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Knowledge, Attitude, and Practice of Exclusive Breastfeeding Among Non-Working Mothers in Rural Areas of Bauchi North Senatorial District, Nigeria

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Abstract

Background: Exclusive breastfeeding (EBF) provides optimal nutrition for infants during the first six months of life and significantly reduces infant morbidity and mortality. Despite global recommendations, EBF practice remains suboptimal in many developing countries, including Nigeria. **Objective:** To assess the knowledge, attitude, and practice of exclusive breastfeeding among non-working mothers in rural areas of Bauchi North Senatorial District. **Methods:** An institutional-based descriptive cross-sectional study was conducted among 239 non-working mothers selected using a multistage sampling technique. Data were collected using a structured questionnaire. Descriptive statistics, chi-square tests, and logistic regression analyses were performed. Statistical significance was set at $p < 0.05$. **Results:** The mean age of respondents was 33.4 ± 7.5 years. Good knowledge of EBF was observed in 71.7% of respondents, while only 33.3% had a positive attitude toward EBF. The prevalence of EBF practice was 29.1%. After adjusting for confounders, secondary education (AOR = 3.50; 95% CI: 1.24–6.74), post-secondary education (AOR = 4.00; 95% CI: 2.75–7.75), supportive spouse/family reaction (AOR = 4.15; 95% CI: 1.75–18.53), cultural support (AOR = 3.50; 95% CI: 1.15–6.89), good knowledge (AOR = 4.25; 95% CI: 1.75–10.55), and positive attitude (AOR = 6.01; 95% CI: 2.34–17.76) were significant predictors of EBF practice. **Conclusion:** Although knowledge of exclusive breastfeeding was relatively high, attitude and practice were poor. Educational level, family support, cultural support, knowledge, and attitude significantly influenced EBF practice. Community-based behavioural change interventions are recommended.

Keywords: Exclusive breastfeeding; knowledge; attitude; practice; rural mothers; Nigeria.

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Introduction

Exclusive breastfeeding (EBF) provides all the nutritional and fluid requirements for infants during the first six months of life and represents an optimal balance of proteins, fats, carbohydrates, and fluids UNICEF, 2019. Infants who are exclusively breastfed have a substantially lower risk of infections and other childhood illnesses, making EBF one of the most effective and cost-efficient interventions for reducing infant morbidity and mortality Indian Academy of Pediatrics, 2020. The World Health

Organization (WHO) defines exclusive breastfeeding as feeding an infant only breast milk from the mother or a wet nurse for the first six months of life, without any additional liquids or solids, except for oral rehydration solutions, vitamins, minerals, or prescribed medications Elyas et al., 2020.

Breast milk is the ideal food for infants and supports both physical and cognitive development. It contains essential nutrients, immunological factors, and bioactive components that protect infants against infections such as diarrhoea and pneumonia while promoting healthy growth and development World Health Organization, 2021. Exclusive breastfeeding has also been associated with long-term health benefits for both the child and the mother, including reduced risk of childhood obesity and improved cognitive outcomes in later life Gillman, 2019. Consequently, global health organizations such as WHO and UNICEF strongly recommend exclusive breastfeeding for the first six months of life, followed by continued breastfeeding alongside appropriate complementary feeding Bevan et al., 2020.

Despite these well-established benefits, the global prevalence of exclusive breastfeeding remains relatively low. Approximately 40% of infants worldwide are exclusively breastfed, with a global target of at least 50% by 2025 Mensah et al., 2021. In Nigeria, the prevalence of exclusive breastfeeding is estimated at about 29%, with considerable regional variation National Population Commission (NPC) & ICF, 2018. Suboptimal breastfeeding practices contribute significantly to childhood malnutrition, which remains a major public health concern. In Nigeria, about 37% of children under five years of age are stunted, while severe stunting affects approximately 21% of children National Population Commission (NPC) & ICF, 2018.

Globally, inadequate breastfeeding practices contribute substantially to infant morbidity and mortality. Suboptimal breastfeeding has been linked to approximately 45% of neonatal infectious deaths and about 30% of diarrhoeal deaths among children under five in developing countries World Health Organization, 2021. Furthermore, non-exclusive breastfeeding during the first six months of life is associated with increased risks of diarrhoeal diseases and acute respiratory infections, which are major contributors to child mortality USAID, 2019.

To address these challenges, several international and national initiatives have been implemented to promote optimal breastfeeding practices. In Nigeria, the Baby-Friendly Hospital Initiative (BFHI) was introduced to provide supportive environments for breastfeeding and to encourage appropriate infant feeding practices. Despite these efforts, exclusive breastfeeding rates remain below the recommended levels, particularly in rural communities where cultural beliefs, limited maternal education, and inadequate access to health information may influence infant feeding practices.

Understanding the factors that influence breastfeeding practices is therefore essential for designing effective maternal and child health interventions. Non-working mothers represent an important group for such investigations because they are often expected to have more time and opportunity to breastfeed their infants. This study assessed the knowledge, attitudes, and practices of exclusive breastfeeding among non-working mothers in rural areas of Bauchi North Senatorial District and examined factors associated with the practice of exclusive breastfeeding in this population.

Methods

Study Design and Setting

A community-based descriptive cross-sectional study was conducted among non-working mothers in selected rural communities of Bauchi North Senatorial District, Bauchi State, Nigeria. The study was carried out in Jama'are "B" Ward of Jama'are Local Government Area (LGA) and Bangire Ward of Shira LGA. These rural communities are predominantly agrarian with limited access to health information and maternal health services, factors that may influence infant feeding practices.

Study Population

The study population comprised non-working mothers with infants residing in the selected communities. Eligible participants were mothers who had infants aged 0–12 months and who had lived in the study area for at least six months prior to the study.

Inclusion and Exclusion Criteria

Non-working mothers residing in the study area who consented to participate were included in the study. Working mothers and mothers who declined to provide informed consent were excluded.

Sample Size Determination

The minimum sample size was determined using the single population proportion formula:

$$n = \frac{Z^2 pq}{d^2}$$

where n is the required sample size, Z represents the standard normal deviate corresponding to a 95% confidence level (1.96), p represents the estimated prevalence of exclusive breastfeeding in Nigeria (17%) based on the Nigeria Demographic and Health Survey (NDHS, 2018), $q = 1 - p$, and d represents the margin of error set at 5%.

The calculated minimum sample size was 217. After adjusting for a 10% non-response rate, the final sample size was 239 respondents.

Sampling Technique

A multistage sampling technique was employed. First, two Local Government Areas within Bauchi North Senatorial District were selected using simple random sampling. Subsequently, one ward was randomly selected from each of the selected LGAs. A sampling frame of eligible non-working mothers in each ward was developed with the assistance of community leaders and health workers. Participants were then selected proportionately from the two wards using simple random sampling until the required sample size was achieved.

Data Collection Instrument and Procedure

Data were collected using a structured interviewer-administered questionnaire adapted from previous studies on exclusive breastfeeding practices. The questionnaire consisted of sections on socio-demographic characteristics, knowledge of exclusive breastfeeding, attitudes toward exclusive breastfeeding, breastfeeding practices, and factors influencing exclusive breastfeeding.

Data collection was conducted by trained research assistants who administered the questionnaires during household visits. Interviews were conducted in the local language where necessary to ensure proper understanding by the respondents.

Measurement of Variables

Knowledge and attitudes toward exclusive breastfeeding were assessed using ten structured questions. Each correct response was assigned a score of one, while incorrect responses were assigned a score of zero. Composite scores were generated and categorized as poor (scores 1–4) or good (scores 5–10).

Exclusive breastfeeding practice was assessed based on whether mothers reported feeding their infants only breast milk for the first six months of life without additional liquids or solids, except for prescribed medications or vitamin supplements.

Data Analysis

Data were entered, cleaned, and analyzed using appropriate statistical software. Descriptive statistics including frequencies and percentages were used to summarize respondents' socio-demographic characteristics and key study variables. Chi-square tests were used to examine associations between independent variables and exclusive breastfeeding practice. Variables that showed significant associations were included in multivariate logistic regression models to identify independent predictors of exclusive breastfeeding practice. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Permission to conduct the study was obtained from community leaders in the selected wards. Informed consent was obtained from all participants before data collection. Participation in the study was voluntary, and respondents were assured of confidentiality and anonymity throughout the research process.

Results

Note: SD = Standard deviation.

Note: χ^2 = Chi-square test; *Statistically significant at $p < 0.05$.

A total of 239 questionnaires were administered to eligible participants in the study area. Of these, 237 questionnaires were completely filled and retrieved, yielding a response rate of 99.2%.

Table 1: Distribution of Respondents According to Socio-demographic and Economic Characteristics ($n = 237$)

Characteristic	Category	Frequency	Percentage (%)
Age (years)	15–24	39	16.5
	25–34	129	54.4
	35–44	56	23.6
	>44	13	5.5
	Mean ± SD	–	33.4 ± 7.5
Religion	Islam	228	96.2
	Christianity	9	3.8
Ethnic group	Hausa	161	67.9
	Others	76	32.1
Educational status	Non-formal education	32	13.5
	Primary education	70	29.5
	Secondary education	88	37.1
	Post-secondary education	47	19.8
Marital status	Married	216	91.1
	Others	21	8.9
Occupation	Business	177	74.7
	Farmers	15	6.3
	Others	45	19.0
Monthly income	< ₦30,000	189	79.7
	₦30,001–₦50,000	18	7.6
	₦50,001–₦100,000	16	6.8
	> ₦100,000	14	5.9

Table 2: Aggregate Scores of Knowledge, Attitudes, and Practice of Exclusive Breastfeeding Among Study Participants ($n = 237$)

Variable	Category	Frequency	Percentage (%)
Knowledge of exclusive breastfeeding	Good	170	71.7
	Poor	67	28.3
	Total	237	100.0
Attitude toward exclusive breastfeeding	Good	79	33.3
	Poor	158	66.7
	Total	237	100.0
Practice of exclusive breastfeeding	Yes	69	29.1
	No	168	70.9
	Total	237	100.0

Table 3: Socio-cultural Factors Affecting the Practice of Exclusive Breastfeeding Among Study Participants ($n = 69$)

Variable	Category	Frequency	Percentage (%)
Study participant responsible for decision on EBF	No	44	63.8
	Yes	25	36.2
Other person influencing decision on EBF	Mother-in-law	15	34.1
	Father-in-law	8	18.2
	Husband	21	47.7
Spouse/family reaction toward EBF	Unsupportive	9	12.9
	Supportive	61	87.1
Presence of challenges during EBF	Yes	19	27.5
	No	50	72.5
Type of challenges experienced	Pain	13	43.3
	Hunger	17	56.7
Cultural support for EBF	Yes	56	81.2
	No	13	18.8

The mean age of the respondents was 33.4 ± 7.5 years. The majority of respondents were Muslims (96.2%), and about two-thirds (67.9%) belonged to the Hausa ethnic group. Primary and secondary education together accounted for approximately two-thirds (66.6%) of the respondents. Most of the participants were married (91.1%). In terms of occupation, nearly three-quarters (74.7%) were engaged in petty trading or small-scale business activities, although more than three-quarters (79.7%) reported earning less than ₦30,000 per month.

Overall, 71.7% of respondents demonstrated good knowledge of exclusive breastfeeding, while 28.3% had poor knowledge (Table 1).

Regarding attitudes toward exclusive breastfeeding, only 33.3% of respondents had positive attitudes, whereas the majority (66.6%) demonstrated poor attitudes toward exclusive breastfeeding (Table 2).

The prevalence of exclusive breastfeeding practice among the respondents was 29.1%, while the majority (70.1%) reported that they had never practiced exclusive breastfeeding (Table 3).

Among the 69 respondents who practiced exclusive breastfeeding, only 25 (36.2%) reported that the decision to practice exclusive breastfeeding was made by themselves, whereas in most cases (63.8%) the decision was influenced by husbands or parents-in-law. The majority of respondents who practiced exclusive breastfeeding (88.4%) reported receiving support from their families. However, some respondents reported challenges such as hunger and physical discomfort during breastfeeding. Approximately 27.5% of respondents reported experiencing challenges while practicing exclusive breastfeeding. Nevertheless, more than four-fifths (81.2%) reported receiving cultural support for exclusive breastfeeding.

There were statistically significant associations between exclusive breastfeeding practice and several sociodemographic characteristics, including educational status, ethnicity, and occupational status ($p < 0.05$). Mothers with higher levels of education were more likely to practice exclusive breastfeeding. Similarly, respondents with higher income levels were more likely to practice exclusive breastfeeding. Ethnicity was also found to influence exclusive breastfeeding practices. All observed associations were statistically significant at $p < 0.05$.

Discussion

The mean age of the study participants was 33.4 ± 7.5 years. The majority of respondents were Muslims (96.2%) and about two-thirds (67.9%) were of Hausa ethnicity. Primary and secondary education together accounted for approximately two-thirds (66.6%) of the respondents, and most participants were married. Nearly three-quarters (74.7%) were engaged in petty trading or small-scale business activities.

This study found that the majority of respondents (71.7%) had good knowledge of exclusive breastfeeding. This level of knowledge is higher than the findings reported by Peterside et al. (2020), where 59.7% of mothers knew the correct definition and duration of exclusive breastfeeding. However, it contrasts with the findings of Bolanle (2019), where more than three-quarters (78.4%) of respondents lacked knowledge of exclusive breastfeeding and only 27.0% could correctly define it. Ukaegbu et al Ukaegbu et al., 2021 reported

Table 4: Relationship Between Socio-demographic/Economic Variables and Practice of Exclusive Breastfeeding Among Study Participants ($n = 237$)

Variable	No	Yes	χ^2	p-value
Age (years)			19.011	0.004*
15–24	17	22		
25–34	99	29		
35–44	43	13		
>44	8	5		
Religion			Fisher's exact	0.580
Islam	162	65		
Christianity	5	4		
Ethnic group			14.514	0.000*
Hausa	101	59		
Others	66	10		
Educational status			53.129	0.000*
Non-formal	14	18		
Primary	33	36		
Secondary	80	8		
Post-secondary	40	7		
Marital status			0.103	0.950
Married	152	63		
Others	15	6		
Occupation			24.751	0.000*
Farmers	10	5		
Housewife	138	39		
Others	19	25		
Monthly income			4.879	0.559
< ₦30,000	139	49		
₦30,001–₦50,000	11	7		
₦50,001–₦100,000	9	7		
> ₦100,000	8	6		

an even higher knowledge level (91.2%) among mothers attending an immunization clinic at Nnamdi Azikiwe University Teaching Hospital, Nigeria. The higher knowledge observed in their study may be attributed to the urban setting of the study population, whereas the present study was conducted in rural communities. Previous studies have shown that women living in urban areas tend to have better knowledge of exclusive breastfeeding than those in rural areas Abdul Ameer et al., 2021.

The findings of this study also revealed a significant association between maternal knowledge and the practice of exclusive breastfeeding ($p < 0.05$). This finding is consistent with that of Anacletus et al Anacletus et al., 2021, who reported that maternal knowledge of exclusive breastfeeding was significantly associated with breastfeeding practice ($p = 0.001$). This suggests that mothers with higher levels of knowledge are more likely to practice exclusive breastfeeding.

Despite the relatively high level of knowledge observed in this study, the attitude of respondents toward exclusive breastfeeding was poor, with only 33.3% demonstrating positive attitudes. This was reflected in the low level of exclusive breastfeeding practice observed among the respondents, where only 29.1% reported practicing exclusive breastfeeding during the first four to six months of their infants' lives. This finding contrasts with the study conducted in Bedele, Ethiopia, where the majority of mothers (87.3%) demonstrated positive attitudes toward exclusive breastfeeding Tamiru & Mohammed, 2019.

Similarly, Alade et al. (2019) reported that the practice of exclusive breastfeeding among mothers in rural areas remained low despite relatively high knowledge levels. Misconceptions regarding the effects of exclusive breastfeeding remain common among rural mothers, emphasizing the need for improved health education and community-based awareness programs aimed at correcting these misconceptions and promoting positive attitudes toward exclusive breastfeeding.

The exclusive breastfeeding rate of 29.1% observed in this study is only slightly higher than the national prevalence of 29.0% reported in the Nigeria Demographic and Health Survey National Population Commission (NPC) & ICF, 2018, but remains far below the World Health Organization (WHO) recommended target of 90% Jones et al., 2018. Similar findings were reported by Ekanem et al.Ekanem et al., 2021, who observed an exclusive breastfeeding rate of 24.0% among working mothers in Calabar, while Agunbiade et al. Agunbiade & Ogunleye, 2018 reported a prevalence of 19% among mothers in South-West Nigeria. In contrast, Maduforo et al. Maduforo et al., 2019 reported a much higher prevalence of exclusive breastfeeding (66.4%) among mothers in Owerri metropolis. The higher practice observed in that study may be attributed to the higher level of knowledge reported among participants (90.6%), supporting the assertion by Bryne et al. Bryne et al., 2020 that maternal knowledge strongly influences breastfeeding practices.

Multivariate logistic regression analysis in the present study identified several significant predictors of exclusive breastfeeding practice. Educational status (secondary: AOR = 3.50; 95% CI: 1.24–6.74; post-secondary: AOR = 4.00; 95% CI: 2.75–7.75), supportive spouse or family reactions toward exclusive breastfeeding (AOR = 4.15; 95% CI: 1.75–18.53), cultural support (AOR = 3.50; 95% CI: 1.15–6.89), maternal knowledge (AOR = 4.25; 95% CI: 1.75–10.55), and positive maternal attitudes (AOR = 6.01; 95% CI: 2.34–17.76) were all significant predictors of exclusive breastfeeding practice.

Low household income may also influence breastfeeding practices. In this study, more than three-quarters (79.7%) of respondents reported earning less than ₦30,000 per month, indicating that many households live below the international poverty line of approximately $2 per day. Socioeconomic constraints have been shown to influence infant feeding practices and child health outcomes. For instance, Talebian et al. (2019) reported that child growth outcomes are more compromised in low-income households.

The study further revealed that 27.5% of mothers reported experiencing challenges during exclusive breastfeeding, with hunger (56.7%) and pain (43.3%) being the most common complaints. These findings are consistent with those reported by Anacletus et al. Anacletus et al., 2021, who observed that mothers who experienced physical discomfort during breastfeeding were less likely to exclusively breastfeed their infants during the first six months ($p < 0.05$). Additionally, antenatal breastfeeding education has been shown to significantly improve exclusive breastfeeding rates by preparing mothers psychologically and practically for breastfeeding Ally et al., 2021.

Conclusion

This study demonstrated that although knowledge of exclusive breastfeeding among rural non-working mothers was relatively high, both attitudes and practices toward exclusive breastfeeding remained poor. Educational status, family support, cultural support, maternal knowledge, and maternal attitudes were identified as significant predictors of exclusive breastfeeding practice. Improving exclusive breastfeeding practices in rural communities will therefore require targeted interventions that address educational, social, and cultural factors influencing maternal behaviors.

Recommendations

Improving the practice of exclusive breastfeeding in rural communities requires coordinated interventions at the community, health system, and policy levels. Community-based behavioural change communication programs should be strengthened to promote exclusive breastfeeding, targeting not only mothers but also spouses, extended family members, and community leaders who play important roles in influencing infant feeding decisions. Health facilities should intensify breastfeeding education during antenatal and postnatal care visits to improve maternal knowledge, correct misconceptions, and promote positive attitudes toward exclusive breastfeeding. At the policy level, efforts to improve female education—particularly at secondary and post-secondary levels—should be prioritized, as maternal education has been shown to significantly influence breastfeeding practices. Community engagement strategies involving tra-

ditional and religious leaders should also be implemented to address cultural beliefs that discourage exclusive breastfeeding. In addition, programs aimed at improving women's socioeconomic empowerment should be supported, as greater financial autonomy and social support may enhance mothers' ability to practice exclusive breastfeeding successfully.

What is Known About This Topic

Exclusive breastfeeding (EBF) is widely recognized as a cost-effective and essential public health intervention that provides optimal nutrition for infants during the first six months of life. Previous studies have shown that EBF significantly reduces infant morbidity and mortality by protecting against infections such as diarrhea and pneumonia. However, despite global recommendations by the World Health Organization, the practice of exclusive breastfeeding remains suboptimal in many low- and middle-income countries, including Nigeria, especially in rural settings

Authors' Contribution

MMS conceptualized and designed the study, FH & SBA conducted data collection, ISJ & UMB performed data analysis, YAM and drafted the manuscript. All authors read and approved the final manuscript.

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Conflict of Interest Statement

The author(s) declare that there is no conflict of interest regarding the publication of this paper.

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