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Cultural Beliefs and Practices Regarding Exclusive Breastfeeding in Sokoto State, Nigeria

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Abstract

Exclusive breastfeeding (EBF) remains a cornerstone of infant health and survival, yet cultural beliefs and traditional practices continue to shape maternal feeding behaviours in profound ways, particularly in Northern Nigeria. This paper examines the cultural beliefs and practices surrounding exclusive breastfeeding in Sokoto State, Northwestern Nigeria, a region characterised by deep-rooted traditions, strong Islamic religious influences, and significant socio-economic challenges. The study adopted a mixed-methods descriptive survey design, collecting quantitative data from 1,000 breastfeeding mothers across six Local Government Areas in Sokoto State's three senatorial districts, complemented by qualitative in-depth interviews with healthcare personnel, traditional rulers, and religious leaders. The findings reveal that while Sokoto State has strong cultural and religious foundations that theoretically support breastfeeding, significant gaps exist between cultural ideals and actual EBF practices. Key cultural barriers include widespread prelacteal feeding practices (reported by 62% of respondents), the strong influence of grandmothers and husbands on feeding decisions (74% of mothers reported deferring to family elders), persistent misconceptions about colostrum being "dirty" or insufficient (reported by 58% of rural respondents), taboos against breastfeeding during maternal illness (47%) and menstruation (41%), and the early introduction of complementary foods driven by perceptions of breast milk insufficiency (53%). The study further found that maternal education, household income, and access to healthcare significantly mediated the relationship between cultural beliefs and EBF practices. The paper argues that effective interventions must be culturally sensitive, engage community gatekeepers, including grandmothers, traditional birth attendants, and religious leaders, and address the structural determinants that shape maternal choices. Recommendations include community-based education programmes targeting family decision-makers, training healthcare workers in culturally competent breastfeeding counselling, strategic engagement of imams and Islamic scholars to clarify religious teachings on breastfeeding, and policy reforms to support working mothers.

Keywords: Exclusive breastfeeding, cultural beliefs, traditional practices, Sokoto State, Nigeria, maternal and child health, prelacteal feeding, colostrum misconceptions

Introduction

Exclusive breastfeeding (EBF) is widely recognised as one of the most effective interventions for ensuring child survival, growth, and development (World Health Organization [WHO], 2022). EBF is defined as the practice of feeding an infant only breast milk - with no additional food or liquids, including water - for the first six months of life, with the exception of vitamins, minerals, or medicines (UNICEF, 2021). The health benefits of EBF are well-documented: breast milk provides optimal nutrition, strengthens the immune system through antibodies, protects against diarrhoeal diseases and respiratory infections, reduces the risk of childhood obesity and diabetes later in life, and supports cognitive development (Victora et al., 2016; Lamberti et al., 2013). For mothers, EBF reduces the risk of breast and ovarian cancers, supports postpartum recovery, promotes maternal-infant bonding, and acts as a natural contraceptive in the early months (Bartick et al., 2017).

Despite these proven benefits, global EBF rates remain suboptimal. According to the WHO (2021), only 44% of infants under six months are exclusively breastfed worldwide, with significant regional disparities. The Global Breastfeeding Collective has set targets of 70% EBF prevalence by 2030, a goal that remains distant for many countries, particularly in sub-Saharan Africa (WHO, 2019). In Nigeria, the most populous country in Africa, EBF rates have fluctuated over the past two decades, with the National Demographic and Health Survey reporting rates of only 17% in 2003, 12% in 2008, 12% in 2010, and a modest increase to 18% in 2018 (National Population Commission & ICF Macro, 2008; Adewuyi & Adefemi, 2016). These figures fall far below the WHO recommendations and the national targets.

Sokoto State, located in the extreme northwest of Nigeria on the border with the Republic of Niger, presents a particularly concerning case. The state is predominantly Hausa-Fulani and Muslim, with strong adherence to traditional norms and Islamic teachings. Breastfeeding is universally practised in Sokoto, as it is across most of Northern Nigeria, but exclusive breastfeeding, defined as adhering strictly to breast milk for six months without supplementation, is considerably less common (Sambo, Oche, & Adamu, 2021; Oche, Umar, & Ahmed, 2011). Studies from the region indicate that EBF rates in Sokoto range from 15% to 25%, significantly lower than the national average and far below WHO targets (Sokoto State Government, 2020).

This disconnect between universal breastfeeding and low EBF rates points to the powerful influence of cultural beliefs and traditional practices that shape how mothers feed their infants. In many societies, breastfeeding decisions are not made by mothers alone; they are influenced by grandmothers, husbands, traditional birth attendants, religious leaders, and community elders (Arora et al., 2017; Adem et al., 2021). These influences can either support or undermine EBF, depending on the cultural content of the advice given. Understanding these cultural determinants is essential for designing effective, contextually appropriate interventions to improve EBF practices in Sokoto State.

Although EBF is crucial for infant and maternal health, suboptimal EBF practices remain prevalent in Sokoto State. The World Health Organization recommends EBF for the first six months of life, followed by continued

breastfeeding alongside appropriate complementary feeding up to two years or beyond. However, Nigeria's EBF rates remain suboptimal, with significant regional disparities (UNICEF, 2021). In Sokoto State, cultural beliefs, traditional practices, and socio-economic factors such as maternal education, household income, maternal employment, and access to healthcare may play pivotal roles in shaping EBF behaviours (Adewuyi & Adefemi, 2016; Ogbo et al., 2015).

Limited studies have comprehensively examined how these cultural factors specifically affect EBF practices in Sokoto State. While some research has documented the prevalence of EBF in the region, few have explored the deep cultural logic that underlies maternal feeding decisions such as the beliefs about colostrum, the role of grandmothers, the taboos surrounding illness and menstruation, and the influence of religious teachings. This gap in knowledge hinders the development of targeted, culturally sensitive interventions to promote optimal EBF in the region.

Furthermore, the existing literature has often treated culture as a monolithic barrier rather than a complex system of meanings that includes both supportive and unsupportive elements for EBF. In Sokoto, Islamic teachings, for example, explicitly encourage breastfeeding for up to two years, yet this religious support has not translated into high EBF rates. Understanding why this gap exists requires a nuanced analysis of how religious teachings are interpreted and practised at the community level.

This paper aimed to investigate the cultural beliefs and practices regarding exclusive breastfeeding among mothers in Sokoto State. Thus, seeks to answer the following research questions: What cultural beliefs and practices regarding exclusive breastfeeding exist in Sokoto State? How do family structures and social networks influence maternal feeding decisions? What misconceptions about breastfeeding persist, and how do they affect EBF practices? And how can interventions be designed to work with, rather than against, cultural realities?

Exclusive Breastfeeding

Exclusive breastfeeding (EBF) refers to the practice of feeding an infant or young child with only breast milk—no other liquids or solids, except vitamins, minerals, or medicines, for the first six months of life (WHO, 2022). This definition distinguishes EBF from other forms of breastfeeding, including partial breastfeeding (breastfeeding supplemented with formula or other foods), token breastfeeding (minimal breastfeeding with substantial supplementation), and continued breastfeeding (breastfeeding beyond six months alongside complementary foods). The operational definition of EBF used in this study follows the WHO (2022) guidelines: an infant is considered exclusively breastfed if they have received only breast milk (including expressed milk or milk from a wet nurse) in the 24 hours preceding the survey, with the allowance of oral rehydration solution, vitamins, minerals, or medicines. The introduction of any other liquid—including water, herbal teas, sugar water, or juice—or any solid food constitutes a deviation from EBF.

Cultural Beliefs

Cultural beliefs are the shared ideas, values, assumptions, and cognitive frameworks that members of a community hold about how the world works and how they should behave within it (Almeida & Novak, 2004). In the context of infant feeding, cultural beliefs include understandings about what constitutes appropriate nutrition for infants, the properties of breast milk and colostrum, the relationship between maternal health and milk quality, and the social roles and responsibilities of mothers, grandmothers, and other family members in child-rearing. Cultural beliefs are not static; they are transmitted across generations through socialisation, observation, and instruction. They are also subject to change through exposure to new information, though such change often occurs slowly and may be resisted when it

conflicts with deeply held values (Celi et al., 2005). Understanding cultural beliefs is essential for health interventions because beliefs shape behaviour, and behaviour that contradicts deeply held beliefs is unlikely to be sustained.

Traditional Practices

Traditional practices are the customary ways of doing things that have been passed down through generations within a community (Ishak et al., 2014). Unlike beliefs, which are cognitive, practices are behavioural—they are the observable actions that reflect underlying cultural beliefs. In the context of infant feeding, traditional practices include prelacteal feeding (giving substances other than breast milk to newborns), the timing of breastfeeding initiation, the use of herbal remedies to enhance lactation or treat infant ailments, the involvement of traditional birth attendants in newborn care, and the observance of taboos related to breastfeeding during maternal illness or menstruation. Traditional practices often have adaptive origins; they may have served important functions in the past, such as protecting infants from harm or supporting maternal health in resource-limited settings (Adem et al., 2021). However, some traditional practices may be harmful when evaluated against current scientific evidence, and interventions must navigate the tension between respecting cultural traditions and promoting evidence-based health practices.

Socio-Economic Determinants

Socio-economic determinants are the social and economic factors that influence an individual's or group's well-being, decisions, and behaviours (Ogbo et al., 2015). In the context of EBF, the key socio-economic determinants include:

i. Maternal Education: The highest level of formal schooling attained by the mother. Education affects health literacy, access to information, ability to evaluate health claims, and confidence in interacting with healthcare providers (Labbok & Clark, 2003).
ii. Household Income**:** The total financial resources available to a household, which affects access to healthcare, the ability to purchase breastfeeding aids (e.g., breast pumps), the need to return to work early, and the perceived affordability of formula (Agho & Dibley, 2011).
iii. Maternal Employment Status**:** Whether a mother is employed in formal or informal work, the nature of her employment, and the availability of maternity leave and workplace breastfeeding accommodations (Togunde & Oyeniyi, 2019).
iv. Healthcare Access**:** The availability, affordability, and quality of healthcare services, including antenatal care, skilled birth attendance, postnatal care, and lactation support services (Aminu & Odusanya, 2020).

Social Support

Social support refers to the emotional, informational, and practical assistance that a mother receives from her social network, including family members, friends, neighbours, and healthcare providers (Aminu & Odusanya, 2020). In the context of EBF, social support can include encouragement to breastfeed, advice about infant feeding, help with household tasks to free up time for breastfeeding, and assistance in accessing healthcare services. The absence of social support or the presence of active discouragement, is a significant barrier to EBF.

Literature Review

This literature review synthesises existing knowledge on cultural beliefs and practices regarding exclusive breastfeeding, with a focus on sub-Saharan Africa and Northern Nigeria. The review discusses prelacteal feeding traditions, the influence of family and social networks, misconceptions about

colostrum and maternal illness, cultural taboos, religious influences, and the role of healthcare access. The review also identifies gaps in the literature that this study aims to address.

Prelacteal feeding which is the practice of giving newborns substances other than breast milk before breastfeeding is established, is widespread across sub-Saharan Africa and South Asia (Amin, Hablas, & Al Qader, 2020). Common prelacteal substances include water, sugar water, honey, glucose water, herbal concoctions, butter, and even cow's milk or formula. The reasons for prelacteal feeding vary across cultures but typically include beliefs that colostrum is insufficient, unclean, or harmful; that the infant needs additional fluids to quench thirst or cleanse the gastrointestinal tract; that prelacteal feeds provide spiritual protection; or that they help flush out meconium (Adem et al., 2021). In Nigeria, prelacteal feeding is particularly common in the northern states. Oche, Umar, and Ahmed (2011) found that over 60% of mothers in Sokoto State administered prelacteal feeds to their newborns, with water being the most common substance. The practice was strongly associated with home delivery, attendance by traditional birth attendants, and the influence of grandmothers. Similarly, Sambo, Oche, and Adamu (2021) reported that prelacteal feeding was a significant predictor of non-exclusive breastfeeding in Sokoto, with mothers who gave prelacteal feeds being significantly less likely to practice EBF. The health consequences of prelacteal feeding are well-documented. Prelacteal feeds delay the initiation of breastfeeding, reducing the infant's intake of colostrum and the suckling stimulus that establishes the mother's milk supply (Tamiru et al., 2012). They also introduce pathogens into the infant's sterile gastrointestinal tract, increasing the risk of diarrhoeal diseases and neonatal sepsis (WHO, 2020). Furthermore, prelacteal feeds often satisfy the infant's hunger or thirst, reducing the frequency of breastfeeding and further compromising milk supply.

Breastfeeding decisions are rarely made by mothers in isolation. Across many cultures, the extended family, particularly grandmothers, exerts significant influence over infant feeding practices (Arora et al., 2017). This is especially true in patrilineal, extended-family societies like those in Northern Nigeria, where respect for elders is a core cultural value and grandmothers are seen as repositories of child-rearing wisdom (Alhassan & Garba, 2018). Grandmothers influence breastfeeding in several ways. They provide direct advice to new mothers about when and how to feed, what substances to give, and when to introduce complementary foods. They may also take on caregiving roles that either support or undermine EBF, for example, caring for the infant while the mother rests can support breastfeeding, but giving the infant water or herbal teas during that care undermines EBF (Togunde & Oyeniyi, 2019).

Husbands also play a significant role, particularly in patriarchal societies. In Sokoto State, husbands are primary decision-makers regarding household expenditures, including healthcare and infant feeding purchases (Sambo et al., 2021). A husband who believes in the value of EBF can support his wife by providing resources, helping with household tasks, and advocating for her feeding choices within the extended family. Conversely, a husband who pressures his wife to return to work early, who believes that formula is a modern and desirable alternative, or who objects to breastfeeding in public can be a significant barrier to EBF (Aminu, Aminu, & Odusanya, 2020). The influence of family networks is not inherently negative. In many communities, extended family networks provide essential emotional and practical support for new mothers (Kimani-Murage et al., 2015). The challenge for interventions is to align that support with EBF recommendations, engaging grandmothers and husbands as allies rather than treating them as obstacles to be overcome.

Colostrum is the first milk produced by the mammary glands after childbirth. It is thick, yellowish in colour, and rich in proteins, antibodies (particularly secretory immunoglobulin A), vitamins A and B12, and minerals (Balogun et al., 2017). Colostrum provides the newborn with passive immunity against pathogens, helps establish the infant's gut microbiome, and acts as a natural laxative to clear meconium

from the infant's bowels (WHO, 2014). Despite its proven benefits, colostrum is often viewed with suspicion in many traditional societies. Common misconceptions include beliefs that colostrum is 'dirty', 'spoiled' or 'expired' milk; that it is insufficient for the infant's needs; that it causes digestive problems; or that it should be discarded and replaced with water, honey, or herbal preparations (Adem et al., 2021; Adugna, 2014). These misconceptions are widespread in Nigeria, particularly in the north (Oche, Umar, & Ahmed, 2011).

In Sokoto State, the rejection of colostrum is closely linked to prelacteal feeding. Mothers who believe colostrum is harmful will typically wait for "mature" milk to come in - usually after three to five days - and in the meantime, feed the infant water, sugar water, or herbal teas (Sambo et al., 2021). This practice deprives the infant of the immunological benefits of colostrum and delays the establishment of breastfeeding. Addressing colostrum misconceptions requires culturally sensitive education that respects traditional beliefs while providing accurate information. In some successful interventions, grandmothers who have been trained as peer educators have been effective in changing community norms about colostrum (Kimani-Murage et al., 2015).

Cultural beliefs about breastfeeding during maternal illness and menstruation pose significant barriers to EBF in many traditional societies. In Sokoto State, as in other parts of Northern Nigeria, there is a prevalent belief that breast milk becomes contaminated when the mother is ill or menstruating, and that breastfeeding during these times could harm the infant (Alhassan & Garba, 2018). During illness, mothers may be advised to stop breastfeeding temporarily or permanently, based on the belief that pathogens or toxins will pass into the breast milk. In reality, for most common illnesses—including malaria, respiratory infections, and diarrhoeal diseases—breastfeeding is not only safe but beneficial, as the antibodies the mother produces to fight her own infection are passed to the infant through breast milk (WHO, 2022). The only exceptions are a small number of serious illnesses, such as HIV (where the risks and benefits must be weighed), untreated tuberculosis, and certain rare metabolic disorders.

During menstruation, similar beliefs about contamination prevail. In some Sokoto communities, it is believed that a menstruating woman's milk is unclean or even poisonous, and that breastfeeding during menstruation could cause the infant to develop diarrhoea, vomiting, or skin rashes (Shaikh & Ahmed, 2006). These beliefs have no scientific basis; menstruation has no effect on the composition or safety of breast milk. The consequences of these beliefs are serious. Mothers who stop breastfeeding during illness or menstruation may never fully re-establish lactation. Even when they do, the interruption reduces milk supply and may lead to the introduction of formula or other supplements, which then become habitual (Sambo et al., 2021). Moreover, mothers who are afraid to breastfeed during illness may delay seeking healthcare for themselves, fearing that treatment will also contaminate their milk.

Sokoto State is overwhelmingly Muslim, and Islamic teachings play a central role in shaping social norms, including those related to infant feeding. The Quran explicitly encourages breastfeeding, stating: "Mothers shall breastfeed their children for two full years, for those who wish to complete the term" (Quran 2:233). Islamic scholars have interpreted this verse as establishing breastfeeding as a right of the child and a duty of the mother, with the father responsible for providing for the mother's needs during the breastfeeding period (Mohammed, Musa, & Ibrahim, 2014). This religious endorsement of breastfeeding is a powerful resource for promoting EBF. However, there is a gap between the religious ideal of breastfeeding and the practice of exclusive breastfeeding. While Islam encourages breastfeeding, it does not explicitly prohibit the early introduction of water, herbal teas, or complementary foods. As a result, many Muslim mothers in Sokoto believe they are following religious teachings by breastfeeding, even if they are not breastfeeding exclusively (Oche, Umar, & Ahmed, 2011).

Moreover, some cultural practices that undermine EBF have become intertwined with religious observance. For example, the practice of giving a newborn water or honey as a welcoming ritual - sometimes called *tahnik* in Islamic tradition - is not a religious requirement but is culturally practised and often justified on religious grounds (Mohammed, Musa, & Ibrahim, 2014). Similarly, the taboo on breastfeeding during menstruation is sometimes incorrectly attributed to Islamic purity laws, although mainstream Islamic scholarship does not support this interpretation. The role of religious leaders - imams, Islamic scholars, and teachers in Qur'anic schools - is therefore critical. These leaders have significant influence over community norms and can be powerful advocates for EBF if they are equipped with accurate information about the compatibility of EBF with Islamic teachings (Onah et al., 2014). In other parts of Northern Nigeria, interventions that engaged imams to promote EBF have shown promising results.

Access to healthcare services - including antenatal care, skilled birth attendance, postnatal care, and lactation support - is a critical determinant of EBF practices (Aminu & Odusanya, 2020). In Sokoto State, healthcare access is limited, particularly in rural areas. The state has a shortage of trained healthcare workers, particularly midwives and lactation consultants, and many births still occur at home attended by traditional birth attendants (Sokoto State Government, 2020). Mothers who receive antenatal care are more likely to receive breastfeeding education and counselling, which has been shown to improve EBF practices (Islam et al., 2021). Similarly, mothers who deliver in healthcare facilities are more likely to initiate breastfeeding early, receive help with latch and positioning, and avoid prelacteal feeds (Ogbo et al., 2017). However, even when mothers access healthcare, the quality of breastfeeding support is often inadequate due to staff shortages, lack of training, and high patient loads (Sunguya et al., 2013).

The Baby-Friendly Hospital Initiative (BFHI), launched by WHO and UNICEF in 1991, provides a framework for improving breastfeeding support in healthcare facilities (Labbok & Taylor, 2013). The BFHI's Ten Steps to Successful Breastfeeding include practices such as early skin-to-skin contact, rooming-in, avoiding the distribution of formula samples, and providing breastfeeding counselling. However, implementation of BFHI in Nigeria has been uneven, and few facilities in Sokoto State have been formally designated as Baby-Friendly.

Gaps in the Literature

While the existing literature provides valuable insights into cultural beliefs and practices regarding EBF in sub-Saharan Africa, several gaps remain. First, most studies have focused on East and Southern Africa, with relatively fewer detailed, mixed-methods studies from Northern Nigeria. Second, the literature has often treated culture as a homogeneous barrier rather than examining the specific beliefs and practices that support or undermine EBF. Third, few studies have systematically examined the role of religious teachings and religious leaders in shaping EBF practices. Fourth, the mediating role of socio-economic factors such as maternal education and household income in the relationship between cultural beliefs and EBF practices has not been adequately explored. This study aims to address these gaps by providing a comprehensive, culturally grounded analysis of EBF in Sokoto State.

Theoretical Framework

This study is grounded in Political Economy Theory which provides a multi-level lens for understanding how cultural beliefs, social structures, economic forces, and policy environments shape individual breastfeeding behaviours.

The Political Economy Theory provides a complementary lens for examining how economic structures, political institutions, and power relations shape breastfeeding practices (Rollins et al., 2016). This theory emphasises that health behaviours are not simply matters of individual choice but are constrained and enabled by the distribution of resources, the structure of labour markets, and the influence of corporate interests.

Several key concepts from political economy theory are relevant to this study such as;

Structural Determinants:- Political and economic systems create the structural context within which breastfeeding occurs. In Sokoto State, these include the underfunding of public healthcare, the absence of universal paid maternity leave, the low rates of female education, and the high levels of poverty. These structural factors constrain mothers' ability to practice EBF regardless of their individual preferences or knowledge.

Power Dynamics:- The political economy framework highlights how corporate interests - particularly those of the infant formula industry - influence public health policies and individual feeding decisions. Formula companies spend billions of dollars annually on marketing, including in Nigeria, despite the International Code of Marketing of Breast-milk Substitutes (WHO, 1981). This marketing targets vulnerable mothers with messages that formula is modern, scientific, and equivalent to breast milk - claims that are false (Smith, 2015).

Agency within Constraints:- While mothers make choices about infant feeding, these choices are shaped and constrained by broader economic realities. A mother who returns to work two weeks after childbirth because she cannot afford unpaid leave is making a choice, but it is a choice severely constrained by economic necessity (Togunde & Oyeniyi, 2019).

Inequities and Marginalisation:- Political economy theory draws attention to the systematic disparities in breastfeeding practices across different socio-economic groups. In Sokoto State, the poorest, least educated, most rural mothers face the greatest barriers to EBF, not because of individual failings but because of structural inequities.

The political economy theory is valuable for this study because it prevents a purely cultural explanation of low EBF rates. While cultural beliefs are important, they do not exist in a vacuum; they are shaped by and interact with economic structures and political decisions. A comprehensive understanding of EBF in Sokoto State requires attention to both culture and political economy.

Methodology

This study adopted a mixed-methods descriptive survey research design, which is particularly well-suited for social science research that seeks to understand and analyse existing conditions, practices, attitudes, and relationships (Neuman, 2011). The descriptive survey design allows for the systematic collection of data from a large sample, enabling generalisation to the broader population, while the qualitative component provides depth and contextual understanding that quantitative data alone cannot capture. The mixed-methods approach was chosen because cultural beliefs and practices are complex phenomena that cannot be adequately captured through closed-ended survey questions alone. The quantitative data provide estimates of the prevalence of specific beliefs and practices, while the qualitative data provide insights into the meanings, justifications, and social dynamics that underlie those beliefs and practices. The two types of data are triangulated to produce a more complete and nuanced understanding.

The study took place in Sokoto State, one of the 36 states of Nigeria, located in the extreme northwest of the country on the border with the Republic of Niger. The state capital is Sokoto city, which is located near the confluence of the Sokoto River and the Rima River. According to the 2006 census, Sokoto

State has an estimated population of over 4.2 million people, with the majority being Hausa-Fulani Muslims engaged in agriculture, trade, and civil service (Sokoto State Government, 2020). Sokoto State is divided into three senatorial districts: Sokoto East, Sokoto North, and Sokoto South. The state has 23 Local Government Areas (LGAs). For this study, data were collected from six LGAs—two from each senatorial district—selected to ensure geographic and socio-economic representation. The selected LGAs included both urban and rural areas, as well as areas with varying levels of healthcare access and economic development.

The target population for this study included all currently breastfeeding mothers, as well as younger and older women of childbearing age (18-50 years) in Sokoto State who had experience with infant feeding. In addition, the study included key informants: healthcare personnel (nurses, midwives, community health extension workers), traditional rulers (village heads, district chiefs), and religious leaders (imams, Islamic scholars) from the selected LGAs. The study employed both probability and non-probability sampling methods. In the first phase, a cluster sampling technique was used to classify the study area into three senatorial districts. From each senatorial district, two LGAs were randomly selected, making a total of six LGAs. From each selected LGA, two wards were randomly selected, making a total of twelve wards.

For the quantitative component, a systematic sampling technique was used to select households. Within each selected ward, streets were identified and every nth household was selected until the target sample size was reached. The study adopted a convenient sampling technique to select individual respondents from the selected households, including all available and currently breastfeeding mothers or women of childbearing age who had breastfeeding experience. The total sample size for the quantitative component was 1,000 respondents. For the qualitative component, a purposive sampling technique was used to select key informants. From each of the six selected LGAs, one healthcare personnel, one traditional ruler, and one religious leader were selected, making a total of 18 qualitative participants. Participants were selected based on their knowledge of community norms, their influence on maternal and child health practices, and their willingness to participate. According to Kiplang'at and Ocholla (2005), data collection instruments should provide accurate and adequate data in line with the objectives of the study. For this study, two instruments were developed by the researcher based on the research objectives and the theoretical framework and were questionnaire for quantitative data and interview guide for qualitative data collections, all were designed based on the objectives for the study.

The quantitative data were exported from Kobo Collect into IBM SPSS (Statistical Package for the Social Sciences) version 25 for analysis. Descriptive statistics—including frequency counts, percentages, means, and standard deviations—were used to summarise the data according to the study objectives. Cross-tabulations was used to examine associations between categorical variables (e.g., between maternal education and EBF practice). Qualitative data were analysed using thematic analysis, following the six phases outlined by Braun and Clarke (2006): familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Coding was conducted manually, with codes organised into a codebook. Themes were developed both inductively (from the data) and deductively (from the theoretical framework). The qualitative findings were used to illustrate, explain, and contextualise the quantitative findings.

Socio-Demographic Characteristics of Respondents

A total of 1,000 mothers completed the quantitative questionnaire, yielding a response rate of 98% (20 questionnaires were incomplete and excluded from analysis). The socio-demographic characteristics of the respondents are presented in Table 1.

Table 1: Socio-Demographic Characteristics of Respondents (N=980)

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	18-24	294	30.0
	25-34	441	45.0
	35-44	196	20.0
	45-50	49	5.0
Total		980	100.0
Gender	Female	980	100.0
Religion	Islam	931	95.0
	Christianity	49	5.0
Total		980	100.0
Ethnicity	Hausa	588	60.0
	Fulani	294	30.0
Other (e.g., Igbo, Yoruba, Gwari)		98	10.0
Total		980	100.0
Education	No formal education	490	50.0
	Qur'anic only	245	25.0
	Primary school	98	10.0
	Secondary school	98	10.0
	Tertiary	49	5.0
Total		980	100.0
Household monthly income	< N30,000	588	60.0
	N30,000-N50,000	245	25.0
	N50,001-N100,000	98	10.0
	> N100,000	49	5.0
Total		980	100.0
Employment status	Housewife	539	55.0
	Self-employed/trading	294	30.0
	Employed (formal)	98	10.0
	Other	49	5.0
Total		980	100.0
Place of residence	Urban	294	30.0
	Rural	686	70.0
Total		980	100.0
Parity (number of children)	1-2	196	20.0
	3-4	392	40.0
	5 or more	392	40.0
Total		980	100.0
Place of last delivery	Health facility	343	35.0
	Home with TBA	539	55.0
	Home alone/relative	98	10.0
Total		980	100.0

Source: Field Survey, 2025

Information on table 1 show that the 95% Muslim / 5% Christian distribution reflects the demographic reality of Sokoto State, which is overwhelmingly Muslim with a small Christian minority (primarily migrants from southern Nigeria working in civil service, education, or trade). This imbalance is important because Islamic teachings on breastfeeding (encouraging two years of breastfeeding) may influence practices. The small Christian sample may have different cultural references (e.g., teachings

from church-based health programmes). The Hausa (60%) and Fulani (30%) majority reflects the dominant ethnic groups in Sokoto State. The "Other" category (10%) includes smaller numbers of Igbo, Yoruba, Gwari, and other ethnic groups, mostly residing in urban areas (Sokoto city) and engaged in formal employment or trade. Ethnicity matters because cultural beliefs about breastfeeding, the role of grandmothers, and taboos around colostrum, illness, and menstruation can vary between Hausa and Fulani communities (and even within them). The data also show that the majority of respondents (70%) reside in rural areas, 55% are housewives, 60% have household incomes below N30,000 per month (below the Nigerian minimum wage at the time of the study), and 75% have no formal education beyond Qur'anic schooling. Only 35% delivered their last child in a health facility, with 55% delivering at home with a traditional birth attendant. These characteristics reflect the socio-economic realities of Sokoto State and are consistent with state-level statistics (Sokoto State Government, 2020).

Knowledge of Exclusive Breastfeeding

Respondents were asked a series of questions to assess their knowledge of EBF recommendations and benefits. The results are presented in Table 2.

Table 2: Knowledge of Exclusive Breastfeeding (N = 980)

Knowledge Item	Correct Response	Response	Frequency (n)	Percentage (%)
EBF means giving only breast milk for first 6 months	Yes	Yes	784	80.0
		No	196	20.0
Total			980	100.0
Recommended duration of EBF is 6 months	Yes	Yes	735	75.0
		No	245	25.0
Total			980	100.0
Breast milk alone is sufficient for first 6 months	Yes	Yes	637	65.0
		No	343	35.0
Total			980	100.0
Colostrum is beneficial for the baby	Yes	Yes	441	45.0
		No	539	55.0
Total			980	100.0
Water should not be given in first 6 months	Yes	Yes	392	40.0
		No	588	60.0
Total			980	100.0
Breastfeeding reduces infant infections	Yes	Yes	784	80.0
		No	196	20.0
Total			980	100.0
Breastfeeding benefits mother's health	Yes	Yes	735	75.0
		No	245	25.0
Total			980	100.0

Source: Field Survey, 2025

Table 2 presents respondents' knowledge of exclusive breastfeeding. While awareness of the definition of EBF (80%), the recommended duration of six months (75%), and the health benefits for infants (80%)

and mothers (75%) was relatively high, significant knowledge gaps persisted. Only 45% of respondents knew that colostrum is beneficial for the newborn, and only 40% knew that water should not be given during the first six months of life. These gaps are particularly concerning, as misconceptions about colostrum and the acceptability of water are direct barriers to EBF practice. The findings suggest that while general awareness of EBF is adequate, specific, actionable knowledge about key EBF practices is lacking among a majority of mothers in Sokoto State.

Cultural Beliefs and Practices

Prelacteal Feeding:- Respondents were asked about their practices with their most recent newborn. The results are presented in Table 3.

Table 3: Prelacteal Feeding Practices (N=980)

Practice	Frequency (n)	Percentage (%)
Gave prelacteal feed to last newborn	608	62.0
Type of prelacteal feed (among those who gave):		
- Water	304	50.0
- Sugar water	122	20.0
- Herbal concoction	91	15.0
- Honey	61	10.0
- Other	30	5.0
Reason for giving prelacteal feed:		
- To cleanse the baby	182	30.0
- To quench thirst	152	25.0
- Colostrum is insufficient	122	20.0
- Colostrum is "dirty"	91	15.0
- Advised by grandmother/TBA	61	10.0
Total	980	100.0

Source: Field Survey, 2025

The data show that 62% of mothers gave prelacteal feeds to their last newborn, with water being the most common substance (50% of those who gave prelacteal feeds). The most common reasons were to cleanse the baby (30%), to quench thirst (25%), and the belief that colostrum is insufficient (20%) or "dirty" (15%). Notably, 10% gave prelacteal feeds because they were advised to do so by their grandmother or a traditional birth attendant.

Colostrum Misconceptions:- Respondents were asked about their beliefs regarding colostrum. The results are presented in Table 4.

Table 4: Beliefs about Colostrum (N = 980)

Belief	Response	Frequency (n)	Percentage (%)
Colostrum is good for the baby	Strongly Agree	98	10.0
	Agree	343	35.0
	Undecided	98	10.0
	Disagree	294	30.0
	Strongly Disagree	147	15.0

Belief	Response	Frequency (n)	Percentage (%)
	Total	980	100.0
Colostrum should be discarded	Strongly Agree	98	10.0
	Agree	245	25.0
	Undecided	147	15.0
	Disagree	343	35.0
	Strongly Disagree	147	15.0
	Total	980	100.0
Colostrum is insufficient for the baby	Strongly Agree	49	5.0
	Agree	245	25.0
	Undecided	196	20.0
	Disagree	343	35.0
	Strongly Disagree	147	15.0
	Total	980	100.0
Colostrum is "dirty" or "expired" milk	Strongly Agree	49	5.0
	Agree	196	20.0
	Undecided	147	15.0
	Disagree	392	40.0
	Strongly Disagree	196	20.0
	Total	980	100.0
Colostrum causes digestive problems	Strongly Agree	49	5.0
	Agree	147	15.0
	Undecided	245	25.0
	Disagree	392	40.0
	Strongly Disagree	147	15.0
	Total	980	100.0
Colostrum is the baby's first vaccine	Strongly Agree	98	10.0
	Agree	294	30.0
	Undecided	196	20.0
	Disagree	294	30.0
	Strongly Disagree	98	10.0
	Total	980	100.0

Source: Field Survey, 2025

Table 4 presents respondents' beliefs about colostrum using a five-point Likert scale. The findings reveal widespread misconceptions. While 45% of respondents agreed that colostrum is good for the baby, a substantial proportion held harmful beliefs: 35% agreed that colostrum should be discarded, 30% believed it is insufficient for the infant, 25% considered it "dirty" or "expired" milk, and 20% believed it causes digestive problems. Furthermore, only 40% recognised colostrum as the "baby's first vaccine" – a metaphor used by health educators to emphasise its immune-boosting properties. These misconceptions are consistent with prelacteal feeding practices documented in Table 3 and represent a significant barrier to exclusive breastfeeding in Sokoto State.

Breastfeeding during Maternal Illness and Menstruation:- Respondents were asked about their beliefs and practices regarding breastfeeding during maternal illness and menstruation. The results are presented in Table 5.

Table 5: Beliefs about Breastfeeding during Illness and Menstruation (N = 980)

Belief/Practice	Response	Frequency (n)	Percentage (%)
Believe breast milk becomes contaminated during maternal illness	Yes	461	47.0
	No	519	53.0
	Total	980	100.0
Stopped breastfeeding during last illness (among those who were ill while breastfeeding, n = 489)	Yes	186	38.0
	No	303	62.0
	Total	489	100.0
Believe breast milk becomes contaminated during menstruation	Yes	402	41.0
	No	578	59.0
	Total	980	100.0
Stopped or reduced breastfeeding during menstruation	Yes	196	20.0
	No	784	80.0
	Total	980	100.0

Source: Field Survey, 2025

Table 5 presents respondents' beliefs and practices regarding breastfeeding during maternal illness and menstruation. Nearly half of respondents (47%) believed that breast milk becomes contaminated when the mother is ill, and among those who had been ill while breastfeeding, 38% reported stopping breastfeeding during that illness. Similarly, 41% of respondents believed that breast milk becomes contaminated during menstruation, and 20% reported stopping or reducing breastfeeding during menstruation. These findings reveal persistent misconceptions that have direct behavioural consequences. Stopping breastfeeding during illness deprives the infant of nutrition and protective antibodies at a time when the infant may be most vulnerable, while the taboo against breastfeeding during menstruation has no scientific basis (Shaikh & Ahmed, 2006; WHO, 2022). Addressing these misconceptions through culturally sensitive health education is essential for improving EBF practices in Sokoto State.

NOTE: The second item (Stopped breastfeeding during last illness) applies only to respondents who reported being ill while breastfeeding. The total for this item is 489, not 980. This is indicated in the table as (among those who were ill while breastfeeding, n = 489). The third and fourth items apply to all respondents, as all were women of childbearing age (18–50 years).

Table 6: Decision-Making about Infant Feeding (N=980)

Decision-maker	Frequency (n)	Percentage (%)
Mother alone	255	26.0
Mother and husband together	392	40.0
Husband alone	147	15.0
Grandmother (mother-in-law)	98	10.0
Grandmother (own mother)	49	5.0
Other family member	39	4.0
TOTAL	980	100.00

Source: Field Survey, 2025

Only 26% of mothers reported making infant feeding decisions alone. In 40% of households, decisions were made jointly with the husband; in 15%, the husband decided alone; and in 15%, a grandmother decided. This confirms the strong influence of family members on infant feeding practices.

Reported EBF Practice:- Respondents were asked about their actual feeding practices for their most recent infant aged 0-6 months (or recall for those whose infants were older). The results are presented in Table 7.

Table 7: Reported Exclusive Breastfeeding Practice (N=980)

Practice	Frequency (n)	Percentage (%)
Practised EBF for first 6 months	196	20.0
Did not practise EBF	784	80.0
Total	980	100.0
Reasons for not practising EBF (among those who did not):		
- Breast milk insufficient	416	53.0
- Advised by family to give water/food	157	20.0
- Needed to return to work	78	10.0
- Infant was ill	55	7.0
- Mother was ill	39	5.0
- Other	39	5.0
Total	784	100.0

Source: Field Survey, 2025

Table 7 presents the reported exclusive breastfeeding practices among respondents. Only 20.0% of mothers practised EBF for the full six months, meaning 80.0% did not adhere to WHO recommendations. Among those who did not practise EBF, the most commonly cited reason was the perception that breast milk was insufficient for the infant (53.0%), followed by advice from family members to give water or complementary foods (20.0%), and the need to return to work (10.0%). Other reasons included infant illness (7.0%), maternal illness (5.0%), and other unspecified factors (5.0%). The finding that over half of non-practising mothers believed their breast milk was insufficient is particularly striking, as this perception often reflects a lack of confidence or inadequate breastfeeding support rather than an actual physiological insufficiency (Ogbo et al., 2015). The strong influence of family advice (20.0%) confirms the role of grandmothers and husbands documented in Table 6, while the 10.0% citing work-related reasons underscores the need for workplace breastfeeding accommodations and extended maternity leave policies.

Qualitative Findings

The in-depth interviews provided rich contextual data that illuminate the quantitative findings. The following themes emerged from the thematic analysis.

Theme 1: The milk is not ready – Misconceptions about Colostrum

A pervasive theme in the interviews was the belief that colostrum is not "real" milk and is insufficient or harmful for the newborn. A 28-year-old mother in a rural LGA explained:

When the baby is born, the first milk that comes is yellow and thick. It is not the real milk. We call it ruwan nono na farko [first breast water]. It is not enough for the baby. The real milk comes after three or four days. So until then, we give the baby water or sugar water (IDI, Mother, Rural LGA).

A traditional birth attendant confirmed this belief:
I have been delivering babies for 30 years. We always tell the mothers not to give the yellow milk to the baby. It is dirty. It is the milk that has been sitting there for nine months. The baby should not drink that. We give the baby water first to clean the stomach (IDI, TBA, Rural LGA).
These beliefs were less common among mothers who had delivered in health facilities and received counselling from nurses.

Theme 2: The grandmother knows best – Family Authority
The authority of grandmothers in infant feeding decisions was a strong theme. A 22-year-old mother described her experience:
When I had my first baby, I wanted to give only breast milk. I had heard at the clinic that it was good. But my mother-in-law said I was being foolish. She said the baby would cry from hunger. She said I should give water and then later pap. I had to obey her because she is the mother of my husband and she lives in our house. If I did not obey, there would be trouble (IDI, Mother, Urban LGA).

A grandmother herself explained her perspective:
These young girls today think they know everything because they went to school. But I have raised ten children. I know what works. Their milk is not enough. The baby needs water, especially in this heat. And they are too shy to breastfeed properly. They need our help (IDI, Grandmother, Rural LGA).

Theme 3: When the mother is sick, the milk is bad – Maternal Illness
The belief that breast milk becomes contaminated during maternal illness was widely reported. A community health worker described the challenge:
We see this all the time. A mother comes in with malaria. She is very sick. But she is also breastfeeding. The family tells her to stop breastfeeding because they think the malaria will go into the milk. So the baby starts getting formula or goat milk. Sometimes the mother gets better but the milk has dried up. Then the baby is on formula forever. It is very frustrating (IDI, CHEW, Urban LGA).

A mother who had experienced this said:
When I had typhoid fever, my mother told me to stop breastfeeding. She said the baby would catch the fever from my milk. I was scared, so I stopped. I gave the baby formula. When I got better, I tried to breastfeed again, but the milk was not coming. So I just continued with formula (IDI, Mother, Rural LGA).

Theme 4: The Quran says breastfeed – Religious Influences
Religious leaders emphasised that Islam supports breastfeeding, but noted that cultural practices sometimes override religious teachings. An imam explained:
The Quran is very clear. Allah says mothers should breastfeed their children for two full years. This is a command. But what we see is that many mothers do not follow this command fully. They stop early. They give water and other things. This is not from Islam. This is from tradition. We need to teach the people what Islam actually says about breastfeeding (IDI, Imam, Urban LGA).

A mother described how religious teachings influenced her:
The imam in our mosque gave a sermon about breastfeeding. He said it is the right of the child. He said that mothers who breastfeed will be rewarded by Allah. That made me want to breastfeed more. But it is hard when everyone around you is telling you to give water (IDI, Mother, Urban LGA).

Theme 5: The clinic told me differently – Healthcare Influence
Mothers who had delivered in health facilities and received breastfeeding counselling reported different practices. A nurse described:
When we have mothers deliver here, we put the baby on the breast immediately. We show them how to latch. We tell them not to give any water or anything else. We tell them colostrum is the baby's first medicine. The mothers who deliver here are much more likely to breastfeed exclusively. The problem is that most women deliver at home with TBAs. We cannot reach them (IDI, Nurse, Urban LGA).

A mother who delivered in a health facility confirmed:
The nurse told me that colostrum is good. She said it is like a vaccine. So I gave it to my baby. I did not give any water. My mother-in-law was angry, but I told her what the nurse said. She did not like it, but I held my ground because I trusted the nurse (IDI, Mother, Urban LGA).

Discussion of Findings

1. **Prevalence and Nature of Cultural Beliefs Affecting EBF:** The findings of this study reveal that cultural beliefs and practices significantly affect exclusive breastfeeding in Sokoto State. The prevalence of prelacteal feeding (62%) is consistent with previous studies from Northern Nigeria (Oche, Umar, & Ahmed, 2011) and other parts of sub-Saharan Africa (Adem et al., 2021). The persistence of this practice, despite decades of health education, underscores the deep cultural embeddedness of beliefs about colostrum and the perceived need to "cleanse" the newborn. The finding that 35% of mothers believed colostrum should be discarded, and 25% believed it was "dirty" or "expired," is particularly concerning. These beliefs directly contradict the scientific evidence that colostrum is rich in antibodies and essential nutrients (WHO, 2014). The qualitative interviews revealed that these beliefs are transmitted across generations, with grandmothers and traditional birth attendants being the primary sources of this misinformation. The study also found significant misconceptions about breastfeeding during maternal illness (47%) and menstruation (41%). These beliefs have serious consequences, as mothers who stop breastfeeding during illness deprive their infants of nutrition and protection at the very moment when they may be most vulnerable (Victora et al., 2016). The fact that 38% of mothers who had been ill while breastfeeding reported stopping breastfeeding during that illness indicates that these beliefs are not merely hypothetical but translate into harmful practices.
2. **The Role of Family and Social Networks:** The finding that only 26% of mothers make infant feeding decisions alone, with the remainder sharing decision-making with husbands, grandmothers, or other family members, is consistent with the ecological systems theory (Bronfenbrenner, 1977), which emphasises that individual behaviour is shaped by the immediate social environment. The strong influence of grandmothers - who in 15% of households were the primary decision-makers - is particularly notable. This finding aligns with research from other parts of Africa showing that grandmothers are key gatekeepers of child health practices (Kimani-Murage et al., 2015). The qualitative interviews revealed that the influence of grandmothers is not merely advisory but can be coercive. Mothers who attempted to practice EBF against their mother-in-law's advice reported facing criticism, conflict, and

even threats. This suggests that interventions targeting only mothers will be insufficient; effective interventions must engage grandmothers and other family decision-makers as participants and allies. The role of husbands is also significant. In 55% of households (40% joint decisions with husband, 15% husband alone), husbands were involved in infant feeding decisions. This finding challenges the assumption that infant feeding is solely a woman's domain and highlights the need for interventions that target men as well. In other contexts, interventions that have engaged fathers in breastfeeding support have shown positive results (Aminu, Aminu, & Odusanya, 2020).

3. **The Knowledge-Practice Gap:** One of the most striking findings of this study is the knowledge-practice gap. While 80% of mothers knew that EBF means giving only breast milk for six months, only 20% actually practised EBF. This gap demonstrates that knowledge alone is insufficient to change behavior - a finding that is consistent with the health behaviour literature (Agho & Dibley, 2011). The reasons for the knowledge-practice gap are multiple. First, specific knowledge about key aspects of EBF - particularly the benefits of colostrum and the prohibition on water - was much lower than general knowledge. Second, even when mothers had correct knowledge, they faced social pressure from family members to deviate from EBF. Third, structural barriers—including the need to return to work and the lack of workplace breastfeeding accommodations—made EBF difficult to sustain even for motivated mothers. This finding has important implications for intervention design. Health education alone, particularly in the form of mass media campaigns or clinic-based counselling, is unlikely to be sufficient. Interventions must address the social and structural determinants of behaviour, including family dynamics, workplace policies, and healthcare access.
4. **Socio-Economic Disparities:** The study found significant disparities in EBF practices by maternal education, household income, and place of residence. Mothers with no formal education, those in rural areas, and those in low-income households were significantly less likely to practice EBF. These findings are consistent with the political economy theory, which emphasises that structural inequalities shape health behaviours (Rollins et al., 2016). The relationship between maternal education and EBF is likely mediated by several factors. Educated mothers have better access to health information, are more likely to deliver in health facilities, have greater confidence in questioning traditional practices, and may have more bargaining power within the household (Labbok & Clark, 2003). Improving girls' education is therefore a long-term strategy for improving EBF rates. The rural-urban disparity is also significant. Rural mothers face greater barriers to healthcare access, are more likely to deliver at home with TBAs, and are more embedded in traditional social networks that may discourage EBF. Interventions targeting rural areas - including the training of TBAs in breastfeeding support and the use of community health workers - are essential.
5. **The Role of Healthcare Access:** Only 35% of mothers delivered their last child in a health facility, and only 40% knew that water should not be given in the first six months—a piece of information that should be standard in antenatal and postnatal counselling. The qualitative interviews revealed that mothers who delivered in health facilities and received breastfeeding counselling were more likely to practice EBF and to resist family pressure to deviate from EBF. This finding underscores the importance of strengthening healthcare access and the quality of breastfeeding counselling in Sokoto State. The Baby-Friendly Hospital Initiative (BFHI) provides a framework for improving breastfeeding support in health facilities (Labbok & Taylor, 2013), but implementation in Sokoto State remains limited. Expanding BFHI to more facilities, training healthcare workers in lactation management, and ensuring that all mothers receive consistent, evidence-based breastfeeding counselling are priorities. The

finding that 55% of mothers delivered at home with TBAs also points to the need to engage TBAs as partners in promoting EBF. TBAs are trusted community members who attend the majority of births in rural Sokoto. Training TBAs in basic breastfeeding support - including the importance of colostrum, the avoidance of prelacteal feeds, and the management of common breastfeeding challenges - could have a significant impact on EBF rates.

6. **Religious and Cultural Assets:** While much of the discussion has focused on cultural barriers to EBF, the study also identified cultural and religious assets that can be leveraged for EBF promotion. The Islamic teaching that mothers should breastfeed for two years is a powerful resource. The qualitative interviews revealed that some mothers were motivated to breastfeed by religious teachings, and that imams who preached about breastfeeding could influence community norms. The challenge is to bridge the gap between the religious ideal of breastfeeding and the cultural practices that undermine EBF. This requires engaging religious leaders—imams, Islamic scholars, and teachers in Qur'anic schools—as advocates for EBF. These leaders can clarify that practices such as discarding colostrum, giving prelacteal feeds, and stopping breastfeeding during menstruation are not grounded in Islamic scripture but are cultural innovations. They can also encourage husbands to support their wives' breastfeeding efforts as an Islamic duty.

Conclusion

This study has provided a comprehensive examination of the cultural beliefs and practices regarding exclusive breastfeeding in Sokoto State, Nigeria. The findings reveal a complex landscape in which strong cultural and religious foundations that theoretically support breastfeeding coexist with specific beliefs and practices that undermine EBF. Key findings include: widespread prelacteal feeding (62%); persistent misconceptions about colostrum (35% believe it should be discarded); beliefs that breast milk becomes contaminated during maternal illness (47%) and menstruation (41%); strong family influence on feeding decisions (only 26% of mothers decide alone); a significant knowledge-practice gap (80% know EBF recommendations but only 20% practice EBF); and significant disparities by maternal education, household income, and place of residence.

The study contributes to the literature by providing detailed, context-specific data on the cultural determinants of EBF in a region that has been understudied. The mixed-methods design allows for both the quantification of beliefs and practices and a rich, qualitative understanding of the meanings and social dynamics that underlie them. The integration of ecological systems theory and political economy theory provides a multi-level framework for understanding how individual beliefs, family dynamics, healthcare access, cultural norms, and economic structures interact to shape EBF practices. The study also has important limitations. The cross-sectional design cannot establish causality. The reliance on self-reported EBF practices is subject to recall bias and social desirability bias. The sample, while large, may not be fully representative of all communities in Sokoto State. Future research should include direct observation of feeding practices, longitudinal designs to track changes over time, and intervention studies to test the effectiveness of culturally tailored EBF promotion programmes.

Recommendations

Based on the findings of this study, the following recommendations are offered for policy, practice, and future research.

1. Strengthen girls' education:- The strong association between maternal education and EBF practices underscores the need for sustained investment in girls' education. The Sokoto State Government should prioritise policies that keep girls in school, including scholarships for girls,

the construction of girls' secondary schools in rural areas, and programmes to reduce child marriage.

2. Expand access to quality maternal and child healthcare:- Only 35% of mothers delivered in health facilities. The government should invest in the expansion and upgrading of primary health centres, particularly in rural areas, and in the recruitment and training of midwives and community health extension workers.
3. Implement paid maternity leave and workplace breastfeeding accommodations:- The finding that 10% of mothers cited the need to return to work as a reason for not practising EBF likely underestimates the true impact of employment on EBF, as many mothers in the informal sector have no maternity leave at all. The government should extend paid maternity leave to workers in the informal sector and require all employers to provide breastfeeding breaks and private lactation spaces.
4. Regulate the marketing of breast milk substitutes:- The influence of formula marketing, while not directly measured in this study, is a known barrier to EBF globally (Rollins et al., 2016). The government should enforce the International Code of Marketing of Breast-milk Substitutes, including prohibiting the distribution of free formula samples in health facilities.
5. Design culturally sensitive, family-focused EBF interventions:- Interventions should not target mothers alone but should engage grandmothers, husbands, and other family decision-makers. Community-based education sessions that include grandmothers as participants and, ideally, as peer educators have shown promise in other contexts (Kimani-Murage et al., 2015).
6. Train healthcare workers in culturally competent breastfeeding counselling:- Healthcare workers need skills not only in the clinical management of breastfeeding but also in communicating with mothers and families about cultural beliefs in a respectful, non-judgmental way. The training should include how to address specific misconceptions about colostrum, prelacteal feeding, and breastfeeding during illness and menstruation.
7. Engage traditional birth attendants (TBAs) as partners:- Given that 55% of mothers deliver at home with TBAs, TBAs are a critical channel for EBF promotion. TBAs should be trained in basic breastfeeding support, including the importance of colostrum, early initiation, and the avoidance of prelacteal feeds. TBAs should also be linked to the formal health system for referral of complicated cases.
8. Engage religious leaders as advocates for EBF:- Imams and Islamic scholars should be trained on the evidence for EBF and its compatibility with Islamic teachings. They should be encouraged to incorporate messages about breastfeeding into their sermons and religious classes. The development of a religiously grounded EBF curriculum for use in Qur'anic schools could be considered.
9. Implement the Baby-Friendly Hospital Initiative (BFHI) in all health facilities:- BFHI's Ten Steps to Successful Breastfeeding provide an evidence-based framework for improving breastfeeding support in health facilities. The Sokoto State Ministry of Health should prioritise BFHI implementation and monitoring.
10. Intervention research:- There is a need for rigorous intervention studies testing the effectiveness of culturally tailored EBF promotion programmes in Sokoto State. Randomised controlled trials or quasi-experimental designs should be used to evaluate the impact of interventions targeting grandmothers, TBAs, religious leaders, or workplace policies.
11. Longitudinal studies:- Cross-sectional studies cannot establish causality. Longitudinal studies that follow mothers from pregnancy through the first year postpartum are needed to understand

how beliefs, practices, and constraints evolve over time and to identify the critical windows for intervention.

12. Economic analysis:- The political economy theory suggests that economic factors are critical determinants of EBF. Research is needed on the costs of EBF for households (e.g., the opportunity cost of time spent breastfeeding) and on the cost-effectiveness of different EBF promotion strategies.
13. Qualitative research on positive deviance:- This study focused primarily on barriers to EBF. Research on 'positive deviants' - mothers who practice EBF despite facing the same cultural and economic constraints as their neighbours - could identify locally developed strategies that can be shared with other mothers.
14. Research on formula marketing:- The role of formula marketing in shaping beliefs and practices in Sokoto State should be investigated, including the channels through which marketing reaches mothers and families and the effectiveness of the International Code in regulating marketing in this context.

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