


Research

SOCIO-CULTURAL DETERMINANTS OF EXCLUSIVE BREASTFEEDING AND INFANT FEEDING PRACTICES IN NIGER

Maimouna Issoufou Kapran¹, Alisha Farris², Nadeeja Niranjalie Wijayatunga¹, Melinda Wells Valliant³, Georgianna Mann^{1a}

¹ Nutrition and Hospitality Management, University of Mississippi, ² Nutrition and Foods, Appalachian State University, ³ Associate Dean for Faculty and Academic Affairs, University of Mississippi

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Background

Niger has one of the lowest exclusive breastfeeding (EBF) rates in the world. Prelacteal feeding practices may contribute to low EBF rates, but research on the barriers related to EBF in Niger is limited.

Objective

What are the socio-cultural determinants for, and barriers to, EBF during an infant's first 6 months through maternal perspectives in Niamey, the capital of Niger?

Methods

Participants were mothers with children aged 0 to 24 months in Niamey, Niger. Participants completed a semi-structured interview including a 20-item questionnaire on socio-demographics, breastfeeding support and knowledge, a short food security survey, and a 24-hour diet recall.

Results

All participants (n=31) breastfed and a majority of the mothers were planning to breastfeed until the child reached 18 months old. No mother among the participants practiced EBF for the recommended 6 months because of the common practice of prelacteal feeding. Most participants stated that they were advised on how to feed their child by a close relative such as their mother or sister, while health professionals rarely gave such advice.

Conclusions

Exclusive breastfeeding is not a common practice among mothers in Niamey. Even though many breastfeed their infant for a relatively long duration, the participants disclosed that they often feed their infants solid and liquid foods before they reach the recommended age for complementary feeding, and often within 48 hours after birth. Study results may inform the development of breastfeeding education components in clinics where mothers attend pre and postnatal consultations.

INTRODUCTION

Niger is a low-resource country in sub-Saharan Africa with more than 40% of the population in poverty, and 47.8% of children suffering from stunting (United Nations Children's Fund 2018a, 2018b; World Bank 2023). Food insecurity is one of the major causes of malnutrition, as it is responsible for over 3.5 million deaths per year in children under the

age of five in sub-Saharan Africa (Drammeh, Hamid, and Rohana 2019).

According to WHO, exclusive breastfeeding (EBF) is when an infant is fed only breastmilk during the first 6 months of life, and this offers many benefits (2015). Not only does breastmilk contain almost all the nutrients newborns need, but it also provides hydration, improves immunity, and helps with brain development (WHO 2014). Thus, global health organizations recommend EBF for at

a Corresponding author: grmann@olemiss.edu

least 6 months of age (UNICEF 2019; WHO 2014). Despite its importance, not all mothers practice EBF, particularly in developing and underdeveloped countries such as Niger (UNICEF 2019). According to Yalçın, Berde, and Yalçın (2016), who examined EBF patterns in the sub-Saharan region of Africa across 27 countries, the EBF prevalence in the region was estimated to be 36%. Differences in the prevalence of EBF can be observed between urban and rural areas. For example, in northern Nigeria, the EBF rate was 23% (Joseph and Earland 2019), while in urban Abuja it was 54.4% (Okoroïwu et al. 2021).

Niger has one of the lowest rates of EBF in the world (Hitachi et al. 2019). In 2000, it was estimated that 10% of infants under 6 months were exclusively breastfed the day before a survey, increasing to 20% by 2010 (Bhattacharjee et al. 2019), and further increasing to 23% in a more recent survey (UNICEF 2019). This can be compared with UNICEF's global estimate of 44%.

Only a few studies have been done on EBF practices in Niger besides measurements of prevalence (Hitachi et al. 2019), such as healthcare promotion (Moussa Abba, De Koninck, and Hamelin 2010). Hence, it is not clear what factors influence adherence to EBF. The purpose of the present mixed-methods study was to preliminarily identify these factors through a semi-structured interview with mothers in Niamey, the capital of Niger. Specifically, our exploratory research questions were 1) What factors prevent mothers from practicing EBF, 2) How does the mother's environment influence her practice of EBF, and 3) What is the impact of food insecurity or diet diversity on EBF in Niger?

METHODS

Mothers were recruited to participate in a semi-structured interview through purposive sampling, specifically targeting adult mothers with a child. They were recruited at an Integrated Health Center (IHC) in Niamey between July 12th and August 18th 2022. Mothers were at the IHC for either vaccinations or a routine visit for their child. Inclusion criteria comprised mothers who had breastfed or intended to breastfeed for at least 4 months, with the child being under 24 months during the study to minimize recall bias. Participants were required to be over 18 years old, and inclusion was limited to mothers fluent in French, Hausa, or Zarma, the languages known to the researcher. Thirty-three mothers were screened, and thirty-one were invited to participate. One participant had to discontinue before completing the interview, and another participant disclosed that she was formula feeding and not breastfeeding at all due to a lack of breastmilk since giving birth. The Institutional Review Board (IRB) at the University of Mississippi, the Regional Directorate of Public Health, and the District I Directorate in Niamey approved this study. Informed consent was obtained from all participants.

INSTRUMENT DESIGN

Semi-structured interviews with food security and diet diversity measures were chosen to explain and interpret ex-

ploratory findings. All questions were translated into French, Hausa, and Zarma and read aloud to participants by the lead researcher to account for any literacy issues.

Measures were included to assess 1) breastfeeding practices and socio-cultural influences, 2) diet diversity and food insecurity, and 3) sociodemographics. To assess breastfeeding practices and socio-cultural influences, an interview guide was developed using a previously validated survey used in Niger (Hitachi et al. 2019), along with the social-ecological model (SEM) to conceptualize a framework in which the participants, their social networks, and organized groups interact all together and in relation to breastfeeding decisions (Golden et al., 2015). The SEM is a widely used framework in public health research and practice, to help explain behaviors and inform the development of interventions (Lee et al. 2017). The semi-structured guide followed a written script and included 8 open-response questions for qualitative data collection and a deeper understanding of the identified research questions.

Diet diversity was assessed using the Women's Dietary Diversity Score (WDDS) instrument to evaluate diet diversity, which is also a tool useful to evaluate nutrition security (Kennedy, Ballard, and Dop 2010). Some food groups in the questionnaire were aggregated to create the WDDS score range of 0 to 9, where a higher score indicates a more diverse diet (Kennedy, Ballard, and Dop 2010). Frequencies and percentages of each question were calculated, as well as the mean score of participants. To assess food insecurity, a previously validated, 6-item survey (United States Department of Agriculture 2012) was used to assess food insecurity at the individual level. Sociodemographic measures were included along with questions pertaining to the length of EBF and initiation of foods with the infant.

DATA ANALYSIS

For data analysis purposes, the interview recordings were first translated from French, Hausa, or Zarma into English and then transcribed verbatim. Data were analyzed by two researchers (KG & MIK), using NVivo software. Prior to coding, the transcripts were read multiple times by two trained researchers (KG & MIK) for data emergence. A thematic analysis was used to code the responses independently. Differences in coding were reconciled with discussion and reevaluated. The data were assigned to emergent themes with consensus among the two coders. The Cohen's kappa for the coding comparison was 0.85 (McHugh 2012). The socio-demographics, food security, and diet diversity responses were analyzed for frequencies and descriptive statistics using Excel.

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS

A total of 31 mothers with a mean age of 26 years, agreed to participate in the interviews. A plurality (45%) had a university degree and a majority (55%) were unemployed. All were married. The questions asked concerned the most recent child. The age of the infants about which questions

Table 1. Demographic characteristics of sample (n=31)

| Variable | | Frequency | |
|--------------------|--------------|-----------------------|----|
| Mother | Age | 20-24 | 6 |
| | | 25-29 | 16 |
| | | 30-34 | 8 |
| | | 35-39 | 1 |
| | Education | No education | 2 |
| | | Primary/ Secondary | 7 |
| | | High school | 3 |
| | | University | 14 |
| | | Graduate school | 5 |
| | Employment | Unemployed | 17 |
| | | Employed (FT/PT)* | 12 |
| | | Seeking employment | 2 |
| Retired | | 0 | |
| Father | Age | 20-29 | 7 |
| | | 30-39 | 13 |
| | | 40-49 | 9 |
| | | 50-59 | 1 |
| | | Unknown | 1 |
| | Education | No education | 3 |
| | | Primary/ Secondary | 6 |
| | | High school | 3 |
| | | University | 9 |
| | | Graduate school | 10 |
| | Employment | Unemployed | 0 |
| | | Employed (FT/PT)* | 30 |
| | | Seeking employment | 1 |
| Retired | | 0 | |
| Marital status | Single | 0 | |
| | Married | 31 | |
| Ethnicity | Hausa | 15 | |
| | Zarma | 6 | |
| | Fulani | 5 | |
| | Tuareg | 1 | |
| | Other | 4 | |
| Religion | Islam | 30 | |
| | Christianity | 1 | |
| | Other | 0 | |
| Number of children | 1 | 12 | |
| | 2 | 9 | |
| | 3 | 5 | |
| | >3 | 5 | |

*FT/PT: Full-time/Part-time

were asked varied between 0 to 13 months, with most being less than 6 months old. The demographic characteristics of the study population are summarized in [Table 1](#).

All participants were still breastfeeding their infants at the time of the study. Ninety-three percent stated they breastfed or would continue to breastfeed for a minimum of 6 months. Among them, 35%, 22%, and 29% stated that they would continue to breastfeed their infants until the age of 2 years, 18 months, and 1 year, respectively. All participants had fed their infant colostrum as the first feed.

The coding and analysis of the semi-structured interviews yielded two major themes: infant feeding practice, and the environmental influence of the mother on infant feeding. The major themes were categorized into 5 smaller categories and 12 subcategories. See [Table 2](#).

THEME I: INFANT FEEDING PRACTICE

Most participants initiated breastfeeding immediately after birth and expressed no initiation issues. Participants who delayed initiation (13%) reported that the delay was due to assumed lack of breastmilk during the first few days. One participant who did not produce any milk during the first 3 days mentioned that she fed her newborn water with dates. Reasons provided for using infant formula were an insufficient breastmilk supply, to supplement breastfeeding, out of necessity due to illness, not producing sufficient milk, or being employed/studying full-time. One participant stated that she introduced formula at 5 months "since [she] was going out and leaving him [baby] at home". Another had attempted to use infant formula at birth, but the infant refused which is why she had to keep breastfeeding.

Within 48 hours after birth most participants fed their infants other foods and/or liquids. This included Islamic holy water, masticated dates, date water, honey, sugar water, and herbal infusions or decoctions. The most commonly mentioned decoction was called "bawri" (in Hausa language), also known as "guiti" (in Zarma), and many continued to give this to the child for months. One mother noted, when talking about her family, "they started giving it to her when I went to her grandmothers." This decoction was described as "a blend of various herbs such as namari, abalotara, and habalomba" (Hausa) by one of the mothers. Very few participants reported providing only breastmilk in the first 48 hours before leaving the hospital. Many mothers answered no to giving other foods yet when specific foods were mentioned (i.e. honey, Zamzam water, date, herbal decoction, etc.), they would affirm that these foods were given to their infant.s

Only one participant exclusively breastfed and did so for 4 months. Another mother of a 3-month-old said she gave prelacteal foods only during her stay at the hospital. Half of the mothers were giving the infants water regularly, some were giving honey regularly, and some reported that they gave honey occasionally to protect their infant or to treat their infant's cold. A smaller number of participants introduced gruel made from grains (millet, sorghum, etc.) before 6 months of age.

Table 2. Analysis of socio-cultural determinants of exclusive breastfeeding based on mothers' responses in Niamey, Niger (n=31)

| Theme | Category | Subcategory | Quotes |
|---|-------------------------|---|---|
| I. Infant feeding practice | Type of Feeding | Breastfeeding, no formula (n=18) | "Since I gave birth it is only breastmilk, not mixed with anything" <i>Infant 2 days</i> |
| | | Mixed Feeding of breastmilk and formula (n=13) | "Since birth, I had insufficient breastmilk. It [formula] was recommended by the doctor" <i>Infant 6 months</i> "Since I was going out and leaving him at home, I had to give him formula" <i>Infant 10 months</i> |
| | Length of Breastfeeding | Immediate Breastfeeding (n=27) | "I had to give him formula milk for 2 days before I started producing breastmilk, then I stopped the formula milk" <i>Infant 11 months</i> "Well, the first-day milk did not come out, it came out on the third day" <i>Infant 9 months</i> |
| | | Breastfeeding Length (> 6 months, n=29) | "[I will breastfeed for about] 1 year and 4 months to 6 months" <i>Infant 1 month</i> |
| | Complementary Feeding | Complementary feeding before 6 months with solid foods (n=27) | "It [herbal decoction] is just given when I am not giving him milk" <i>Infant 1 month</i> "[I started him] at 3 months but he does not like it [porridge]" <i>Infant 6 months</i> |
| II. Influence of mother's environment on infant feeding | Breastfeeding education | Guidance from health worker (n = 10) | "No, I was not given instructions [regarding breastfeeding]" "Every time I come for the monthly check up they [nurses] tell me to not give anything, just breastmilk" "They [nurses] tell us not to give anything until the baby is 6 months" |
| | | Guidance from family/partner (n = 14) | "My mother, my mother-in-law and the father of my child [gave instructions regarding newborn feeding]" |
| | Sociocultural Influence | Social environment had an influence on feeding practices (n = 18) | "I was instructed [by my family] to give him honey but I did not follow it because I heard that it causes sickness to the child" "They [mother and sister] tell us what to do for the infant" "Whatever we have to [give the infant] they [mother and sister] are the ones who tell us" |
| | | Partner involvement in feeding decisions (n = 15) | "The father wants me to give water, but he does not know that I am not doing it. He thinks I am giving the baby water." "He doesn't say anything" |
| | | Partner supportive of breastfeeding (n = 15) | "I do my own thing" "He supports my decisions" |

THEME II: INFLUENCE OF MOTHER'S ENVIRONMENT ON INFANT FEEDING

Participants were asked to describe any breastfeeding instructions that were given to them either before or after they gave birth. Only one third received it during their routine prenatal checkups with nurses or doctors. More than half reported that they received instructions regarding breastfeeding after giving birth when asked if they were given information about breastfeeding after birth. These instructions were provided by the nurses, midwives, doctors

and family members, either during the first 48 hours after birth or during the monthly postnatal consultation.

Participants' own mothers were the most frequently reported source of information involved in the development of feeding practices. One participant reported her mother and sister as her key sources of influence. Another participant who is a first time mother indicated that she was receiving instructing from all the elders in her family. She stated that she was giving zamzam water, date water and honey at birth and started giving mineral water after 1

week. She also stated that “[she] was told to give her [baby] water, and start giving ‘bawri’ after 40 days.”

The father of the infant was the next most commonly reported, then healthcare agents, grandmothers, aunts, and friends. Very few participants stated that no one was involved in their decision-making about feeding practices and a few stated that all their family members were collectively involved. In this sample, one mother was a nutritionist and she reflected that this was a heavy influence on her choice to exclusively breastfeed and not to give honey due to botulism risk despite the recommendations of her family to do so. She noted that “they [family] know [she] studied nutrition; they don’t instruct [her].” One mother was advised by her brother, a doctor, not to give water to her infant and to exclusively breastfeed. Despite everything mentioned above, more than half of the participants said that no one was influencing them or that they were their own influence.

When asked about the influence of the father of the infant, nearly half responded that the father influenced their feeding decisions. The other half described the father as neutral, not actively participating in the feeding decisions. Only one participant reported the father as negatively impacting her feeding decisions. Overall, however, the majority deemed the father was very supportive of the mother’s decisions.

FOOD SECURITY AND DIET DIVERSITY

Households with raw scores falling between 0 and 1 are considered food secure and raw scores between 2-4 and 5-6 are categorized as low food security and very low food security respectively. The majority of households in this study were food secure. Specifically, 61.3% of participants high or marginal food security, 29.1% had low food security, and 9.6% had very low food security.

Diet diversity was calculated using the WDDS scoring guide, based on 9 food groups. A score of 9 indicates a very diverse diet, whereas 0 indicates that no foods from the nine groups were consumed. The most common food group with a score of 1 (present in the diet) was starchy staples (cereals and white roots and tubers), followed by dark green leafy vegetables and other fruits and vegetables. The mean score of dietary diversity obtained for participants was 3.1. The majority of respondents had a score of 2 (29%) or 3 (41.9%), indicating low dietary diversity. Fewer mothers had scores of 4 (22.6%), 5 (3.2%), or 6 (3.2%).

DISCUSSION

The purpose of this study was to determine socio-cultural determinants, barriers to EBF, and maternal perceptions of EBF in a small sample of breastfeeding women from the Niamey, the capital city of Niger using a mixed-methods approach. This study also describes their feeding practices during the infant’s first months of life in Niger, food insecurity and dietary diversity in their families. The main finding of this study is that a high breastfeeding rate was observed in this sample from Niamey despite a low EBF rate.

Early introduction of liquid and solid foods was common in this community. Family members, such as mothers, sisters, and aunts were primarily the main influencers of these practices.

While the majority of the mothers in the present study were breastfeeding or planned to continue breastfeeding their infant well past 12 months, the EBF rate remained low. Previous studies have also indicated that breastfeeding rates and duration tend to be high in the sub-Saharan region, despite low EBF rates (Oche, Umar, and Ahmed 2011). While delayed breastfeeding initiation was identified as one of the causes of low EBF rates in other African countries (Yalçin, Berde, and Yalçin 2016), it did not seem to be the case in this study. Previous research suggests that breastfeeding can be delayed up to 1 week after birth, and colostrum may be discarded due to cultural practices (Oche, Umar, and Ahmed 2011; Joseph and Earland 2019). According to Mose et al., many factors influence colostrum avoidance, which is defined as discarding colostrum at least once during the first three days (2021). It is frequently discarded due to the lack of awareness of its benefits, especially because mothers think that it is dirty (Mose et al. 2021), leading to them feeding their newborns with other substances while waiting for mature milk to be expressed (Oche, Umar, and Ahmed 2011; Joseph and Earland 2019). In the present study, only 13% of the mothers delayed breastfeeding and it was due to the perceived lack of breastmilk immediately after giving birth. Most importantly, all mothers in this study gave colostrum to their newborns.

A common practice that contributes to the low rates of EBF across developing countries is the use of prelacteal foods and early complementary feeding introduction. In the present study, none of the mothers with infants who had had reached six months of age had practiced EBF up to that age. Prelacteal feeding is defined as the use of any substance other than breastmilk during the first three days (Adem et al. 2021; Hitachi et al. 2019), and is a common cultural practice. In the present study, prelacteal feeding was practiced by the majority of the mothers. In previous studies, the most common prelacteal foods were honey and Islamic holy water also known as zamzam water (Hitachi et al. 2019; Joseph and Earland 2019), which were also used by the mothers in this study. Honey has long been identified as dangerous for infants, potentially leading to infant botulism (Centers for Disease Control and Prevention 2022). This practice is not considered safe, yet appears to have cultural value in the Muslim religion. Another common food given to newborns in this study was mashed dates or date water. Most of the prelacteal foods given to newborns as part of the religious and cultural practices in this community include sweet foods. These practices stem from a religious recommendation called “Tahneek” which refers to the practice of masticating or chewing dates before rubbing them on the palate of the newborn (Indrayani, Khodijah, Mudarris, et al. 2017). In lieu of dates, honey or other sweets can be used, since the goal of the practice is to introduce sweetness as the first taste for the newborn. This also explains why different sweets (i.e. dates, date water, sugar

water, and honey) are given by the mothers in this community.

The introduction of complementary feeding around 5 months, primarily millet gruel, was observed as a common practice among the mothers in this study. In some communities, the introduction of complementary food happens earlier, due to the belief that infants can eat once they can support their heads (Nsiah-Asamoah, Doku, and Agblorti 2020). Infant health could potentially be impacted by prelacteal and complementary feeding practices (UNICEF 2019). These cultural and religious practices around prelacteal and complementary feeding will need to be addressed and incorporated into future EBF promotion.

Breastfeeding promotion during the pregnancy period was almost nonexistent for this sample. Some participants attested that they did not receive any instructions from their doctor or midwife regarding breastfeeding during their visits before or after giving birth. A previous study conducted in Niamey also concluded that EBF is not actively promoted and that health professionals do not typically encourage EBF or only briefly mention it without explanations (Moussa Abba, De Koninck, and Hamelin 2010). Furthermore, several studies have found that knowledge of EBF does not necessarily translate into a higher practice of EBF (Nsiah-Asamoah, Doku, and Agblorti 2020; Dachew and Biffitu 2014). While EBF rates in Africa are often higher in urban areas where education rates are also higher (Okoroïwu et al. 2021), research in Niger demonstrated urban areas have lower EBF rates than rural counterparts (Hitachi et al. 2019). In the present study, most participants indicated that family members actively instructed them on their infant's feeding, which included breastfeeding as well as giving other substances. Other studies also demonstrate that the mother is often influenced regarding infant feeding by her own mother or other elders in the society such as a traditional birth attendant or religious leaders (Joseph and Earland 2019; Nsiah-Asamoah, Doku, and Agblorti 2020). Very few mothers reported receiving positive breastfeeding education, specifically guidance on EBF and refraining from introducing other foods, from their family members. Health professionals should be providing information, but also consider involving family members identified in this study as important to mothers for trusted information into their communication practices.

Despite the influence culture and traditions have on the mothers, more than half of participants believed that they make their own decisions regarding infants' feeding. The father's influence was not necessarily negative since more than half of the participants also said that their husbands were supportive of their decisions. Very few mothers expressed that they were not in agreement with their partners on the type of feeding provided, with some going against their husbands' recommendations when they believed it was improper.

The majority of the mothers in this study were not food insecure, with only 9.5% at a very low food security status, consistent with the national food insecurity prevalence of 8% in 2017 (World Food Programme 2022). In the present study, over half of participants had high or marginal food

security, while others had low or very low food security. More than two-thirds of participants had diet diversity scores in this sample below the score of 4 considered adequate in previous studies (Makurat et al. 2018). It is essential to recognize how the association between food insecurity, diet diversity, and breastfeeding can be significant. While not food insecure, mothers may have experienced challenges in accessing and affording a nutritious diet as reflected in their lack of diet diversity. This can impact the quality of breastmilk, potentially leading to nutritional deficiencies that affect both mother and child, and eventually wasting and stunting in children (Ahmad et al. 2018; Khamis et al. 2019).

The present study has several strengths. It employed a qualitative approach to allow for a deep exploration of the factors influencing breastfeeding and infant feeding practices in addition to quantitative measures. The interviews were conducted in several languages which allowed for greater inclusion of potential participants. They were also done by a native of Niger. These strengths enhance the study's capacity to capture a diverse range of perspectives and promote a deeper understanding of the socio-cultural determinants of exclusive breastfeeding practices among mothers in Niamey.

This study also has several limitations. Findings from this study may not be generalized to the entire country due to the specific urban context. The sample size was also very small. A larger sample could have provided a more comprehensive understanding of the diverse perspectives within the urban population. Additionally, the WDDS was designed to be used with a representative sample which is not the case here. The WDDS was used as a tool to indicate diet diversity only in this sample to enrich the qualitative data and food security component of the study. Also, self-reporting can result in recall bias and social desirability bias.

This study found that sample mothers did not practice EBF because of their cultural and religious beliefs and were also influenced by their family members. Common characteristics that were shared among the participants in this sample were giving water since birth and other prelacteal foods. Many factors were associated with the low prevalence of EBF observed in this study. Social support was available and breastfeeding practices were influenced by family members, friends, and neighbors, demonstrating the role of culture, traditions, and religion in their feeding practices. At the societal level, mothers typically receive breastfeeding information through health workers but there is minimal promotion of breastfeeding, especially EBF promotion. Alive and Thrive, UNICEF, and WHO are partners of the Niger's Ministry of Health in the promotion of exclusive breastfeeding throughout the country (UNICEF 2019).

Future interventions could focus on educating young mothers and their families about the importance of EBF, include family member interventions, and focus on cultural and religious practices that may be encouraging risky infant and breastfeeding practices. Additionally, interventions should address the lack of breastfeeding promotion for ex-

pecting mothers in urban areas as this study has indicated that health workers provide inadequate promotion. Conducting focus group discussions with mothers and key informant interviews involving health workers, religious leaders, and other influential figures would be beneficial to breastfeeding education.

CONCLUSION

Although breastfeeding is well established, exclusive breastfeeding for the first 6 months of life was almost nonexistent in this small sample. Pre-lacteal feeding and the introduction of complementary foods before 6 months were common and appeared to be one of the main barriers to EBF. We found a strong influence from culture, religion

and most family members, that teaches mothers to practice pre-lacteal feeding and introduce food before 6 months of age. There was a lack of breastfeeding education especially about the detrimental effects of pre-lacteal feeding on infants' health. Thus, providing education not only to mothers but also to their social support may help prevent harmful practices and increase the country's EBF rates. Given that religion has a significant influence on the mothers' practices, it would be beneficial to engage religious leaders in educational programs.

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