Original Article

Practice and Determinants of Exclusive Breastfeeding: A Cross-Sectional Study in Ondo, South-Western Nigeria

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ABSTRACT

Exclusive breastfeeding (EBF) offers enormous benefits for both babies and mothers, but it is often not practiced in most developing countries. This study evaluated breastfeeding practices, and determined the sociodemographic characteristics that influenced EBF among mothers attending infant welfare clinic (IWC) in University of Medical Sciences Teaching Hospital (UNIMEDTH), Ondo Nigeria. This study adopted a cross-sectional study design with structured questionnaires to collect data from 170 mothers with children aged 0–18months. Mothers attending IWC from January 2025 to June 2025 were selected through simple random sampling. Breastfeeding practices in the last 24hours prior to this study were assessed based on the definition by the World Health Organization. Sociodemographic characteristics, level of knowledge and practices of EBF were obtained from eligible mothers. There was a universal awareness and high level of knowledge of EBF among mothers, but the level of practice low (28.2%, n=48/170). Mothers aged <25years [aOR4.54; 95% (CI) 0.63, 1.83], aged 26-30 years [aOR4.01; 95%CI 0.76, 2.01], who had tertiary education [aOR5.56; 95%CI 0.84, 2.56], who are civil servants [aOR4.54; 95%CI 0.43, 1.23], and who had spontaneous vagina delivery [aOR6.51; 95%CI 2.13, 3.0] were more likely to breastfeed their infants exclusively. EBF and timely complementary feeding practices are suboptimal. Age, educational status, occupation, and mode of delivery of mothers strongly predicted maternal practice of EBF. Interventions emphasizing on practical education should therefore be targeted at addressing these factors.

Keywords: Continuous breastfeeding, Determinant, Exclusive breastfeeding, Knowledge, Practice, Sociodemographic, Timely complementary feeding

INTRODUCTION

Adequate and optimal breastfeeding practice contributes tremendously to long term health status of children[1,2,3]. Exclusive breastfeeding (EBF) is apparently low in many countries; globally, only about 40% of infants less than 6 months of age are exclusively breastfed[4,5,6]. Commencing breastfeeding in the first hour of delivery, adhering to EBF for the first six (6) months of life, and continued breastfeeding alongside appropriate complementary feeds for up to two (2) years or beyond are recommended as the best infant feeding plans for optimal growth and development[7,8,12]. Globally, less than half of the 70% of neonates fed with breastmilk commenced breastfeeding in the first hour of life, and late commencement still remains a challenge in most developing countries[13,14]. Interestingly, the trend of EBF among infants less than six (6) months

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in developing nations has increased from 53% in 2018 to 64% in 2023[14,15]. The 2018 Demographic Health Survey in Nigeria reported an EBF rate of 68% at 6 months, which is far lower than the optimal EBF rate of 90% in infants less than 6 months set by the WHO/UNICEF for developing countries[15,16]. Among factors known to influence knowledge and determinants of breastfeeding practices in both developing and developed countries are sociodemographic factors[17]. A related study by Vieria *et al* concluded mothers with eight years or less of formal education were at 34% higher risk of stopping EBF[19]. Mothers who had adequate antenatal clinic visits adhere more to EBF compared to mothers who abstained completely or were not regular on antenatal clinic visits[16]. Despite huge benefits of EBF to both mothers and infants, yet the levels of practice particularly in developing countries including Nigeria is still suboptimal[19,20]. Hence, understanding the existing level of knowledge and the factors that enhances breastfeeding practices is important in designing appropriate interventions. This study therefore aimed at determining knowledge and practice, and evaluating the sociodemographic factors associated with EBF among mothers attending IWC at UNIMEDTH, Ondo.

MATERIALS AND METHODS

Study design and setting

This was a cross-sectional study carried out at the IWC, UNIMEDTH. The study location is one of the twenty-five tertiary health institutions in Nigeria that started the Federal Government breastfeeding advocacy program[21]. The program aimed at scaling up breastfeeding practices, addressing the environmental and socio-economic implications of suboptimal infant nutrition, and strengthening child health support systems[21]. The IWC, UNIMEDTH also provides guidance on breastfeeding, formula feeds, nutrition, hygiene, sleep, safety, and address parenting concerns.

Sampling

The study involved mothers attending IWC, UNIMEDTH. Mothers aged 15–47years and were breastfeeding at the time of study and/or had previously practised breastfeeding, with infants and young children aged 0–18months were included in the study.The sample size was calculated using the formulae adopted by Kaas and Buhrman (2010) based on the presumed parameters: prevalence of mothers who were reported to be practicing appropriate infant feeding was estimated as 52%, the population of infants and young children aged 0–18months in Ondo town is 14,000[21,22]. The level of precision (the effect size and the acceptable sampling margin of error) was 5% (0.05), while the level of confidence was 95% [11]. The Z value of 95% confidence interval was 1.96[11].

The sample size was estimated to be 170. The 170 mothers were selected by simple random sampling technique from a list of 452 mothers who were registered for infant welfare services during the study period. The numbers were first assigned to the names of mothers written in the register. It was then written on pieces of papers and folded into multiple tiny balls to ensure it is concealed. The paper balls were mixed together thoroughly, and the 170 participants were randomly selected. Fifteen mothers picked for the study were not available for the data collection, and were replaced by mothers who followed them immediately in the register.

Data collection

Five research assistants were recruited and given practical training. A structured questionnaire was then administered to each of the study participants from January 2025 to June 2025. Mothers selected had a copy of structured questionnaire given to them as they took their turn to attend the clinic. The questionnaire captured data on sociodemographic characteristics, maternal knowledge of breastfeeding, and maternal practice of breastfeeding. Mothers were asked if they had in the past 24hours breastfed in order to provide information on current breastfeeding knowledge and practice. Mothers were asked to recall how soon after birth their babies were given breast-milk, and whether they were fed with the first breast milk to gather information on early initiation of breastfeeding and colostrum. Information on mothers' current knowledge and infant feeding practices (exclusive breastfeeding, complementary feeding, and continuous breastfeeding) were obtained by asking all foods or liquids given to the

infant in the last 24 hours before filling the questionnaires. The questionnaires also included information on sociodemographic characteristics, type and mode of delivery, age and gender of baby, and whether the pregnancy was planned or not. The information on these questionnaires was formulated from literature reviewed on breastfeeding and was pretested at Ore town, a town of similar settings to Ondo City, in the South-western state of Nigeria.

Data analysis

Data collected were entered and analyzed using SPSS for Windows 10.0 graph pad prism (version 8.1). Using the student t-test, differences in mean within variables were determined. Descriptive statistics was done. Univariate logistic regression analysis was also carried out to find the association between independent variables (sociodemographic characteristics, maternal knowledge and practice of breastfeeding) and dependent variable (exclusive breastfeeding). Multiple regression analysis was also done for variables that were significantly associated at univariate logistic analysis, and adjusted odd ratios (aOR) were calculated. After univariate logistic regression, variables that were significant at p< 5% (0.05) were included in the multiple regression model.

The World Health Organization (WHO) indicators for assessing infant feeding practices were used to assess breastfeeding practices in this study. They are defined as thus;

Early initiation of breastfeeding	Proportion of children born in the last 24 months who were put to the breast within one (1) hour of birth
Exclusive Breastfeeding under 6 months	the proportion of infants 0-5 months of age who were exclusively breastfed in the last 24 hours
Continuous breastfeeding at 1 year	Proportion of children 12-15 months of age who are fed breast milk in the last 24 hours
Timely complementary feeding	Proportion of infants 6-8 months of age who were breastfeeding and receiving solid, semi-solid or soft foods

RESULTS

Sociodemographic characteristics of study mothers (n = 170)

Table 1 present the sociodemographic characteristics, knowledge and practice of breastfeeding by the respondents (n=170). Thirty-three percent (33%; n=56) were aged 26-30years, with a mean age of 30.3±0.52 years, and about 58.8%; n=100 are married. About 51.8%; n=88 practice Islam, while the remaining 48.2%; n=82 are Christians. Most of the respondents (55.3%; n=94) attained tertiary level of education, and also about 62%; n=106 of their spouse. Most of the respondents (51.8%; n=88) were traders, and their spouse civil servants (36.7%, n=64). A high proportion of the mothers (81.1%; n=138) had within 1-2children. Approximately 35%; n=60 of all the mothers delivered at general hospital, and the proportion of normal/vaginal deliveries was (56.6%; n=86). Most (64.7%; n=110) of these mothers planned the pregnancies, and they were mostly males (50.6%; n=86), aged between 0-5months (58.8%; n=100).

Most were aware of EBF, and 82.4%; n=140 of them correctly indicated that EBF entails feeding an infant with only breast milk. A high proportion (40%; n=68) started breastfeeding 1-2hours postpartum; most claimed they were too tired immediate postpartum (23.5%; n=40). Most mothers (61.2%, n=104) received information on breastfeeding during pregnancy/delivery. They claimed the information influenced their breastfeeding practice (37.6%, n=64). Most mothers that didn't receive information about breastfeeding during pregnancy and delivery would have liked to receive information about positioning of their babies during breastfeeding (12.9%; n= 22). About 55.3%; n=94 received help, mostly by nurse/midwife, to start breastfeeding their babies. A higher proportion (54.7%; n=93) claimed breastfeeding helped reduce infection, diarrhea, and upper respiratory tract infection in their babies. The challenge most (41.2%; n=70) faced was inability to secrete breast milk, while others (37.6%; n=64) complained of inability to sleep. Most mothers chosed to breastfeed because it is cheaper (40.0%; n=68), and it helped their babies grow (51.8%; n=88).

Practice of EBF remained low among mothers (28.2%; n=48). Most (40.0%; n=68) initiate breastfeeding 1-2hours after delivery. Most mothers (62.4%; n=106) had relations with them after delivery, and this influenced their breastfeeding practice (84.7%; n=144). About 42%; n=72 breastfed 6-8 times per day, and each feed lasted less than 30minutes in about 50%; n=85 of them. Most

mothers didn't breastfeed at night (61.2%; n=104). Higher proportion of mothers intended to breastfeed for only three months (41.2%; n=70). Most mothers intended to breastfeed in a total of 6-12months (45.9%; n= 78), while very few mothers (5.9%; n= 10) intended to breastfeed for as long as 2years and beyond. About 62%; n=106 didn't give colostrums because it wasn't available for baby. Most mothers gave their babies other things alongside breast milk in the first 6 months; water (37.6%; n= 64), and herbal concoction (30.6%; n= 52). Some claimed their babies were crying too much (51.8%; n=88), while others claimed it was due to pressure from relatives (21.2%; n=36).

Table 2 presents the univariate and multiple logistic regressions of sociodemographic factors associated with EBF. In the multiple logistic regression analysis using variables that were significant at $p < 0.05$ at the univariate analysis, mothers' age, level of education, occupation, and mode of delivery were independently associated with EBF. Mothers aged <25years (aOR4.54; 95%CI 0.63, 1.83), 26–30 (aOR4.01; 95%CI 0.76, 2.01), with tertiary education (aOR5.5; 95%CI 0.84, 2.56), and civil servants (aOR4.54; 95%CI 0.43, 1.23) were more likely to exclusively breastfeed their infants. Mothers that had spontaneous vagina delivery (aOR6.51; 95%CI 2.13, 3.0) were also more likely to breastfeed their babies exclusively compared to those that had surgical operations or instrumental delivery.

Table 1: Socio-demographic characteristics, Knowledge and Practice of breastfeeding by the respondents (N=170)

Variables	Frequency	Percent
Age of mother		
<25 years	46	27.1
26-30 years	56	32.9
31-35 years	28	16.5
36-40 years	18	10.6
> 41 years	22	12.9
Mean±S.E.M =30.3±0.52		
Marital status		
Single	46	27.1
Married	100	58.8
Divorced	18	10.6
Separated	6	3.5
Religion		
Christianity	82	48.2
Islam	88	51.8
Mothers level of education		
Secondary education	76	44.7
Tertiary education	94	55.3
Fathers level of education		
Secondary education	64	37.6
Tertiary education	106	62.4
Mother's occupation		
Trading	88	51.8
Artisan	2	1.2
Civil servant	60	35.3
Student	2	1.2
Housewife	12	7.1
Private sector	6	3.5
Father's occupation		
Trading	58	34.1
Artisan	10	5.9
Civil servant	64	37.6
Driver	18	10.6
Private sector	16	9.4
Public servant	4	2.4
Parity		
1-2 children	138	81.1
3-4 children	6	3.6
No response	26	15.3

Place of delivery		
General hospital	60	35.3
Health center	50	29.4
Mother and Child Hospital	46	27.1
Traditional birth attendants	4	2.4
Mission homes	10	5.9
Mode of delivery		
SVD	86	50.6
EMCS	46	27.1
ELCS	26	15.3
Forceps	12	7.1
Planned pregnancy		
Yes	110	64.7
No	60	35.3
Gender of baby		
Male	86	50.6
Female	84	49.4
Age of baby		
0-5 months	100	58.8
6-10 months	66	38.8
> 11 months	4	2.4
Ever heard of exclusive breastfeeding	170	100.0
When did you start breastfeeding		
<30mins	38	22.4
1-2hrs	68	40.0
>2hrs	22	12.9
2nd day	42	24.7
Reasons for the time frame		
Too tired	40	23.5
Wanted to bath	36	21.2
Illness in mother	26	15.3
Illness in baby	30	17.6
Baby not brought to me	18	10.6

Table 2: Socioeconomic factors associated with exclusive breastfeeding among mothers (N=48)

Variables	OR [95% CI] (Unadjusted)	P - value (Unadjusted)	OR [95% CI] (Adjusted*)	P - value (Adjusted)
Age of mother				
• <25 years	5.14*(1.94 – 3.14)	0.004	4.54*(0.63-1.83)	0.02
• 26 - 30 years	4.33*(1.13-1.56)	0.003	4.01*(0.76-2.01)	0.002
• 31 – 35 years	1.0		1.0	
• 36 – 40 years	1.0		1.0	
• >41 years	1.0		1.0	
Marital status				
• Single	1.0		1.0	
• Married	1.0		1.0	
• Divorced	1.0		1.0	
• Separated	1.0		1.0	
Religion				
• Cristianity	1.0		1.0	
• Islam	1.0		1.0	
Mother's level of education				
• Secondary education	1.0		1.0	
• Tertiary education	6.31*(1.07-1.60)	0.01	5.56*(0.84-2.56)	0.02

Father's level of education				
• Secondary education	1.0		1.0	
• Tertiary education	1.0		1.0	
Mother's occupation				
• Trading	7.11*(0.13 - 8.32)	0.03	6.9 (0.87 - 6.73)	0.34
• Artisan	1.0		1.0	
• Civil servant	4.76*(0.65 - 0.90)	0.02	4.54*(0.43-1.23)	0.01
• Student	1.0		1.0	
• Housewife	1.0		1.0	
• Private sector	1.0		1.0	
Father's occupation				
• Trading	1.0		1.0	
• Artisan	1.0		1.0	
• Civil servant	1.0		1.0	
• Driver	1.0		1.0	
• Private sector	1.0		1.0	
• Public servant	1.0		1.0	
Place of delivery				
• General hospital	1.0		1.0	
• Health centre	1.0		1.0	
• Mother&ChildHospital	1.0		1.0	
• TBA	1.0		1.0	
• Mission homes	1.0		1.0	

DISCUSSION

This study assessed maternal knowledge and practice of EBF. The level of knowledge and awareness is impressive, but practice still remains low[19,21,22]. A study documented similar level of knowledge and awareness whereby 95.5% of mothers heard so much about EBF[23]. Another study reported low level of awareness (28.5%) and knowledge (32.4%) about EBF among mothers[24,25]. The high level of awareness recorded in this study may be attributed to the effectiveness of the Nigeria Federal Ministry of Health breastfeeding program aimed at scaling up breastfeeding practices in the primary, secondary, and tertiary health centres[26]. This study has found that most mothers tend to trust and rely most on midwives for necessary information on breastfeeding. This is also as reported in a similar study whereby mothers solely rely on information they receive from health professionals whenever they visit health facilities[27,28]. Ogbo *et al*. on the other hand reported most mothers without prior breastfeeding experience rely mostly on information they receive about breastfeeding from more experienced mothers around them[29]. This study however reported the high level of trust mothers have in health professionals, and also the need for adequate health education about breastfeeding during antenatal and postnatal care. Despite a high level of knowledge and awareness about EBF in this study, the level of practice still remains low; only 28.2% of infants less than 6months of age were exclusively breastfed. A few related studies reported EBF rate of 44.5% and 48.4%[30,32]. Relatively lower EBF rates of 16.4% and 25.8% were also reported in a study conducted in eastern part of Nigeria[33]. The disparity between level of knowledge and suboptimal practice of breastfeeding observed in this study is also similarly reported in a study by Ogunlesi *et al*[35]. However, Ogunlesi noted knowledge among mothers does not eventually translate into practice; this may be due to failure of these mothers to fully appreciate the benefits of EBF to both mothers and babies. To avoid this, efforts should be channeled towards practically assisting mothers to succumb challenges to practice EBF rather than mere dishing out information.

In this study, mothers' age, educational status,

occupation, and mode of delivery were associated with EBF. The odds of EBF were high with mothers <25 years, and also within 26 – 30 years. A similar finding was reported by Aidam *et al*. where mothers <25 years are more likely to engage in EBF[36,37]. This finding, according to Aidam may be due to the fact that younger mothers, due to fear instilled into them, are more likely to adhere to teachings about breastfeeding during antenatal care, compared to older mothers. As regards mothers' educational status, mothers who had tertiary education were more likely to exclusively breastfeed. This finding is contrary to what was documented in a similar study where mothers with formal and/or higher education are less likely to exclusively breast feed their infants[38,39]. Nigeria mothers with higher education, even though always in formal employment, are more likely to understand the long-term benefits of EBF. The occupation of mothers was also found to influence their practice of EBF. Mothers who are civil servants have higher odds, and are more likely to exclusively breastfeed their infants.This is contrary to the finding by Friday *et al.* who reported mothers in informal work sectors and housewives have all the time to exclusively breastfeed compared to mothers in formal work sectors[42,43]. Our finding may be attributed to the fact that Nigeria government approve three months maternity leave for all nursing mothers, hence they have all the time to attend their babies. The mode of delivery is also associated with EBF; mothers who had spontaneous vagina delivery are more likely to exclusively breastfeed, compared to mothers who delivered through caesarean section or forceps. This finding is also similar to that of Jacdonmi *et al.*[44]. Jacdonmi attributed this to the time taken for mothers to recover from pain and anesthesia following caesarean section. This could also be explained by the influence of cultural beliefs of some mothers about initiation of breastfeeding following surgical operations. Most elderly mothers held the belief that breastfeeding should not be initiated until after three months post-caesarean section. Furthermore, this study found early initiation of breastfeeding rate of 62.4%, which is similar to findings in other studies where they recorded 58.7% within 1-2 hours after birth[45,47]. This is higher than findings in related studies conducted in Ghana (39.95%), Ethiopia (52.4%), and India (23.5%)[48,49]. This study also found that most (62.4%) mothers do not feed their babies with the first breast milk (colostrums), although most (24.1%) reported it is not available for baby. This finding is contrary to findings in other countries like Nepal (91.0%) and Ethiopia (83.3%)[50,51]. The low rate recorded in this study may be attributed to the fact that most of the mothers delivered in primary health centers where they are not encouraged to initiate breastfeeding immediately after delivery.

Our study found continuous breastfeeding at 1 year of age rate of 45.9%. Higher rates have been reported in a related study by Vieira *et al*. (89.4%)[52]. The observed difference is attributed to study design and sample size differences.

Only 12.9% of infants aged 6-12 months were given complementary feeding in this study. This is contrary to findings in a study by Issaka *et al*. where about 72.6% of infants were given timely complementary feeds[53]. Issaka explained low level of education is responsible to the high rate of timely complementary feeding at 6-12 months, but the higher level of formal and or higher education of most mothers in our study may explain the low rate of timely complementary feeding. Despite this, more education on the importance of complementary feeding among mothers is encouraged.

Even though use of herbal concoction in infants is reportedly not widespread in Nigeria, but this study found as much as 30.6%. This was higher than what has been reported in other related studies[54]. Mbada *et al*. reported use of herbal concoction in infancy was found mostly among rural and poor mothers[55]. The high rate reported in this study may be attributed to the fact that this study was done in a semi-urban town with features close to a rural community. This finding however suggests the need for advocacy and campaign against use of herbal concoction by nursing mothers.

CONCLUSION

This study comprised mothers who were universally informed, and they have adequate knowledge of EBF. The level of practice of EBF among infant 1-5months, and complementary feeding among

infants 6–12months however remains suboptimal. EBF among mothers was influenced by age, level of education, occupation, and mode of delivery. Hence, programs aimed at practical education should be targeted at addressing these factors, and incorporated into national guideline.

Recommendations

This study recommends breastfeeding mothers should;

i. initiate breastfeeding within the first hour of birth.

ii. ensure proper latch and feeding evaluation.

iii. stay hydrated and eat nutritious diets.

iv. continue with breastfeeding alongside complementary foods for up to two years or beyond.

v. get help from healthcare providers, support groups, and family to overcome challenges and build confidence in their ability to breastfeed.

vi. avoid substances like alcohol and certain drugs that can have harmful effects on the baby through breast milk

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Authors' contributions

ABF, AD, and OGT	conceived and designed the study, conducted the analysis and interpretation of data, and drafted the initial manuscript
OT, GOM and AJO	assisted in the study design and supervised data collection
ANG, AV, and OT	assisted in the interpretation of data
ABF, AD, and OYJ	critically reviewed drafts
All authors	read and approved the final manuscript

Ethics approval and consent to participate

Ethical clearance	from the Ethical Review Committee of UNIMEDTH, Ondo (UNIMEDTH/ERC/025/088)
Letter of permission	from the Departments of Obstetrics & Gynecology, Paediatrics & Child Health, UNIMEDTH, Ondo

Competing interests

All the authors in this study have declared that they have no competing interests.

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