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Joanah M Ikobah Kelechi Uhegbu Iwasam E Agbor **Ekong Udoh**



CC –BY Predictors of breastfeeding practices among mothers in a developing African country – A tertiary facility based study in Calabar, Nigeria

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Joanah M Ikobah (🖾) Uhegbu Kelechi Paediatric Gastroenterology, Hepatology and Nutrition Unit Department of Paediatrics,

Iwasam E Agbor Department of Community Medicine, University of Calabar. Calabar, Cross River State, Nigeria Email: ikobah.joan@gmail.com; joanahikobah@unical.edu.ng

Ekong Udoh Department of Paediatrics, University of Uyo, Akwa Ibom State

Abstract: Introduction: Breastfeeding is essential for optimum childhood development. Although there is an increased awareness of the importance of breast milk, the Nigerian Demographic and Health Survey of 2018 showed that less than one-third (29%) of mothers in Nigeria practice exclusive breastfeeding. This may be attributed to several factors, hence the need for this study to assess the indicators and predictors of breastfeeding practices among mothers in a tertiary facility in Calabar, Cross River State.

Methods: This cross-sectional study was conducted in the University of Calabar Teaching Hospital, Calabar, Nigeria. Consenting mothers of children aged six weeks to two years were sequentially recruited into the study using an interviewer-administered questionnaire. A test of association of categorical variables was done using Chi square test and pvalue was set at 0.05.

Results: One hundred and twenty one children and their mothers were surveyed. Mean age of children was 6.2 ± 3.8 months and mothers was 28±25 years. Exclusive breastfeeding rate for six months was 67.8%.Timely breastfeeding within one hour of life was 44.6%, ever breastfed rate was 86%.Practice of giving water alongside breast milk and use of breast milk substitute was 18.2% and 14.0% respectively. Mothers age was significantly associated with practice of exclusive breastfeeding (p=0.014) and giving water alongside breast milk (p=0.005) while birth order was associated with timely commencement of breastfeeding within one hour of life (p=0.022).

Conclusion: The ever breastfed and exclusive breastfeeding rates were fairly high. However, the timely first suckling rate, increased use of breast milk substitute and giving of water alongside breast milk in the first six months of life were low. There is the need for continuous health education of mothers.

Keywords: Breastfeeding practices, Indicators, Predictors, Mothers, Nigeria

Introduction

Breast feeding in early life is important for proper growth and development with short and long term health implications.¹The United Nations International Children's Fund (UNICEF) and the World Health Organization (WHO) estimated that if all neonates are breastfed in the first sixmonths of life, there would be a significant reduction in morbidity and malnutrition rates of children across the world.²

In view of this, Exclusive Breastfeeding (EBF) is seen as one of the largest preventive intervention outcome against childhood mortality with about 13% reduction of under-fives compared to other interventions.³

Early initiation of breastfeeding within one hour of birth and EBF have been shown to reduce neonatal mortality by up to about 20%.^{4,5} Optimum breastfeeding practices has impacts that can last a lifetime and the potential to prevent about 1.4 million deaths of the estimated 10 million deaths that occur annually in children of less than five years of age.¹Although there is increased awareness of the importance of breast milk and the WHO's recommendation on breastfeeding, the National Demographic Health Survey (NDHS) of 2018 showed that less than one-third (29%) of mothers in Nigeria practice EBF.⁵Although, this is better than the NDHS of 2013⁶ with a EBF rate of 17%, it still falls below the WHO target of 50% by the year 2025.7 Poor breastfeeding practices may be attributable to several factors, which have been sparsely researched amongst the socioculturally diverse mothers in Cross River State of Nigeria. A better understanding of the pattern and predictors of breastfeeding practices, are key to the improvement

of existing interventions and policies, towards attainment of the set maternal and child health-related Sustainable Development Goals (SDGs). Therefore, this study aimed at assessing the indicators and predictors associated with breastfeeding practices among mothers attending a tertiary health facility in Calabar, Cross River State, Nigeria.

Materials and Methods

Study Design

This was across-sectional study

Study Duration

The study was conducted over a two month period (October and November) in 2018.

Study Participants and Sampling Technique

Convenience sampling technique was used to sequentially recruit 121 consenting mothers and their children aged six weeks to 2 years of age attending the Children Out-Patient clinic and the Maternal and Child Health Clinics of the University of Calabar Teaching Hospital, Calabar, Cross River State.

Data Collection

A structured interviewer-administered questionnaire was used to obtain quantitative data. The questionnaire consisted of socio-demographic data of the participants and breastfeeding practices by mothers which included early initiation of breastfeeding within one hour of birth, ever breastfed rate, exclusive breastfeeding rate, use of breast milk substitutes (BMS) and giving of water alongside breastfeeding. Family socioeconomic status determination was based on Ogunsanya's classification.⁸

Ethical Clearance

Ethical clearance was obtained from the Cross River State Health and Ethics Research Committee. Participating mothers were those who gave consent to participate in the study.

Statistical Analysis

Data analysis was done using Statistical Package for Social Sciences (SPSS version 23.0, Chicago, Inc). Test of association of categorical variables was performed using chi square test and p- value was set at 0.05.

Results

General Characteristics of study participants

One hundred and twenty-one(121) mothers and their children were surveyed. The children included 60 (49.6%) males and 61 (50.4%) females. Mean age of

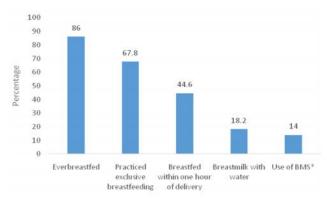
children was 6.2 ± 3.8 months and of mothers was 28 ± 25 years. Most participants were from the low social class (48.8%), 33.9% from the middle social class and 16.5% from the upper social class. Most of the study participants were from a nuclear family setting(80.8%) and 84% of mothers were of the working class. This is shown on Table 1.

Table 1: Socio-demographic characteristics			
Variable	Frequency	Percentage	
Sex of children			
Male	60	49.6	
Female	61	50.4	
Social class			
Upper	20	16.5	
Middle	41	33.9	
Lower	59	48.8	
No response	1	0.8	
Maternal age (years)			
25	25	20.8	
26 - 30	43	35.8	
31 – 35	39	32.5	
36	13	10.8	
Mean age of mothers	28±25		
Mother living together with spouse			
Yes	113	94.2	
No	7	5.8	
Family Setting			
Nuclear	97	80.8	
Extended	23	19.2	
Mothers working			
Yes	84	70.0	
No	36	30.0	

Breastfeeding practices of mothers

The age at stopping breastfeeding among mothers was 11.57 ± 6.46 months. Figure 1 shows breast feeding practices of study participants. Early initiation of breast-feeding within one hour of birth was 44.6%. Exclusive breastfeeding rate in the first six months of life was 67.8%. Practice of giving water alongside breast milk in the first six months and use of breast milk substitute (BMS) were 18.2% and 14.0%, respectively. Ever breastfeed rate was 86%.

Fig 1: Indicators of breast feeding among study participants



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 Table 2: Factors associated with exclusive breastfeeding

 practice among study participants

practice	e among stud	y participan	ts			
	Exclusively breastfed infant					
	Yes	No	Total	Chi square test	p-value	
Mothers a	ge (years)					
25	21 (87.5)	3(12.5)	24(20.5)	10.56	0.014*	
26 - 30	32 (78.0)	9(22.0)	41(35.0)			
31 - 35	23(59.0)	16(41.0)	39(33.4)			
36	6 (46.2)	7(53.8)	13(11.1)			
Sex of chi	()					
Male	41(35.0)	18(15.4)	59(50.4)	0.020	1.000	
Female	41(35.0)	17(14.5)	58(49.6)			
Social cla						
Upper	11(9.4)	8(6.8)	19(16.2)	1.801	0.490	
Middle	28(23.9)	12(10.3)	40(34.2)			
Lower	43(36.8)	15(12.8)	58(49.6)			
Birth orde	· · ·					
1-4	76(65.0)	29(24.8)	105(89.7)	FET	0.179	
>4	6(5.1)	6(5.1)	12(10.3)			
	ving together					
Yes	77(65.8)	34(29.1)	111(94.9)	FET	0.667	
No	5(4.3)	1(0.9)	6(5.1)			
Family set		20/24 0	0.5 (0.1. 0)	0.000	0.004	
Nuclear	66(56.4)	29(24.8)	95(81.2)	0.090	0.804	
Ex- tended	16(13.7)	6(5.1)	22(18.8)			
ANC visit	e					
1-4	6(5.1)	6(5.1)	12(10.3)	2.573	0.109	
>4	76(65.0)	29(24.8)	105(89.7)	2.070	01105	
Counselle	d during ANC	· · ·				
Yes	76(65.0)	29(24.8)	105(89.7)	FET	0.158	
No	6(5.1)	6(5.1)	12(10.3)			
Mother we	0					
Yes	56(47.9)	27(23.1)	83(70.9)	0.932	0.333	
No	26(22.2)	8(6.8)	34(29.1)			
	ıt breast milk					
Yes	23(20.9)	10(9.1)	33(30.0)	0.050	0.823	
No	52(47.3)	35(22.7)	87(70.0)			
Painful ni Yes	pple 20(18.2)	10(9.1)	30(27.3)	0.044	0.835	
r es No	20(18.2) 62(50.0)	25(22.7)	30(27.3) 87(72.7)	0.044	0.855	
110	02(00.0)	23(22.7)	07(12.1)			

FET=Fisher's Exact Test* Significant p-value

Table 2 shows factors associated with exclusive breastfeeding practice among study participants. There was significant association between age group of mothers and practice of exclusive breastfeeding (p = 0.014). The rate of EBF decreased gradually from 87.5% in the youngest age group (25 years) to 46.2% in the oldest age group (36 years). There was no significant difference in the practice of EBF and the sex of the child (p=1.000). Those in the lower social class were more likely to practice EBF followed by those in the middle class, then the upper class, although the difference was not statistically significant (p=0.490). Children within the 1-4 birth order category were more likely to be breastfed exclusively compared with those in the >4 birth order (65.0% versus 5.1%), the difference was not statistically significant (p=0.179). Similarly, children of parents living together, those who mothers attended ANC >4 times and those who were counselled concerning EBF were more likely to be exclusively breastfed, although the difference was not statistically significant (p>0.05). Exclusive breastfeeding practice was

commoner among women with perceived sufficient breast milk, compared with those with perceived insufficient breast milk (47.3% versus 20.9%), this difference however was not statistically significant (p=0.823).

Significant factor associated with timely commencement of breastfeeding among study participants

There was a significant association between birth order and timely commencement of breastfeeding within one hour after delivery (p = 0.022). Children within the 1-4 birth order category were more likely to be commenced timely on breastfeeding after delivery compared with those in the > 4 birth category (51.5% versus 16.7%). This is shown on Table 3.

Table 3: Factor associated with timely commencement of breastfeeding after delivery among study participants						
Factor	-	astfeeding com- t after delivery? No (%)	Chi square test	p-value		
<i>Birth ord</i> 1-4 >4	der 52 (51.5) 2 (16.7)	49 (48.5) 10 (83.3)	5.21	0.022*		

*Significant p-value

Significant factors associated with practice of giving water alongside breast milk among study participants

Age group of mothers was significantly associated with the practice of giving water alongside breast milk in the first six months of life (p = 0.005). The rate of giving water in addition to breast milk increased from 4.3% in the youngest age group (25 years) to 53.8% in the oldest age group (36 years) as shown on Table 4.

Table 4: Factor associated with practice of giving water alongside breast milk among study participants					
Factor	Give water with breast milk?		Chi square test	p-value	
	Yes (%)	No (%)	-		
Age group					
25	1 (4.3)	22 (95.7)	12.73	0.005*	
26 - 30	6 (15.0)	34 (85.0)			
31 - 35	8 (21.1)	30 (78.9)			
36	7 (53.8)	6 (46.2)			

*Significant p-value

Fig 2: Proportion of participants who commenced complementary feeding in the first eight months of life.



Figure 2 shows the proportion of study participants who commenced complementary feeding at various times in the first eight months after delivery. Majority of the women (48.6%) commenced complementary feeding of their babies at 6 months after delivery. The mean age at commencement of complementary feeding was 4.76 ± 1.90 months.

Discussion

The exclusive breastfeeding rate in this study was 67.8%. This is comparable to studies carried out in similar settings as this index study in Child Welfare Clinic in two hospitals in Anyigba, Kogi State⁹ and Jos University Teaching Hospital, Plateau State,¹⁰ Nigeria with rates of 66.7% and 66% respectively. However, it is higher than the37.3% rate among nursing mothers in Anambra State, Nigeria.¹⁰ Though this study was also carried out in urban health facility, the difference in these findings could be due to the perception of the knowledge and practice of breastfeeding in different socio-cultural settings in Nigeria.

Mothers who had greater than four visits to ANC and who were counselled during ANC visits about infant feeding practices, practiced exclusive breastfeeding more compared to those who had less number of visits. Agho et al¹² showed that women in Nigeria with greater than four ANC visits tend to practice exclusive breastfeeding more. This shows the importance of health workers in promoting appropriate infant feeding practice. Health workers are in a strategic position and have the responsibility to educate and counsel mothers and the general public towards proper initiation and adherence to recommended infant feeding practices.¹³ Hunegnew et al¹⁴ in Ethiopia showed that mothers who did not receive breastfeeding counselling were 0.43 times less likely to practice exclusive breastfeeding compared with mothers who received counselling.

Parents living together in a nuclear family setting practiced EBF more than those in the extended family setting and single mothers. Paternal support of nursing mothers' impacts positively on effective breastfeeding practices and the negative influences mostly seen in extended family setting has been shown to hamper practice of exclusive breastfeeding. Mensah et al¹⁵ in Ghana showed that fathers and extended family members decide if mothers will exclusively breastfeed infants or not. In Malawi, fathers and paternal grandmothers also play a significant role in the practice of EBF.¹⁶

Working class mothers practiced EBF more than nonworking class mothers in this study. Though this was not significantly associated with EBF rate. this is in line with the study done in Bangladesh where working mothers breastfed exclusively more than those not working.¹⁷ This could be as a result of prolonged maternity leave by formal employers and even after they have resumed work some organizations have crèches to assist the mothers or possibly some of these mothers are privately employed and are at liberty to carry their babies with them to work.

Mothers with children in birth order less than four were more likely to practice EBF compared to those in birth order greater than four. In Gozamin District, Northwest Ethiopia, similar result was obtained as regards birth order and exclusive breastfeeding practice.¹⁴

Women from the low socio-economic class practiced EBF more than those from the upper and middle class in this study. This agrees with the belief in developing countries that breastfeeding is perceived to be old fashioned and practiced more by women of low social class who may not be financially buoyant to purchase infant formula for their babies which is seen by many as a sign of affluence.¹⁸ In Ghana, Nukpezah et al ¹⁹ showed that mothers with lower education tend to practice EBF. However, Patel et al²⁰ in India and Agho et al ¹² in Nigeria, observed that high socio-economic status was associated with increased EBF practice.

In this study, mothers breastfed their male and female children equally. Studies by Hunegnew et al¹⁴ and Agho et al¹² showed that female infants were more likely to be breastfed than male infants. The reason for this is not well understood.

Mothers who perceived to have sufficient breast milk practiced EBF more than those with perception of insufficient breast milk. This was validated by Gatti et al²¹ and Robert et al²² showing that maternal perception of insufficient breast milk was associated with early weaning practices. Leurer et al²³ working among the Maasai women in Tanzania where breastfeeding practices is held in high esteem showed that there was a low rate of EBF and maternal perception of insufficient breast milk. This therefore means that counselling during ANC and the psychological state of mothers has effect on the practice of EBF. This could also explain why mothers living together with partner's breastfeed more possibly due to the psychological support they receive.

Mothers with painful nipples breastfed less than those without painful nipples. With effective counselling during ANC by well knowledgeable health workers, this narrative can be changed as mothers are taught the right thing to do to prevent painful nipple or when it occurs what to do.

Early initiation of breastfeeding within one hour of birth was observed in 44.6% of mothers in this study. It has been shown to encourage continued breastfeeding and offers the needed first immunity by infants to prevent infection.^{6, 24} In the Sekyere—South District of Ghana, Mensah et al ¹⁵ showed that 41.8% of newborns were put to breast within 30 minutes of birth, however, in Tamale metropolis of Ghana, 39.4% of mothers initiated breast-feeding within one hour after birth.¹⁹ Akinyinka et al ²⁵ working in a military barrack in South-west Nigeria showed that 56.5% of mothers practiced early initiation of breastfeeding within one hour.

Ever breastfed rate in this study was 86%. This was lower than the 97.3% obtained by Akinyinka et al²⁵ in South-west Nigeria and according to UNICEF globally, about 95% of infants are ever breastfed.²⁶ This value however is higher in the low and middle income countries with an almost 9 in 10 babies ever breastfed compared to high income countries with more than 1 in 5 babies never breastfed.²⁶ For breastfeeding rates to increase, there has to be government commitment at all levels with provision of adequate maternal and paternal leaves to assist working class parents .Provision of crèches will also assist mothers to practice effective breast feeding. In this study, 18.2% of mothers gave plain water alongside breastfeeding. This is lower than the study by Akinyinka et al²⁵ and the NDHS 2018⁵ survey that showed 47.2% and 39% of mothers respectively practiced giving plain water alongside breast milk. Okolo and Ogbonna²⁷ showed that 19.2% of health workers belief water should be given during exclusive breastfeeding. The response of these health workers may reflect the common believe in Nigeria that breastfed babies are usually thirsty and need water for satisfaction to occur. Sachdev et al²⁸ demonstrated that fully breastfed babies in the tropics do not need water even in extremely hot dry climates.

About 14% of mothers practiced giving breast milk substitute (BMS) to their babies in this study. This was higher than the 2018 NDHS data on Infant and Young Child Feeding (IYCF) of 4%.⁵ This could be attributed to the fact that this study was carried out in urban area where BMS is readily available and mothers could be easily influenced to believe it is good for their babies. This should be discouraged as the risk of infection such as diarrhoea is higher in these children with increased risk of mortality.²⁹

WHO recommends that appropriate complementary food be commenced at six months of age alongside breastfeeding.³⁰ In this study, 48.6% of infants were commenced on complementary food at six months of age. However, 8.6% and 12.9% received complementary foods at one month and five months of age respectively.

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The risk of malnutrition is higher when there is inappropriate commencement of complementary foods.³⁰ The fact that this was a hospital-based study limits the application of our findings to the general population. Further studies in communities are needed in future.

Conclusion

The indicators of breastfeeding practices based on the ever breastfed and exclusive breast-feeding rates in this study were fairly high. However, the timely first suckling rate, increased use of breast milk substitute and giving of water alongside breast milk in the first six months of life were sub-optimum. It is therefore necessary for health care providers to regularly educate mothers and caregivers on the WHO recommended infant and young child feeding practices to improve the breast-feeding indicators in the study area.

Authors Contribution JI – Conceptualized the study and wrote up the manuscript IA – Analyzed and interpreted the data KU- Contributed to writing up the first draft of the manuscript EU- Contributed to the review of the manuscript All authors reviewed the manuscript and approved the final version for submission. Conflict of interests: None Funding: None

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