

Original Research Article

## Determinants of Exclusive Breastfeeding Continuity among Mothers of Infants Under Six Months in Plateau State, Nigeria

Itse Jacdonmi<sup>1</sup>, Muhamad.S.Suhainizam<sup>1</sup>, Ismail. B. Suriani<sup>1</sup>, Ayuba. I. Zoakah<sup>2</sup>, Gbubemi. R. Jacdonmi<sup>3</sup>

<sup>1</sup>Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra, Malaysia.

<sup>2</sup>Department of community Medicine, University of Jos.

<sup>3</sup>School of Medicine and Public Health, International University, Bamenda, Cameroon.

Corresponding Author: Itse Jacdonmi

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### ABSTRACT

**Introduction:** Exclusive breastfeeding practice is of public health significance as it improves child health and growth. This study was aimed at determining factors associated with exclusive breastfeeding practices among mothers of infants under six months.

**Materials and Methods:** This was a cross-sectional study. 310 mother-infant pairs were selected from three primary health care facilities in Jos North LGA. A validated questionnaire was administered to mothers. Main outcome measures were factors associated with exclusive breastfeeding practice.

**Results:** 39.7 % practiced exclusive breastfeeding. Determinants of exclusive breastfeeding identified included mother's ethnicity, level of education, marital status, and religion. Others included the time at which breastfeeding was initiated after birth, colostrum feeding and time at which counseling was received by mothers.

**Conclusion:** Exclusive breastfeeding rates are still low and so interventional studies and programs are necessary and should be targeted at mothers of infants under six to increase exclusive breastfeeding prevalence.

**Keywords:** Exclusive breastfeeding, Infants, Determinants, Nigeria.

### INTRODUCTION

Optimal growth and development is best achieved when babies are breastfed exclusively in the first six months of their lives. Breast milk has been agreed upon by experts to provide all that a baby would need for the first 6 months, with no drinks (water) or feeds needed during this period. [1]

EBF is where babies receives only breast milk from mothers or wet nurse or the breast milk expressed, no other extra food or drink. The definition of EBF is "an infant's consumption of human milk with no supplementation of any type (no water, no juice, no non-human milk, and no foods)

except for vitamins, minerals and medications." [2] It has been recommended by national and international guidelines that infants be exclusively breastfed for six months. [3] Breastfeeding can be continued with appropriate complementary foods for 2 years or more.

EBF causes stimulation of babies' immune systems and can protect them from acute respiratory infections and diarrhea, [4,5] these are the two major causes of child mortality especially in developing countries. Also, EBF improves responses to vaccination of infants. [6] Substitutes of breast milk carry risks of infections fatal to infants, particularly in places of unhygienic

conditions. Even with this, only a little more than 1/3 of all children are exclusively breastfed in developing countries for the first six months of life. [7]

Despite the introduction of the Baby Friendly Hospital Initiative (BFHI) in Nigeria in the year 1992, exclusive breastfeeding rates have consistently remained low in Nigeria. From 13 % in 2008 [8] to 17 % in 2013. [9] This study was aimed at identifying the determinants of exclusive breastfeeding the study location.

## MATERIALS AND METHODS

### Setting

This research was carried out in Jos North Local Government, Plateau State in three health care facilities, Tudun Wada PHC, township PHC and Plateau state specialist Hospital's PHC.

### Study design and data collection

This was a cross-sectional study design aimed at determining factors associated with exclusive breastfeeding practice among mothers. A total 310 mothers were selected. A validated structured close ended questionnaire was administered to the study respondents. The study instrument consisted of questions related to mother's socio-demographic characteristics, early infant feeding practices as well as questions related to weaning practices. Inclusion criteria included; biological mother of infant, only mothers of infants under six months, mothers of infants registered at the health facilities or present at the time of data collection and mothers who give consent to participate in the study.

### Statistical Analysis

Statistical Package for Social Sciences (SPSS version 22) was used to analyze all data. Descriptive statistics included frequencies of all variables were obtained. Inferential statistics were also employed to determine associations between variables.

### Ethical consideration

Ethical approval was obtained from the Department of Human Research Ethics committee of the University Putra Malaysia

before conducting the research. Also, ethical approval was obtained from the ethics committee for research from the Jos North Primary Health Care.

## RESULTS

As shown in Table 1, all mothers in this study were in their reproductive age. Majority of mothers, 96(31.0) were from the Hausa ethnic group, 41(13.2). Almost half, 151 (48.9) of the respondents had secondary education, 69 (1.9) had tertiary education, followed by 59 (19.0) who had primary education and 31 (10.0) had no form of formal education. A majority of mothers were married 281 (90.6). More than half, 200 (64.5) were gainfully employed. Majority of mothers, 155 (50.5) were business women with various forms of businesses. The two main religions were Christianity and Islam. Majority of mothers 184 (59.4) had two to four number of children.

**Table 1: Socio demographic characteristics of mothers(n= 310)**

	Frequency n (%)	
<b>Mothers age:</b>		
Less than 25 years	67(21.6)	Mean age ± SD 28.25 ± 4.7680 (years) Minimum age: 18 years Maximum age: 40 years
25-35 years	213(68.7)	
Above 35 years	30(9.7)	
<b>Ethnicity:</b>		
Hausa	96(31.0)	
Igbo	41(13.2)	
Yoruba	18(5.8)	
Anaguta	13(4.2)	
Berom	31(10.0)	
Irigwe	18(5.8)	
Ngas	20(6.5)	
Others	73(23.5)	
<b>Mothers level of education:</b>		
None	31(10.0)	
Primary	59(19.0)	
Secondary	151(48.7)	
Tertiary	69(22.3)	
<b>Marital status:</b>		
Married	281(90.6)	
Single	23(7.4)	
Divorced	6(1.9)	
<b>Mothers occupation:</b>		
Housewife	109(35.5)	
Business	155(50.5)	
Civil servant	43(14.0)	
<b>Religion:</b>		
Christianity	212(68.4)	
Islam	98(31.6)	
<b>Number of children:</b>		
1 child	76(24.5)	Mean ± SD (number of children) 2.81± 1.635 Minimum: 1 Maximum: 7
2-4 children	184(59.4)	
5 and above children	50(16.1)	

**Table 2: Distribution of mothers with respect to early initiation of breastfeeding**

Parameters	Frequency n (%)
<b>Time after delivery at which mother initiated breastfeeding</b>	
Within 1 hour	107(34.5)
>1hour	203(65.5)
<b>Colostrum feeding</b>	
Yes	244(93.2)
No	21(6.8)
<b>Counselling on breastfeeding</b>	
Yes	282(91.0)
No	28(9.0)
<b>Time of counselling</b>	
Before delivery	248(86.1)
After delivery	40(13.9)

Majority of infants, 202 (65.4) were breastfed by their mothers one hour after delivery while only 107 (34.6) were breastfed within the first one hour after delivery. Almost all infants 244 (93.2) were fed colostrum, the first milk after delivery, where only 21 (6.8) were not given colostrum. A large proportion of mothers 282 (91.0), had prior information and counselling on breastfeeding and its importance and only 28 (9.0) had no form of counselling and information on breastfeeding. With regards to the time of counseling on breastfeeding, majority of the mothers 248 (86.1) received counselling before delivery, mostly at antenatal visits

and 40 (13.9) received counselling after delivery.

As shown in table 3, there were no infants who didn't receive breast milk, categorized as non-breastfeeding. Among infants who were 1 month of age, 14 (63.6) were exclusively breastfed and 8 (36.4) who were partially breastfed. Among infants 2 months of age, 40 (54.1) were breastfed exclusively and 34 (45.9) were breastfed partially. Among children 3 months of age, 34 (41.0) were exclusively breastfed and 49 (59.0) were partially breastfed. Among infants 4 months of age, 23 (40.4) were exclusively breastfed and 34 (59.6) were partially breastfed. Among infants 5 months of age, 8 (22.2) were exclusively breastfed and 28 (77.8) were partially breastfed. And finally, among infants 6 months of age, 4 (10.5) were breastfed exclusively and 34 (89.5) were breastfed partially.

The rates of EBF were seen to increase from 63.6 % in the first one month of birth but significantly decreased to 10.5 % in six months. However, the rates of partial breastfeeding (PBF) were found to be increasing across months as higher number of infants partially breastfed were recorded (36.4 % to 89.5 % at six months).

**Table 3: Distribution of infants based on breastfeeding pattern (exclusive breastfeeding, partial breastfeeding and non-breastfeeding)**

Age in months	Frequency n (%)					
	1	2	3	4	5	6
<b>Exclusive breastfeeding</b>	14(63.6)	40(54.1)	34(41.0)	23(40.4)	8(22.2)	4(10.5)
<b>Partial breastfeeding</b>	8(36.4)	34(45.9)	49(59.0)	34(59.6)	28(77.8)	34(89.5)
<b>Non breastfeeding</b>	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)

Association between mother's socio-demographic characteristics and breastfeeding pattern.

Table 4 shows the association between mother's socio-demographic characteristics and breastfeeding pattern. Chi square analysis was carried out to determine association between mother demographic characteristics and breastfeeding pattern. There was no statistically significant relationship between mother's age and breastfeeding pattern categorized into EBF and non-EBF. Mothers who were 35 years above had higher rates of EBF (40.0 %) ( $X^2 = 2.536$ ,

$df = 2$ ,  $p$ -value = 0.274). Mothers from the Ngas ethnic group had higher EBF rates (70.0 %) compared to other ethnic groups.

There was a statistically significant association between ethnicity and breastfeeding pattern ( $X^2 = 33.765$ ,  $df = 7$ ,  $p$ -value = <0.001). Mothers with tertiary form of education (46.4 %) had higher EBF rates compared to those with no form of education (32.2 %). There was a statistically significant association between mothers level of education and breastfeeding pattern ( $X^2 = 10.097$ ,  $df = 3$ ,  $p$ -value = 0.018).

Married mothers had higher rates of EBF (42.3 %) compared to single mothers

(13.0 %). There was a statistically significant association between marital status and breastfeeding pattern ( $X^2=10.282$ ,  $df=2$ ,  $p\text{-value}=0.006$ ). Majority of mothers were employed and had highest EBF rates (41.0 %). However there was no statistically significant association between form of employment and breastfeeding pattern. ( $X^2=0.412$ ,  $df=1$ ,  $p\text{-value}=0.521$ ). Mothers who worked in offices had higher breastfeeding rates (51.2 %) but there was also no statistically significant association between mother's occupation and

breastfeeding pattern ( $X^2=2.552$ ,  $df=2$ ,  $p\text{-value}=0.279$ ). Mothers who had given birth to 2-4 children had higher EBF rates (42.9 %). There was no statistically significant association between mother's number of children and breastfeeding pattern ( $X^2=2.302$ ,  $df=2$ ,  $p\text{-value}=0.316$ ). Christian mothers were found to have higher EBF rates (46.7 %) compared to mothers who were Muslims (24.5 %). There was a statistically significant association between mothers religion and breastfeeding pattern. ( $X^2=13.810$ ,  $df=1$ ,  $p\text{-value}<0.001$ ).

**Table 4: Association between mother's socio demographic characteristics and breastfeeding pattern**

Factors	Exclusive breastfeeding				
	Yes	No	$X^2$	df	p-value
	N=123 N (%)	N=187 N (%)			
<b>Mothers Age</b>			2.536	2	0.274
<25 years	21(31.3)	46(68.7)			
25- 35 years	90(42.3)	123(57.7)			
>35 years	12(40.0)	18(60.0)			
<b>Ethnicity</b>			33.765	7	<0.001*
Hausa	22(22.9)	74(77.1)			
Igbo	14(34.1)	27(65.9)			
Yoruba	7(38.9)	11(61.1)			
Anaguta	3(23.1)	10(76.9)			
Berom	11(35.5)	20(64.5)			
Irigwe	9(50.0)	9(50.0)			
Ngas	14(70.0)	6(30.0)			
Others	43(58.9)	30(41.1)			
<b>Mothers Level of Education</b>			10.097	3	0.018*
None	10(32.3)	21(67.7)			
Primary	14(23.7)	45(76.3)			
Secondary	67(44.4)	84(55.6)			
Tertiary	32(46.4)	37(53.6)			
<b>Marital Status</b>			10.282	2	0.006*
Married	119(42.3)	162(57.7)			
Single	3(13.0)	20(87.0)			
Divorced	1(16.7)	5(83.3)			
<b>Occupation</b>			2.552	2	0.279
House wife	41(37.6)	68(62.4)			
Business	60(38.7)	95(61.3)			
Civil servant	22(51.2)	21(48.8)			
<b>Number of children</b>			2.302	2	0.316
1 child	28(36.8)	48(63.2)			
2-4 children	79(42.9)	105(57.1)			
5-7 children	16(32.0)	34(68.0)			
<b>Religion</b>			13.810	1	<0.001*
Christianity	99(46.7)	113(53.3)			
Islam	24(24.5)	74(75.5)			

\*significance level ( $p \leq 0.05$ )

### Association between mothers early feeding practice-related characteristics and breastfeeding pattern

Table 5 shows the association between mothers early feeding practices-related characteristics and breastfeeding pattern. Mothers who initiated breastfeeding within the first hour of delivery had higher

EBF rates (63.6 %) than those who initiated breastfeeding after the first hour of delivery (27.2 %). There was a statistically significant association between time after delivery at which mother's initiated breastfeeding and breastfeeding pattern ( $X^2=38.517$ ,  $df=1$ ,  $p\text{-value}<0.001$ ). Mothers who fed their babies with

colostrum after birth had higher EBF rates (41.2 %) than those who did not (19.0 %). There was a statistically significant

association between colostrum feeding and breastfeeding pattern ( $X^2= 4.005$ ,  $df= 1$ ,  $p$ -value= 0.045).

**Table 5: Association between early initiation of breastfeeding and other characteristics and breastfeeding pattern**

Factors	Exclusive breastfeeding			$X^2$	df	p-value
	Yes n (%)	No n (%)				
<b>Time after delivery at which mother initiated breastfeeding</b>				38.517	1	<0.001*
Within 1 hour	68(63.6)	39(36.4)				
>1hour	55(27.2)	147(72.8)				
<b>Colostrum feeding</b>				4.005	1	0.045*
Yes	119(41.2)	170(58.8)				
No	4(19.0)	17(81.0)				
<b>Counselling on breastfeeding</b>				0.002	1	0.965
yes	112(39.7)	170(60.3)				
No	11(39.3)	17(60.7)				
<b>Time of counselling</b>				10.582	1	0.001*
Before delivery	111(44.8)	137(55.2)				
After delivery	7(17.5)	33(82.5)				

P-value was calculated using chi square test, \*significance level ( $p \leq 0.05$ )

There was no statistically significant association between those who received counselling and information on breastfeeding and those who did not ( $X^2= 0.002$ ,  $df= 1$ ,  $p$ -value= 0.965). However, mothers who had received counselling messages on breastfeeding had a higher rate of EBF (39.7 %) than those who had not (39.3 %). The time of receipt of counselling showed that there was a statistically significant association between the time of counselling and breastfeeding pattern ( $X^2= 10.582$ ,  $df= 1$ ,  $p$ -value= 0.001). Mothers who had received one form of counselling or the other on breastfeeding before delivery had higher rates of EBF (44.8 %) compared to their counterparts who received counselling only after delivery (17.5 %)

## DISCUSSION

Only 39.7 % of mothers practiced exclusive breastfeeding, while a higher percentage, 60.3 % practiced non-EBF. EBF rate found in this study when compared to global EBF rates was lower than Eastern and southern Africa and also South Asia with EBF rates 47 % and 45 % respectively. [10] A study in Kilimanjaro recorded 29 % of infants 0-6 months exclusively breastfed. [11] A study in Nigeria according to [12] reported only 31 % of infants in the North eastern part of the country were exclusively breastfed, and 37.3 % for EBF rates in the South eastern part of Nigeria. Another study

by [13] in Kaduna revealed that 54.3 % of infants were exclusive breastfed.

Ethnicity was significantly associated with breastfeeding patterns. The decision to exclusively breastfeed is highly influenced by diverse ethnic and cultural factors. A possibly reason for lower rates of EBF amongst the Hausa ethnic group may be due to unacceptability of mothers breastfeeding publicly as baring breast may be seen as a sex symbol. [14,15] Also traditions and cultures in relation to infant feeding have been shown to be promoted by community members as breastfeeding in African is still strongly considered a part of the traditional culture. [16]

There was a significant association between mother's level of education and breastfeeding pattern. This finding is corroborated by other studies. [17,18] Mothers who had secondary and tertiary levels of education were seen to have higher rates of EBF than their counterparts with primary and no form of education. This shows that mothers with these levels of education were more likely to exclusively breastfeed. This could be due to reasons such as understanding and adhering to principles and counselling on EBF during antenatal care visits.

Mothers with tertiary education had higher EBF rates (46.4 %). This is consistent with other studies. [17,19-21,18] More educated mothers are known to be



more exposed as well as have access to journals and documents to successfully breastfeed either from the internet, media or hospitals amongst other as they have better health seeking behaviors. [22] Another reason may be due to the fact that educated mothers tend to be more receptive towards new technologies and health initiatives unlike less educated mothers who are most likely to cling to their traditions. [20] Higher maternal education also enhances mother's appreciation of breastfeeding initiation and sustenance. [23]

A study reported that mothers with at least primary school education were more likely to exclusively breastfeed in contrast to mothers with no formal education. [24] This then indicates the importance of maternal education on mother's choices on infant development and nutrition. Primary school education is known to be the basic threshold required to benefit any health information. Studies in Tanzania and also in Nigeria corroborate this study's findings. It was reported that lower maternal education had a significant association with non-EBF. [25-29] Previous studies in Nigeria have also shown that mothers with no education have limited knowledge and negative attitudes towards EBF practice. [30,29]

There was a significant association between mother's marital status and breastfeeding pattern. This finding is consistent with other findings [31] with reported married mothers living with their husbands to be more likely to exclusively breastfeed their infants. In contradistinction, studies by [32] reported mother's marital status to be non-significantly associated with breastfeeding patterns. Mothers who were married had significantly higher EBF rates than mothers who were single or divorced. This was consistent with studies by [33,21] So many reason can suggest higher rates of EBF amongst married mothers. They include social support from their husbands and relatives unlike single mothers who have no support from husbands. Another reason may be due to the fact that single mothers prefer to remain in

vogue and for perception of their breast sagging or falling they wouldn't sustain breastfeeding for so long a time. Some single mothers do not want to be tied the whole day to their babies, they may want time to visit friends and do other activities.

Studies have shown that some single mothers find EBF a social limiting factor. [34] Another reason may be due to the fact that married women have financial supports from their husbands which consequently influence adequate maternal nutrition that directly supports breast milk production unlike single mothers who have to fend for themselves. Moreover, most married women are older in age and tend have more experience and higher levels of education.

There was a significant association between mothers religion and breastfeeding pattern. Majority of mothers who practiced EBF were Christians (46.7 %). This could be due to the geographic location where the study took place. Plateau State is majorly comprised of Christians. For Christians, there is no specific instruction for breastfeeding in the Holy Bible. Also, the La Leche League founded by the Christian catholic mothers have promoted and supported EBF.

There was a significant association between the time at which breastfeeding was initiated and mothers breastfeeding pattern ( $P < 0.05$ ). Majority of mothers (63.6 %) who initiated breastfeeding within the first one hour after birth were found to practice EBF. Early initiation of breastfeeding may be likely due to increase in health education on colostrum feeding which has been reported to have anti-infective properties as it contains IgA antibodies protective against many infections. [35] Several reasons are related for late initiation of breastfeeding. They included mother's cultural and traditional beliefs, delayed lactation as well as mother's religion. [32]

Colostrum feeding was significantly associated with breastfeeding patterns. Mothers who practiced EBF had higher rates of colostrum feeding. This may be

attributed to higher knowledge on the physiology of lactation, composition of breast milk and its accrued benefits by the mothers as well as risks of not breastfeeding. [36]

Time of counselling was significantly associated with breastfeeding pattern. Mothers who received some form of counselling on breastfeeding had higher rates of EBF. Mothers who received counselling before delivery also had higher rates of EBF. This most likely be due to better education on benefits of EBF for 6 months, better orientation on how to actualize this, adequate education on best nutritional practices for mothers postpartum to support their choice to exclusively breastfeed. Another reason may include a planned decision to exclusively breastfeed before delivery by mothers owing to awareness of health and economic benefits of EBF made available during health visits.

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