am pregnant	4	3.1
The child is old enough	3	2.3

Breastfeeding has found universal acceptability with all mothers breastfeeding their infants in the study communities however, more than two-third of the respondents have stopped breastfeeding their child. Given that all respondents were mothers of child 6-23 months, this finding is not in line with the WHO and UNICEF recommendations for optimal breastfeeding for up to two years or more [6]. Among the reasons respondents gave for discontinuing breastfeeding, majority reported that breast milk was not forth coming during breastfeeding. This finding is different from that reported in earlier study in Sokoto State Nigeria where the major reason mothers stopped breastfeeding was wrong perception that breast milk is not pure and could harm the infant [10] although, the study areas have varying socio-cultural characteristics which may have resulted to differences in finding.

Among the socio-demographic factors assessed in this study, there were significant associations between formal and non-formal education status of respondents and their spouse, ethnic group, income, age and sex of child with effective breastfeeding practice. However, education status of respondents and spouse, and sex of child predicted effective breastfeeding on the multivariate binary logistic regression analysis after controlling for confounders.

More of respondents who were educated and whose spouse has formal education were more likely to practice effective breastfeeding compared to those who were not educated. This finding is similar with reports of previous studies [22,23]. This finding may be related to the fact that educated mothers are more likely to have better access to and make better use of health information received during formal training or antenatal and postnatal care visitations. This finding may be of value in designing breastfeeding promotion programs particularly in the northern parts of Nigeria.

This study found that male children were effectively breastfed compared to their female counterpart. This finding may be related to preference for male child in some settings or areas where after giving birth to a female child, mothers are more likely to wean the child in order to conceive again to try for a male [24]. This is largely because women in this region have less autonomy than men in household decision making, have fewer rights over owning and inheriting property, and have low participation rates in the labour force [25]. This study finding is

similar to that reported in a previous study in Sokoto State Nigeria [10], and different from that conducted in Ethiopia which found that female children were more likely to be breastfed frequently than the male [26]. The differences in findings may be related to different study areas and cultural circumstance.

Although, household income influenced breastfeeding practices among the respondents but, it did not significantly predict effective breastfeeding. Previous study in Nigeria found a positive correlation between household wealth and EBF practices [10]. According to Agho et al.

2011, mothers from poor households were less likely to practice EBF compare to those from rich households [9]. The finding of this study may be attributed to current economic challenges in north east part of Nigeria that is mostly caused by insurgency, where mothers may be forced to find other means of survival due to displacement from homes therefore resulting to shorter duration of breastfeeding. For instance, in the Family Health International (FHI360) study in 2018, 33% of mothers with children aged 0- 23 months in three Internally Displaced Person (IDP) camp in Borno State practiced EBF [27].

Table 5. Bivariate factors influencing breastfeeding practice among respondents

Variables	Breastfeeding practices		Total	Chi-square	P-Value
	Effective n(%)	Not effective n(%)			
Age in years					
<30	30 (27.0)	81 (73.0)	111	0.1	0.749
≥30	31 (29.0)	76 (71.0)	107		
Marital status					
Currently married	60 (29.3)	145 (70.7)	205	2.8	0.093
Not currently married	1 (7.7)	12 (92.3)	13		
Education completed					
Formal education	21 (77.8)	6 (22.2)	27	37.9	<0.001
No formal education	40 (20.9)	151 (79.1)	191		
Education spouse completed					
Formal education	18 (60.0)	12 (40.0)	30	17.7	<0.001
No formal education	43(22.9)	145 (77.1)	188		
Occupation					
Working	4 (50.0)	4 (50.0)	8	2.0	0.158
Not working	57 (27.1)	153 (72.9)	210		
Ethnic group					
Other tribes	19 (40.4)	28 (59.6)	47	4.6	0.032
Kanuri	42 (24.6)	129 (75.4)	171		
Income (naira)					
<25,000	57 (31.3)	125 (68.7)	182	6.1	0.014
≥25,000	4 (11.1)	32 (88.9)	36		
Age of child					
>12 months	35 (39.8)	53 (60.2)	88	10.2	0.001
≤ 12 months	26 (20.0)	104 (80.0)	130		
Sex of child					
Male	50 (38.5)	80 (61.5)	130	17.6	<0.001
Female	11 (12.5)	77 (87.5)	88		
A child is given food or water by 4 months old					
Yes	44 (26.0)	125 (74.0)	169	1.4	0.235
No	17 (34.7)	32 (65.3)	49		
Breastfeeding should be stopped for a child when he or she is one year old					
Yes	14 (15.1)	79 (84.9)	93	13.5	<0.001
No	47 (37.6)	78 (62.4)	125		

Table 6. Multivariate factors influencing breastfeeding practice among respondents

Variables	Adjusted odds ratio	Lower and upper 95% CI	p-Value
Marital status			
Currently married	5.4	0.6- 51.2	0.140
Not currently married	1		
Education completed			
Formal education	14.0	3.8 - 45.3	<0.001
No formal education (Ref)	1		
Education spouse completed			
Formal education	6.0	2.1- 17.6	<0.001
No formal education (Ref)	1		
Occupation			
Working	3.3	0.6- 16.7	0.150
Not working (Ref)	1		
Ethnic group			
Other tribes	1.7	0.6 – 5.0	0.342
Kanuri (Ref)	1		
Income (naira)			
<25,000	2.9	0.8- 11.4	0.121
≥25,000 (Ref)	1		
Age of child			
>12 months	1.2	0.5- 2.8	0.726
≤ 12 months (Ref)	1		
Sex of child			
Male	3.2	1.3- 8.0	0.012
Female (Ref)	1		
Breastfeeding should be stopped for a child when he or she is one year old			
Yes	2.1	0.9 – 5.2	0.100
No (Ref)	1		

Ref: Reference Category

Asides socio-demographic characteristics of respondents that influenced effective breastfeeding, this study also found that respondents with adequate knowledge of when breastfeeding should be stopped for a child practiced breastfeeding more effectively compared to those with inadequate knowledge. This finding confirmed the result of previous study that showed that the understanding of the importance of breastfeeding helped mothers adhere to EBF practice [28].

The study was mainly a cross-sectional study design hence, study participants may present with recall bias, but this effect was minimized by restricting questions on index child within 6-23 months to the study period. Furthermore, the sample size estimated was not reached due to intensified civil unrest or insurgency in the study area however, more than half of the study participants were reached and interviewed.

5. CONCLUSION

The findings of this study have clearly indicated that effective breastfeeding practice was very low among caregivers of children aged 6-23 months in Borno State, and this was predicted by lack of formal education among respondents and spouse, and having a female child. Given that the study was conducted in a Local Government Area of the state, it could be difficult to make generalization to other parts. Hence, more LGAs should be included in future studies in order to make generalization for the whole state.

Given the low rate of effective breastfeeding practice, IYCF information delivered by health service providers and community volunteers (CV) at the community should be strengthened. Interventions should focus on encouraging more women of reproductive age and spouse to attend the IYCF counseling sessions at the health

facility and community. Also, women and their partners may need special interventions designed particularly with the less-educated in mind.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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