

## **Patterns and Predictors of Exclusive Breastfeeding Among Mothers in Ile Ife, Nigeria**

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### **ABSTRACT**

**Background:** Exclusive Breast Feeding (EBF) is a cost effective intervention in saving under-five children's lives in the resource poor settings. However, EBF rates have been shown to be low in these regions with variation in the duration of EBF.

**Objective:** The aim of this study was to assess pattern and predictors of EBF among mothers attending well infant clinic at Obafemi Awolowo University Teaching Hospital Complex (OAUTHC) Ile Ife.

**Materials and Methods:** It was a cross-sectional study carried out between October and December 2014. A total of 250 eligible mothers were selected by simple random sampling among women attending well infant clinic OAUTHC, Ile Ife. A semi-structured self-administered questionnaire was used.

**Results:** The prevalence of EBF in this study was 23%. The pattern of EBF seen was in the duration of EBF. About 60% gave breast milk alone to their children only in the first month of life. Only 23% was breastfed exclusively for four to five months, while 5% breastfed exclusively for at least six months. About 40% practiced mixed feeding right from the first day of life. The predictors of EBF identified include; ANC attendance, a birth interval greater than or equal to 2 years, husband's positive attitude, giving breast milk as the first feed in life, and vaginal delivery.

**Conclusion:** The practice of EBF within 4 to 6 months of life is still very low. Strategies that target improving access to quality ANC, and emphasize husbands' roles in encouraging EBF should be giving priority.

**Keywords:** Pattern, predictors, exclusive breastfeeding.

**E**xclusive breastfeeding (EBF) has been defined as the situation where the infant has received only breast milk from his/her mother or expressed breastmilk and no other liquids or solids with the exception of drops or syrups

consisting of vitamins, minerals, supplements or medicine<sup>1</sup>. The quality as well as the quantity of EBF in terms of energy, protein; nutrients, and water is adequate. EBF has been considered as a cost effective and simple intervention to improve child health and survival. When practiced effectively, EBF has been estimated to avert 13% - 15% of under-five mortality and contribute to reducing mother to child transmission of HIV<sup>2</sup>. The specified duration for EBF is four months to 6 months. This was based on accumulated evidence from previous research<sup>1-2</sup>.

An estimated 1.3 million lives are lost each year due to poor implementation EBF

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policies<sup>3</sup>. One-third of malnutrition is caused by improper infant and young child feeding<sup>2-4</sup>. Mix fed or non-breastfed infants had been shown to have higher rates of acute respiratory infections, poorer neurodevelopmental outcomes and physical growth compared to their exclusively breastfed counterparts. In areas where prevalence is high, especially sub-Saharan African, exclusive breastfeeding has greater benefit than mix feeding for the prevention of mother to child transmission (MTCT) of HIV<sup>5-8</sup>.

Globally, the prevalence of exclusive breastfeeding is 39% which is lower than the recommended World Health Organization (WHO) rate of 90%<sup>9,10</sup>. It is even lower in the low income countries where the rate is 36%<sup>11,12</sup>.

The mortality rate of infant and children younger than 5 years in Nigeria are high (infant mortality rate is 69 per 1000 live births and death rate of children younger than 5 years is 128 per 1000 live births respectively) but the prevalence of exclusive breastfeeding among infant in the first 6month of life is 17%<sup>13</sup>. The pattern of exclusive breastfeeding varies in different parts of the world. Several studies on breastfeeding have shown that a high proportion of infants in developing countries are exclusively breastfed for very short periods<sup>14-17</sup>.

Predictors of exclusive breastfeeding also vary between and within countries. Maternal age; employment status of the mother; higher education; knowledge of good breastfeeding practices; positive attitude towards exclusive breastfeeding; intent to exclusively breastfeed before delivery; partner living with nursing mothers; mode of delivery; birth weight of infants; and community beliefs have been shown to influence exclusive breastfeeding patterns in different areas<sup>18</sup>. This present study was conducted to establish the current trend in patterns of

exclusive breastfeeding in Ile-Ife and identify predictors of exclusive breastfeeding among nursing mothers attending health care facilities. These findings will provide information that can serve as advocacy tools for intervention.

#### **MATERIALS AND METHODS:**

The study employed a descriptive cross-sectional design and targeted population were nursing mothers attending well infant clinic of Obafemi Awolowo University Teaching Hospital Complex (OAUTHC) Eleyele Ile Ife. The study was carried out over a 3-months period between October and December 2014.

Those included in the study were mother-infant pairs aged 6 to 12 months while the refusal of nursing mothers to participate in the study and a mother whose child is in distress or who needs urgent care were the exclusion criteria.

Simple random sampling technique was employed to recruits the study participants while sample size was determined using Fisher's formular<sup>21</sup>. This gave a total of 250 subjects. A pre-tested semi-structured interviewer-administered questionnaire was used to collect the data. Verbal consent was obtained from all mothers who participated in the study. The questionnaire has various sections focussing on socio-demographic characteristics, family characteristics, antenatal and perinatal factors, attitudes and beliefs about breastfeeding, babies' characteristics.

#### **Data analysis:**

Data were analyzed using, Statistical Package for Social Science (SPSS) version 20. Univariate analysis was carried out to determine the socio-demographic distribution of study participants through the use of frequency tables and percentages. The appropriate bivariate analysis was carried out to determine the relevant association. Relevant multivariate

technique e.g. binary logistic regression was used to identify personal, family, perinatal and social variables that may predict exclusive breastfeeding.

#### **Ethical consideration:**

Ethical clearance was obtained from the Research and Ethics committee of OAUTHC prior to the commencement of the study. Participation in the study was completely voluntary and the respondents were assured of confidentiality. Verbal consent was taken from the mothers.

#### **RESULTS:**

The mean age of respondent was 29.7 years, Standard Deviation of 5.0. About 74.4% were Christians and 25.6% were Muslims. The majority of the respondents are Yorubas. About 47.6% had the tertiary education while 1.2% had no formal education. Among the respondents, 87.6% were employed while 12.4% were unemployed. The majority were married while others were single as at the time of interview. About 80.8% are currently working and 19.2% are not working. The mean number of children per respondent was 2 as shown in Table 1.

Mean Husband's age was 36 years ( $\pm 7.2$ ). About 80% of their husbands did not support exclusive breastfeeding. The majority of respondents (84%) are from monogamous setting. Most of the partners of the respondents (96.8%) were employed.

Out of 250 respondents, twenty-three percent gave breast milk (BM) only, 57% gave breast milk and water, 16% gave breast milk and infant formula (BM&IF) while 4% gave breast milk and concussion (BM & C).

#### *Antenatal and Perinatal factors:*

Of the respondents 87.6% of respondent had antenatal care while others did not. About 40.4% was given breast milk within an hour of delivery. Sixty percent of the mother gave breast milk as the 1<sup>st</sup> thing in

Table 1: Socio-demographic Characteristics of mothers attending the infant welfare clinic of the OAUTHC, ILE-IFE

Variables	Frequency	Percentage
Age of mothers (yrs)		
20 – 29yrs	129	51.6
30 – 39yrs	113	45.2
40 – 49yrs	3	3.2
Total	250	100
Religion		
Christian	186	74.4
Muslim	64	25.6
Total	250	100
Ethnicity		
Yoruba	212	84.8
Igbo	27	10.8
Hausa	6	2.4
Others	5	2.0
Total	250	100
Level of Education		
NonFormal	3	1.2
Primary	14	5.6
Secondary	114	45.6
Tertiary	119	47.6
Total	250	100
Occupation of Mothers		
Self employed	154	61.6
Private sector	28	11.2
Governmental	37	14.8
Unemployed	31	12.4
Total	250	100
Marital Status		
Single	7	2.8
Married	237	94.8
Divorced	3	1.2
Separated	3	1.2
Total	250	100
Currently working mothers		
Yes	202	80.8
No	48	19.2
Total	250	100

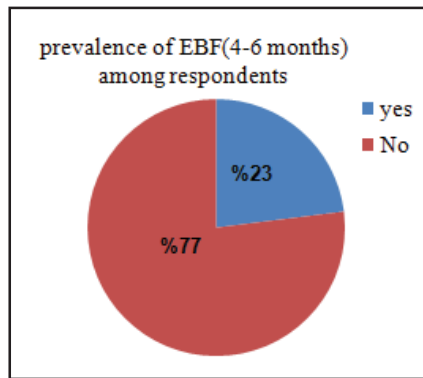


Fig 1: Prevalence of EBF (4-6 months) among respondents

Table 2: Family Characteristics of respondents

Variable	Frequency	Percent
Family setting		
Monogamous	210	84
Polygamous	40	16
Total	250	100
Husband occupation		
Civil servants	80	32
Self employed	137	54.8
Private employees	25	10
Unemployed	8	3.2
Total	250	100
Husband support for EBF		
Support	42	16.8
Does not support	200	80
Indifferent	8	3.2
Total	250	100

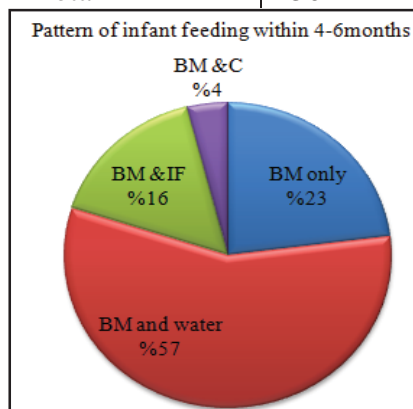


Figure 2: Pattern of infant feeding within 4-6 months.

Table 3: Antenatal and Intrapartum characteristics of the respondents

Variable	Frequency	Percent
ANC attendance in pregnancy		
Yes	218	87.6
No	32	12.4
Total	250	100.0
Discussion of EBF by health workers		
Yes	220	88
No	30	12
Total	250	100
Where baby was delivered		
Hospital	208	83.2
Mission home and home	42	16.8
Total	250	100
Breastfeeding of baby immediately after delivery		
Yes	150	60
No	100	40
Total	250	100
What child was given before breastfeeding		
Glucose water	55	55.0
Infant formula	40	40.0
Others	5	5.0
Total	100	100
Time interval between delivery and breastfeeding		
Within 1 hr	101	40.4
1hr – one day	102	40.8
Greater than 2days	47	18.8

Table 4: Pattern of Exclusive breastfeeding among respondents

Pattern of EBF	Percentages
0 to 1 month	60.0
2 to 3months	32.0
4 to 5 months	23.0
6 months	5.0

Table 5: Association between exclusive breastfeeding (4-6months) and selected socio-demographic variables

Variables	Exclusive breastfeeding			Statistical remark
	Yes	No	Total	
Religion	Freq %	Freq %	Freq %	Chi-square= 5.07
Christianity	149(80.1)	37(19.9)	186(100)	df=1
Islam	41(66.1)	21(33.9)	62(100)	p=0.024
Ethnicity				Fisher's exact 20.55.
Yoruba	168(80)	42(20)	210(100)	p=0.001
Igbo	17(63.3)	10(37)	27(100)	
Hausa	0(0)	6(100)	6(100)	
Others	5(100)	0(0)	5(100)	
Occupation				Chi-square 7.55
Self employed	116(75.8)	37(24.2)	153(100)	df=3
Private sector	16(59.3)	11(40.7)	27(100)	p=0.05
Government worker	31(83.3)	6(16.2)	37(100)	
Unemployment	27(87.1)	4(12.9)	31(100)	
Working status				Chi-square=2.104
Yes	151(74.8)	51(25.2)	202(100)	df=1
No	39(84.8)	7(15.2)	46(100)	
Marital status				Fisher's exact= 9.548
Single	7(100)	0(0)	7(100)	p=0.012
Married	180(76.6)	55(23.4)	235(100)	
Divorced	0(0)	3(100)	3(100)	
Separated	3(100)	0(0)	3(100)	

Table 6: Association between exclusive breastfeeding (EBF) and family characteristics

Variables	Exclusive breastfeeding			Statistical Remark
	Yes	No	Total	
Husband's attitude	Freq. (%)	Freq. (%)	Freq. (%)	Fisher's=25.14
Completely support	165(83.3%)	33(16.7%)	198(100%)	p=0.000
Does not support	25(50.0%)	25(50.0%)	50(100%)	
Family setting				Chisquare= 55.90
Monogamous	164(78.1%)	46(21.9%)	210(100%)	df=1, p= 0.002
Polygamous	26(68.4%)	12(31.6%)	38(100%)	
Feasibility of EBF				Chisquare=68.87
Yes	178(86.8%)	27(13.3%)	205(100%)	df=1, p=0.000
No	12(27.9%)	31(72.1%)	43(100%)	
Child accessibility				Chisquare=11.24
Yes	148(80.9%)	35(19.1%)	183(100%)	df=1, p=0.001
No	31(58.5%)	22(41.5%)	53(100%)	
Expressed breastmilk harmful?				Chisquare=10.60
Yes	80(67.2%)	39(32.8%)	119(100%)	df=1, p=0.001
No	107(84.9%)	19(15.9%)	126(100%)	

Table 7: Logistic Regression Predictors of Exclusive Breastfeeding (EBF)

Variables	Odds ratio	95% C.I	P-value
Religion			
Christianity	1.0		
Islam	0.5	0.3-0.9	0.03
Husbands attitude to breastfeeding			
Support exclusive breastfeeding	1.0		
Partially support	0.2	0.1 – 0.4	0.001
Does not support	0.2	0.1 – 0.5	0.001
indifference	0.6	0.1 – 3.1	0.542
Breastfeeding discussed at ANC			
Yes	1.0		
No	0.3	0.1 – 0.7	0.004
Breast milk was the 1 <sup>st</sup> thing given to child			
Yes	1.0		
No	0.1	0.1 – 0.2	0.001
Family setting			
Monogamous	1.0		
Polygamous	0.4	0.3-0.9	0.044
If respondent received antenatal care			
Yes	1.0		
No	3.0	2.6-3.4	0.006
Mode of delivery			
Spontaneous vaginal delivery	1.0		
Assisted vaginal delivery	0.3	0.1-0.8	0.033
Caesarian section			
Neonatal admission			
No	1.0		
Yes	0.5	1.3-5.7	0.006
Birth interval			
<2years	0.7	0.5-0.9	0.005
2years and above	1.0		
Child accessible			
Yes	1.0	0.1-0.9	0.040
No	0.4		
Feasibility of exclusive breastfeeding			
Yes	1.0	0.1-0.2	0.001
No	0.1		
Breastfeeding on demand			
Yes	1.0		
No	0.4	1.2-11.8	0.027

life to the babies; others gave glucose in water, herbal concoction and infant formula. Most respondents commence breastfeeding within the first day of delivery.

As shown in table 4 about 60% of the respondents gave only breast milk to their babies within the first month of life while only 5% breastfed their babies exclusively for at least 6 months,

Of the 192 respondents who could not practice exclusive breastfeeding, the following were the barriers identified for not practicing exclusive breastfeeding.

Yoruba ethnicity, Christianity as a religion, and being married had significant positive influence on exclusive breastfeeding on chi-square analysis.

*Family characteristics:*

Husband's attitude, the feasibility of exclusive breastfeeding, family setting, child accessibility and the belief that express breast milk is not harmful had statistically significant positive influence on exclusive breastfeeding as shown in table 6 above.

From Table 7 above, the likelihood of practising exclusive breastfeeding reduced by 85% if the respondent's husband did not support breastfeeding compared to those whose husbands support exclusive breastfeeding. If breastfeeding was not discussed by health workers in the last pregnancy, the odds of practising exclusive breastfeeding was reduced by 69% (OR = 0.31 (C.I) 0.14 – 0.68,  $p < 0.05$ ). The likelihood of practising exclusive breastfeeding decreased by 75% (OR = 0.25 (C.I) 0.13 – 0.46,  $p < 0.001$ ) if the respondent breastfed the child immediately after delivery compared to those who did not. Odds of practising exclusive breastfeeding decreased by 90% (OR = 0.10 (C.I) 0.05 – 0.20,  $p < 0.001$ ) if breast milk was not the first thing given to a child by the respondents. The likelihood of practising EBF reduced

by 63% if respondents are from polygamous family compared with their counterpart from monogamous family setting. There is 70% reduction in the likelihood of practising exclusive breastfeeding if respondents had caesarean section compared to the other respondent who had the vaginal delivery. There is 51% reduction in the likelihood of practising EBF if a baby had neonatal admission or care. Odds of practising EBF decreased by 30% if the birth interval is less than 2 years. The likelihood of practising EBF decreased by 63% if the child is not easily accessible to the mother. Respondents that believe EBF is feasible are 92% likely to practise EBF compared to their other counterpart that believes EBF is not feasible. Odds of practising EBF decreased by 64% if mothers do not breastfeed on demand.

**DISCUSSION:**

The result of this study showed that only 23% of respondents breastfeed exclusively within 4 to 6 months of life. This was slightly higher than the national value in the National Demographic Health Survey (NDHS) 2013 (i.e 17%)<sup>13</sup> but lower than the 90% prevalence of EBF recommended by WHO<sup>2</sup> and that of other West African Sub-regions<sup>1</sup>. The higher prevalence compared to that of the national value might be due to the fact that mothers attending well infant clinic are more likely to have been taught the importance of EBF and encouraged to practice it. Nigeria has been named among the poorest EBF rates in Africa by The Saving Newborn Lives program<sup>25</sup>. Increasing community awareness about the benefits of early and exclusive breastfeeding and addressing harmful practices, such as discarding colostrum that may prevent optimal infant feeding are parts of the efforts that has been put in place to help mothers in Nigeria<sup>25</sup>.

The pattern of EBF in this study was 61% at one month, 32% at 3 months, and 23% up to 6 months. This declining trends in EBF prevalence have been shown in previous studies in other parts of Africa<sup>1,12</sup>. The introduction of pre-lacteal feed is discouraged because it limits the frequency of suckling and exposes the infant to risks of infections<sup>26,27</sup>. About 40% of the mothers gave pre-lacteal feeds (mainly glucose water) to their infants. The rate of pre-lacteal feeding was low compared to the national report of 59%<sup>13</sup>.

The barriers to EBF identified in this study were insufficient breast milk production (52%), breast milk refusal by the infant (24%), lactational failure (12%), and babies is not satisfied (12%). All these were similar to barriers identified by Oyedjeiet *al* in a study carried out in Osun state on Barrier to EBF<sup>28</sup>.

In this study 80% of Yorubas exclusively breastfed their babies compared to the other ethnic groups. This ethnic difference is in agreement with findings of a study carried out in Netherlands among ethnic minorities the native Dutch breastfed their babies exclusively (98.6%) compared to the Mediterranean (89.1%)<sup>29</sup>. This was said to be due to specific cultural context. In this study this might be due to the fact that the study population was made up of mainly Yoruba women. Of the married women 76.6% exclusively breastfed their babies and only 4% of the single women did.

From this study there was 51% reduction in the likelihood of respondents practicing exclusive breastfeeding if babies had neonatal care or admission. There was also 69% reduction in the likelihood of respondents practicing exclusive breast feeding if they had caesarian section compared to their counterparts that had spontaneous vaginal delivery. This was similar to findings of a study carried out in Canada on Prevalence and Predictors of

exclusive breast feeding<sup>19</sup>. Giving pre-lacteal feeds before initiation of breastfeeding can prevent mothers from exclusive breast feeding. This was similar to findings of a study carried out in Tanzania on prevalence and predictors of exclusive breastfeeding<sup>18</sup>. Initiating lactation and commencement of breast feeding within the 1st hour of birth by health care providers even in mothers that had caesarian section or had their neonate admitted improved the practice of exclusive breastfeeding among these categories of women.

In this study breast milk as the first thing the neonate tasted in life was one of the predictors of exclusive breast feeding (CI=0.05-0.20). This was similar to findings of a study on Predictors of EBF among mothers in Urban teaching hospital outpatient New Delhi India which showed that breast milk as first feed was a strong predictor of exclusive breast feeding<sup>30</sup>.

In this study current employment status and sex of a child were not significantly associated with EBF. This agreed with findings of a study carried out on determinants of Exclusive breastfeeding practices in Ethiopia<sup>31</sup>.

This study found that husband's supportive attitude towards EBF was a strong predictor of exclusive breast feeding. Single mothers had significantly lower prevalence of EBF for six months compared to cohabiting or married women. It may be that single mothers lack social support to continue practicing EBF as they have to earn for the family. Reports from Canada, Norway and Uganda showed that mothers living with their partners were more likely to exclusively breastfeed their infants for six months<sup>19,32,33</sup>.

Other predictors of EBF in this study include antenatal attendance, breast milk as the first thing given to child in life, child accessibility, neonatal care or admission, importance of breast feeding



discussed during ANC care, family setting (CI=0.138-0.97) and mode of delivery. The study had the following limitations. Recall bias could have affected the results. We studied mothers with infants aged 6-12 months and asked feeding practices of the infants when they were less than six months. Mothers might not remember the exact time when weaning started as the information collected was based on the mother's report of breastfeeding history. Estimating EBF with a cross-sectional study using recall since birth may be difficult and inaccurate; a cohort study would have given reliable estimates as mothers with infants would be followed after delivery and their records of breastfeeding practices could be recorded prospectively. The cross-sectional approach adopted for this study limits its ability to draw inferential causalities from the predictor variables and the practice of exclusive breastfeeding in the country.

### CONCLUSIONS:

The study concluded that the practice of exclusive breastfeeding among Nigerian women is still very low compared to the recommended target by the World Health Organization (WHO). The result from this study can constitute basis for designing intervention targeting policy makers and health professionals in order to breach the gap between the current practice of EBF and WHO recommendation. Single mothers should constitute a focus for intervention programmes. The various reasons for not practicing EBF and common misconception about EBF can be corrected through breastfeeding propagation programmes, important remedial messages on television, radio and during visits to health care centre. The role of men as the family decision makers should not be ignored in this context.

**Competing Interests:** The authors declare that they have no competing interests.

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