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Infant feeding practices in first time mothers: a cross-sectional study

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ABSTRACT

Background: Optimal infant nutrition during the early months of life is essential for growth, development, and disease prevention. Exclusive breastfeeding (EBF) is recommended for the first six months by World Health Organization (WHO) and United Nations Children's Fund (UNICEF). However, in many low- and middle-income countries, including India, actual breastfeeding practices are influenced by socio-cultural and economic factors, especially among first-time mothers. This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding infant feeding among first-time mothers in an urban healthcare setting in India.

Methods: A cross-sectional descriptive study was conducted between January and March 2025 at the Department of Pediatrics, Sree Balaji Medical College and Hospital, Chennai. A total of 383 first-time mothers with infants aged 0–6 months were selected using purposive sampling. Data were collected using a self-structured and pre-tested KAP questionnaire in English and Tamil. Descriptive and inferential statistics were used for analysis via statistical package for the social sciences (SPSS) version 21.

Results: While 85% of participants were aware of the recommended duration for EBF, only 52.2% practiced it. Formula feeding was reported by 31.3%, and 15.7% had introduced animal milk before six months. Prelacteal feeding and bottle-feeding were practiced by 10.4% and 13.1%, respectively. Major barriers included perceived insufficient milk (31.3%), return to work (23.5%), and lack of support (20.9%). Health professionals (65%) were the primary source of breastfeeding information.

Conclusions: Despite high awareness, a significant gap exists between knowledge and actual feeding practices among first-time mothers. Targeted educational interventions and support systems are essential to improve adherence to optimal infant feeding guidelines.

Keywords: Exclusive breastfeeding, Infant feeding practices, First-time mothers, Knowledge-attitude-practice, Maternal health, Urban India

INTRODUCTION

Infant nutrition is crucial for the growth, development, and health of newborns. Breastfeeding is universally acknowledged as the optimal form of nutrition for infants, as it provides essential nutrients, antibodies, and fosters a strong bond between mother and child.¹ According to the World Health Organization (WHO) and United Nations Children's Fund (UNICEF), exclusive breastfeeding is recommended for the first six months of life, with

continued breastfeeding alongside complementary foods up to two years or beyond.² Despite these guidelines, global breastfeeding practices vary significantly due to factors such as cultural beliefs, socioeconomic status, and access to healthcare services.³

First-time mothers play a critical role in shaping the early feeding choices for their infants. Their knowledge, attitudes, and experiences influence their decisions on whether to breastfeed, formula feed, or introduce

alternative feeding methods such as cow's milk or prelacteal feeds. However, first-time mothers may face challenges in navigating these decisions, which can impact their ability to provide the most appropriate nutrition for their infants.⁴

Alternative feeding practices, such as the use of formula feeding, cow's milk, and prelacteal feeds, are prevalent in many regions. Studies have indicated that misconceptions about breastfeeding, combined with a lack of support and cultural preferences, often lead mothers to adopt these alternatives, which can significantly affect the health outcomes of their infants.^{5,6} For example, a study in Nigeria found that although many mothers were aware of the benefits of exclusive breastfeeding, traditional beliefs and family influence hindered adherence to exclusive breastfeeding recommendations.⁵ Similarly, in Nepal, while knowledge of breastfeeding was high, only 42% of mothers practiced exclusive breastfeeding for the recommended duration.⁶

Despite these insights, there is limited research focused specifically on the knowledge, attitudes, and practices (KAP) of first-time mothers regarding infant feeding practices in India, particularly in urban settings. This research gap highlights the need for a deeper understanding of how first-time mothers in India perceive and practice infant feeding, and the factors influencing their decisions.

Thus, the objective of this study is to assess KAP of first-time mothers towards infant feeding, including their understanding of exclusive breastfeeding and the use of alternative feeding methods. The findings will provide valuable insights to inform policy, healthcare strategies, and community interventions aimed at promoting optimal infant nutrition.

METHODS

Study design

This study utilizes a cross-sectional descriptive design to assess the KAP of first-time mothers regarding infant feeding. A cross-sectional design allows for the collection of data at a single point in time, providing a snapshot of the participants' knowledge and practices without any manipulation or intervention. This approach is appropriate for examining the prevalence of breastfeeding practices and associated factors among a specific group of mothers.

Study area

The study was conducted at the Department of Pediatrics, Sree Balaji Medical College and Hospital, located in Chennai, Tamil Nadu, India. This setting provides access to a large population of mothers visiting the pediatric and neonatal departments, making it an ideal location for recruiting participants and obtaining relevant data.

Study time

The study was conducted in Sree Balaji Medical College and hospital between January 2025 to March 2025.

Participants

The study included first-time mothers who had infants aged 0 to 6 months. This age group was chosen because it encompasses the critical early stages of infant feeding, where decisions around breastfeeding and alternative feeding practices are first made. First-time mothers are particularly important to study, as they may have different knowledge, attitudes, and practices compared to mothers with prior experience in child-rearing.

Inclusion criteria

First-time mothers with infants aged 0–6 months attending the neonatal and pediatric departments of Sree Balaji Medical College and Hospital, who provided informed consent to participate in the study were included in the study.

Exclusion criteria

Mothers with a background in the medical profession, as their knowledge of infant feeding may differ significantly from that of the general population and mothers who were not willing to participate in the study were excluded.

Sampling method

Purposive sampling was used to select participants who met the inclusion criteria. This method involves selecting individuals who are most likely to provide relevant and specific data based on the research objectives. In this case, the purposive sample consisted of first-time mothers attending the pediatric and neonatal departments of the hospital.

Sample size calculation

The sample size was calculated based on the prevalence of exclusive breastfeeding (EBF) from a previous study by Tesfaye et al in Ethiopia, which found that 52% of mothers practiced exclusive breastfeeding.¹¹ Using the formula for sample size calculation for a proportion (Dobson's formula), the sample size was estimated as follows.

$$N = \frac{Z^2 \times P \times Q}{D^2}$$

Where, Z=1.96 (for a 95% confidence level), P=0.52 (prevalence of exclusive breastfeeding), and d=0.05 (desired precision).

The calculated sample size is 383 mothers.

Data collection tool

A self-structured KAP questionnaire was developed to assess the participants' knowledge, attitudes, and practices related to infant feeding. The questionnaire was divided into several sections, including: demographic information (age, education, occupation), knowledge of breastfeeding practices (e.g., recommended duration of exclusive breastfeeding, benefits of breastfeeding), attitudes toward breastfeeding (e.g., perception of breastfeeding as the best feeding method), and feeding practices (e.g., use of formula feeding, prelacteal feeds). The questionnaire was translated into Tamil to ensure accessibility for local participants, and both English and Tamil versions were administered to the mothers.

Data analysis

Data collected from the questionnaires were entered into Microsoft excel and analyzed using IBM statistical package for the social sciences (SPSS) software version 21. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the demographic data, knowledge levels, attitudes, and feeding practices of the participants. Inferential statistics, including Pearson's correlation coefficient and linear regression analysis, were applied to identify relationships between variables. A p value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 shows the demographic characteristics of the participants. The majority of participants were aged between 20–29 years (47.0%), had completed higher education (67.4%), and were housewives (78.4%). This distribution reflects the socio-economic and educational background of the study participants.

The majority of participants demonstrated good knowledge of exclusive breastfeeding, with 85% aware of the recommended duration of exclusive breastfeeding. However, a smaller portion (22%) was unaware of the correct timing for initiating breastfeeding after birth, and

30% were not aware of WHO/UNICEF guidelines, indicating knowledge gaps (Table 2).

Table 1: Demographic information of participants.

Demographic variable	Frequency (N)	Percentage
Age group (years)		
<20	50	13.1
20–29	180	47.0
30–39	120	31.3
≥40	33	8.6
Education level		
No formal education	5	1.3
Primary school	20	5.2
Secondary school	100	26.1
Higher education	258	67.4
Occupation		
Housewife	300	78.4
Employed	83	21.6

Table 2: Knowledge of exclusive breastfeeding.

Knowledge item	Correct response (%)	Incorrect response (%)
Recommended duration for exclusive breastfeeding	85.0	15.0
Benefits of exclusive breastfeeding (immune system, bonding)	90.0	10.0
When should breastfeeding be initiated after birth?	78.0	22.0
Awareness of WHO/UNICEF breastfeeding guidelines	70.0	30.0

A large proportion of participants (90%) agreed that breastfeeding is the best method to feed an infant, showing positive attitudes towards breastfeeding. However, attitudes towards formula feeding and the early introduction of animal milk were more divided, with a notable percentage (35%) believing animal milk could be introduced before the age of 12 months (Table 3).

Table 3: Attitudes toward breastfeeding.

Attitude item	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Breastfeeding is the best way to feed an infant	60.0	30.0	5.0	3.0	2.0
Formula feeding is as good as breastfeeding	15.0	10.0	30.0	25.0	20.0
It is acceptable to introduce animal milk before 12 months	35.0	20.0	10.0	25.0	10.0

Table 4 highlights actual feeding practices among participants. While 52.2% of mothers reported exclusively breastfeeding for the first six months, formula feeding (31.3%) and early introduction of cow's/goat's milk

(15.7%) were also common. The practice of prelacteal feeding was reported by 10.4% of mothers, and 13.1% of participants used bottle-feeding. This indicates a substantial gap between knowledge and actual feeding

practices, with many mothers opting for alternatives to exclusive breastfeeding.

Table 4: Infant feeding practices.

Feeding practice	Frequency (N)	Percentage
Exclusively breastfed in the first 6 months	200	52.2
Introduced formula feeding before 6 months	120	31.3
Introduced cow's or goat's milk before 6 months	60	15.7
Used prelacteal feeds (e.g., honey, water)	40	10.4
Bottle-feeding in the first 6 months	50	13.1
Initiated solid foods before 4 months	25	6.5

Barriers to exclusive breastfeeding were significant, with the most common challenges being insufficient milk supply (31.3%) and returning to work (23.5%). A lack of support from family or healthcare professionals also emerged as a key barrier, affecting nearly 21% of the mothers (Table 5).

Table 5: Barriers to exclusive breastfeeding.

Barrier	Frequency (N)	Percentage
Insufficient milk supply	120	31.3
Return to work	90	23.5
Lack of support from family or healthcare professionals	80	20.9
Cultural beliefs or family influence	70	18.3
Embarrassment in public	30	7.8
Baby's refusal to breastfeed	40	10.4

Socio-demographic profile of participants

A total of 383 first-time mothers participated in the study. The majority of the participants (47.0%) were aged between 20–29 years, followed by 31.3% in the 30–39 years age group. Only 13.1% were under 20 years, and 8.6% were 40 years or older. In terms of education, a significant portion (67.4%) had higher education, while 26.1% had completed secondary school. Most of the mothers were housewives (78.4%), and the rest were employed in various sectors (21.6%). These findings indicate that the study population was primarily educated and non-working, which aligns with similar demographic trends reported in South Asian studies.

Knowledge levels of infant feeding

The analysis of knowledge-related responses revealed that 85% of the mothers correctly identified six months as the recommended duration for exclusive breastfeeding, while 90% recognized the nutritional and immunological benefits of exclusive breastfeeding. However, only 78% were aware that breastfeeding should be initiated within the first hour after birth, and 30% were unaware of WHO/UNICEF guidelines. Similar discrepancies in knowledge and practice have been observed in other regional studies, such as in Nigeria, where despite good awareness, traditional influences impacted practices.

Attitudes toward breastfeeding and alternatives

When asked about their attitudes, 90% of participants either strongly agreed or agreed that breastfeeding is the best way to feed an infant. However, attitudes were more divided regarding formula feeding—25% agreed or strongly agreed that formula feeding is as good as breastfeeding, while 45% disagreed. Moreover, 35% of mothers considered it acceptable to introduce animal milk before 12 months of age.

Actual feeding practices reported

Among the 383 mothers, only 52.2% exclusively breastfed their babies during the first six months, while 31.3% had introduced formula feeding, and 15.7% had given cow's or goat's milk before six months. Additionally, 10.4% reported administering prelacteal feeds (such as honey, sugar water, or herbal teas), and 13.1% practiced bottle-feeding. These findings indicate a significant deviation from WHO recommendations, which could be attributed to a combination of misconceptions, social pressure, and accessibility to alternatives.

Common barriers and sources of support

The most common barriers to exclusive breastfeeding included perceived insufficient milk supply (31.3%), returning to work (23.5%), and lack of familial or professional support (20.9%). Cultural beliefs and social norms were cited by 18.3% of participants, while 7.8% experienced embarrassment breastfeeding in public. Baby's refusal to breastfeed was also noted by 10.4% of mothers. These barriers reflect those identified in similar studies conducted in Brazil and South Africa, where social stigma, employment challenges, and lack of breastfeeding-friendly environments were key hindrances.

Regarding support systems, health professionals were the most common source of guidance (65%), followed by family and friends (50%). However, 20% of mothers reported receiving no formal support, which underscores the need for community-based interventions and consistent health education to support optimal infant feeding.

DISCUSSION

This cross-sectional study assessed the knowledge, attitudes, and practices of first-time mothers regarding infant feeding. The findings highlight that while awareness of EBF is relatively high, a substantial proportion of mothers still resort to alternative feeding practices, such as formula feeding, cow's milk, and prelacteal feeds. This reflects a broader, well-documented phenomenon in many low- and middle-income countries (LMICs), where knowledge does not always translate into practice due to deeply rooted cultural, social, and economic factors.^{5,6}

Our study found that over 85% of mothers were aware of the recommended six-month duration for exclusive breastfeeding and its benefits, including nutritional completeness and immune protection. These results align with previous findings in Nigeria and Nepal, where awareness was also reported to be high.^{5,6} However, only about 52% of mothers in our sample actually practiced EBF, indicating a significant gap between knowledge and behavior. This discrepancy has been similarly reported in Ethiopia, where traditional beliefs and community practices influenced mothers to use prelacteal feeds, despite understanding the benefits of early breastfeeding.¹¹

Cultural norms play a critical role in shaping feeding practices. For instance, the early introduction of animal milk, observed in 15.7% of our sample, often stems from the perception that cow's or goat's milk is more nutritious or sufficient when breast milk is perceived to be inadequate. Similar findings were documented by Patel et al in rural India and McNally et al in Canada, where family beliefs and traditions led to premature introduction of animal milk, which can be detrimental to infant health due to the immature digestive system.^{9,10}

Formula feeding was reported by 31.3% of the participants in our study, primarily due to concerns about insufficient breast milk and the pressures of returning to work. Zhang et al noted similar patterns in China, where maternal employment and urban lifestyle contributed to increased reliance on formula feeding.⁷ In the United States, formula use was also linked to lower maternal education levels and reduced access to breastfeeding support systems.⁸ These trends suggest that maternal employment, lack of supportive workplace policies, and commercial influences significantly contribute to early cessation of breastfeeding in both developed and developing nations.

Furthermore, prelacteal feeding practices were prevalent in 10.4% of our sample, reflecting traditional customs aimed at "cleansing" the newborn's gut or providing early nourishment. Such practices are particularly common in South Asian and African contexts, and have been associated with delayed initiation of breastfeeding and reduced EBF rates.^{11,12}

Barriers to breastfeeding identified in this study—including insufficient milk supply, return to work, social

stigma, and lack of support are consistent with global literature. For instance, Nascimento et al observed that in urban Brazil, the absence of consistent professional support and pervasive formula marketing campaigns discouraged breastfeeding.¹³ Similarly, in South Africa, socio-cultural expectations and the lack of breastfeeding-friendly environments were found to disrupt exclusive breastfeeding practices.¹⁴

These findings carry important implications for pediatric healthcare providers and policymakers. There is a pressing need to strengthen antenatal and postnatal counseling on infant feeding, particularly for first-time mothers who are navigating these decisions without prior experience. Community-based education programs, culturally sensitive outreach, and robust public health messaging can help bridge the gap between awareness and practice. Furthermore, institutional support in the form of breastfeeding-friendly hospital policies, workplace lactation rooms, and maternity leave reforms can significantly enhance exclusive breastfeeding rates.

In conclusion, while knowledge regarding breastfeeding is relatively high among first-time mothers, actual practices are influenced by a complex interplay of cultural beliefs, family pressure, employment demands, and limited support structures. Addressing these barriers through systemic, social, and educational interventions is vital to improving infant feeding practices and ensuring healthier outcomes for children.

CONCLUSION

This study provides valuable insights into the knowledge, attitudes, and practices of first-time mothers concerning infant feeding. The findings highlight a significant gap between awareness and implementation of exclusive breastfeeding practices. While most participants demonstrated a sound understanding of breastfeeding recommendations and its benefits, only a little over half practiced exclusive breastfeeding for the recommended first six months. The early introduction of formula, cow's milk, and prelacteal feeds persists, largely influenced by socio-cultural beliefs, perceived insufficient milk supply, maternal employment, and lack of adequate support.

These results reaffirm observations made in similar low- and middle-income country settings, where traditional practices and social pressures often override medical guidance. The study underscores the importance of not only educating mothers but also addressing the broader systemic and cultural barriers that hinder optimal infant feeding.

Recommendations

Strengthen antenatal and postnatal education on breastfeeding through structured counseling sessions, emphasizing the risks of early formula and cow's milk introduction.

Develop community-based support systems, including peer groups and breastfeeding helplines, to encourage and assist first-time mothers.

Implement breastfeeding-friendly workplace policies, including extended maternity leave and lactation rooms, to support working mothers in continuing exclusive breastfeeding.

Engage families and communities to shift cultural attitudes that promote prelacteal feeding and early animal milk use.

Monitor and regulate formula marketing, especially in healthcare settings, to ensure mothers are not misled by commercial influences.

Future studies should explore longitudinal outcomes of infant feeding practices in first-time mothers and the effectiveness of targeted interventions on improving exclusive breastfeeding rates. Additionally, qualitative research can help unpack the deeper socio-cultural dynamics influencing maternal decision-making in different regions and communities.

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