

Knowledge, attitudes, and practices regarding exclusive breastfeeding in primiparous mothers: technical gaps and risk of early weaning

Jesusa Nicol Lucio Sulca¹,
Melva Nancy Ramírez Julcarima¹,
Gloria Elizabeth Corcuera Segura²,
Jeannette Avila Vargas Machuca¹

¹ Universidad Nacional Federico Villarreal, Professional School of Nursing. Lima, Peru.

² Instituto Nacional Materno Perinatal. Lima, Peru.

ABSTRACT

Objective: To assess knowledge, attitudes, and practices related to exclusive breastfeeding among primiparous mothers, incorporating the exploration of myths, beliefs, cultural perceptions, and sociocultural barriers influencing the breastfeeding experience. **Materials and methods:** A quantitative, descriptive, cross-sectional study was conducted. The study included 534 primiparous mothers over 18, treated in growth and development and pediatric services at an urban health center in the district of Santa Anita, Lima. Data collection instruments developed by the researchers were administered, demonstrating strong statistical validity and high reliability. **Results:** Acceptable levels of knowledge regarding breastfeeding exceeded 95%, and favorable attitudes reached 83%; however, appropriate practices were reported at 88%. Regarding knowledge gaps, 30.9% of participants were unaware that nighttime breastfeeding stimulates milk production, and 32.4% did not recognize its protective effect against breast and ovarian cancer. In terms of attitudes, 20.4% believed that breastfeeding negatively affects body image, while 17% considered that breastfeeding should be discontinued if the infant gets sick. Concerning practices, 30.7% did not implement breastfeeding on demand, and 42.5% of mothers reported pain or physical discomfort during breastfeeding. **Conclusions:** A significant gap exists between acquired knowledge and its practical application. This suggests that prior educational interventions have maintained a predominantly theoretical focus, reflecting a lack of practical training, particularly among primiparous mothers. On the other hand, although attitudes toward breastfeeding are generally favorable, they tend to weaken in the presence of stressors such as aesthetic pressures, social and work-related demands, or episodes of illness of the infant.

Keywords: health knowledge, attitudes, and practice; breastfeeding; breastfeeding mothers; health education.

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Scientific contribution:

Evidence shows that although first-time mothers demonstrate adequate knowledge and favorable attitudes toward breastfeeding, actual practices remain suboptimal. The main challenge lies in ensuring that mothers have enough technical knowledge, practical skills, and emotional support to sustain breastfeeding in the face of difficulties and sociocultural pressures.

INTRODUCTION

Exclusive breastfeeding (EBF), defined as feeding an infant exclusively with breast milk during the first six months of life, represents one of the most cost-effective interventions for ensuring child health and development (1). The World Health Organization and the United Nations Children's Fund recommend initiating breastfeeding within the first hour of life, practicing on-demand feeding, and avoiding bottles, artificial nipples, and pacifiers. From six months onward, safe complementary foods should be introduced while continuing breastfeeding up to two years of age or beyond. Breast milk is safe, contains antibodies, and meets the infant's nutritional requirements during the first six months. After that, continued breastfeeding alongside complementary feeding is recommended up to two years of age or beyond. Breastfed children demonstrate better cognitive outcomes and have a lower risk of overweight, obesity, and diabetes, while mothers experience a reduced risk of breast and ovarian cancer (2).

The systematic assessment of knowledge, attitudes, and practices (KAP) in the context of EBF enables the identification of the well-known "know-do gap," that is, the difference between what mothers know about breastfeeding and what they actually implement in practice. This analysis is essential for guiding interventions not only toward information dissemination but also toward the development of technical skills, problem-solving, and the strengthening of emotional support—factors that are often decisive in the breastfeeding experience. Recent studies indicate that multiparous women generally outperform primiparous women in terms of knowledge and practices related to EBF, although attitudes tend to be positive in both groups (3–4). Furthermore, no significant differences in EBF rates have been observed (4–6).

First-time mothers often face greater challenges in initiating or maintaining EBF due to psychological barriers—such as low self-efficacy, anxiety, and insufficient mental preparation for pain—as well as frequent infant feeding demands and sleep deprivation. They also experience breastfeeding difficulties, including problems with latching and positioning, cracked nipples, breast engorgement, and perceived insufficient milk supply. This scenario is compounded by limited training in basic breastfeeding skills and frequently delayed or insufficient professional support. At the same time, first-time mothers are exposed to family pressure through conflicting messages—such as recommendations to offer water, herbal infusions, or formula in response to infant crying—which reinforces the myth that breast milk is "insufficient." Similarly, factors such as workplace conditions and domestic workload—particularly early return to work without adequate lactation spaces—further complicate the maintenance of EBF (5–9). Evaluating KAP in this population is crucial for identifying real barriers that interfere with breastfeeding, tailoring educational messages and support strategies, enhancing maternal self-efficacy, and ultimately improving EBF rates

in a group that is structurally more vulnerable to the demands and challenges of breastfeeding.

Systematic reviews of validated instruments in Spanish show that most EBF questionnaires focus on traditional dimensions and do not comprehensively address sociocultural factors, misconceptions, or emotional and social support barriers. Recent studies highlight that conventional tools are limited because they fail to incorporate perceptions, family myths, self-efficacy, support networks, and practical barriers—elements identified as key determinants for initiating and sustaining EBF due to their cultural, emotional, and social influence (10–12).

The objective of this study was to evaluate KAP related to EBF in first-time mothers, explicitly incorporating the exploration of myths, beliefs, cultural perceptions, and sociocultural barriers that influence the breastfeeding experience. In this way, the study aimed to generate context-specific evidence to inform the design of more effective, culturally sensitive EBF promotion and education strategies aligned with the real needs of first-time mothers.

MATERIALS AND METHODS

A quantitative, descriptive, cross-sectional study was conducted. The study population consisted of first-time mothers receiving care in the Growth and Development and Pediatric Services of the Santa Anita Maternal and Child Health Center (Lima, Peru) between September and October 2023. For sample size calculation, a finite population ($n = 1300$) was considered, with an expected proportion of $p = 0.70$ based on prior evidence, a 95% confidence level ($z = 1.96$), a precision of $d = 0.04$, a finite population correction, and an additional 10% to account for potential losses. A non-probability convenience sampling method was used, conditioned by the operational availability of the research team. Three to four weekly shifts were scheduled, covering full morning and afternoon shifts; however, not all facility shifts were included. During each visited shift, all first-time mothers over the age of 18 who attended the facility during the researchers' presence were invited to participate until the target sample size was reached. Mothers with contraindications to breastfeeding were excluded. The final sample comprised 534 mothers, providing an approximate effective precision of 3%.

Two data collection techniques were employed: interviews and observation. The instruments included a knowledge questionnaire, an attitude scale, and a checklist, all developed by the researchers. The level of knowledge was assessed using 15 items across five domains: understanding of exclusive breastfeeding, breast milk composition, benefits of breastfeeding, milk production, and breastfeeding technique. Each correct response was scored as 1 point, and each incorrect response as 0 points. Stanine scaling was used for score interpretation: fewer than 9 points indicated a low level;

9–11 points, a moderate level; and 12–15 points, a high level. Attitudes were evaluated using a 5-point Likert scale (“strongly agree” to “strongly disagree”) across 15 items grouped into four domains: willingness, successful breastfeeding, breastfeeding and work, and myths and beliefs. The maximum score was 60: scores below 46 indicated an unfavorable attitude; 46–55, a moderately favorable attitude; and 56–60, a favorable attitude. Practices were assessed using a 22-item checklist distributed across four domains: general signs of effective breastfeeding, breast condition, infant positioning, and latch. Scoring was categorized as follows: fewer than 14 points indicated poor practices; 14–20 points, good practices; and 21–22 points, excellent practices.

Instrument validation was conducted with the support of 12 expert judges, including nurses specialized and trained in exclusive breastfeeding. An Aiken’s V coefficient of 0.99 was obtained for all three instruments, indicating high content validity. Reliability assessment required a prior pilot study involving 45 first-time mothers attending a health center other than the one used in the study. Cronbach’s alpha coefficients were 0.92 for the knowledge questionnaire, 0.81 for the attitude scale, and 0.79 for the checklist.

Two nurses with experience in breastfeeding promotion participated in the administration of the instruments. They were previously trained and standardized through protocol review, instrument-specific training, and pilot application to ensure consistency in data recording. The knowledge test and attitude scale were primarily self-administered; however, when participants had difficulty completing the instruments (e.g., holding or breastfeeding their infants), they were administered via structured interview, maintaining identical content and question order. These instruments were applied in outpatient waiting areas, with an approximate duration of 10 minutes.

The observation checklist was applied through direct observation of a complete breastfeeding session. Researchers recorded maternal and infant performance silently and in real time, without intervening in the process. Only after the full session had concluded did we proceed to provide the necessary guidance and correct any errors in the observed technique, thereby ensuring measurement integrity. Educational materials containing correct information on breastfeeding knowledge and technique were provided.

The collected data were initially recorded and organized in a Microsoft Excel spreadsheet. After data cleaning and validation to ensure consistency, the dataset was imported into IBM SPSS Statistics v. 26 for processing and quantitative analysis. Descriptive statistics were used for data analysis; absolute and relative frequencies were calculated, and summary statistical tables were generated.

This article is derived from an undergraduate thesis defended in 2024 and approved by the Institutional Research Ethics Committee of the School of Medicine of Universidad Nacional Federico Villarreal (Approval No. 12-2022 CIEI FMHU).

RESULTS

The study participants predominantly exhibited a profile of young adult first-time mothers, with a secondary level of education (67.0%) or higher (24.3%), and a predominance of cohabitation (77.0%) as marital status, suggesting a relatively stable social context. More than half of the participants reported working outside the home (59.0%). Similarly, the study highlights the key role of healthcare personnel as the primary source of information (79.6%) (Table 1).

Table 1. Sociodemographic data of first-time mothers

Variables	n	%
Age		
18-24 years	221	41.4
25-31 years	268	50.2
32-38 years	45	8.4
Educational Level		
No formal education	3	0.6
Primary education	43	8.1
Secondary education	358	67.0
Higher education	130	24.3
Marital status		
Single	59	11.0
Cohabiting	411	77.0
Married	42	7.9
Separated	22	4.1
Occupation		
Homemaker	174	32.6
Works at home	7	1.3
Works outside the home	315	59.0
Studies outside the home	38	7.1
Received Information		
Yes	434	81.3
No	100	18.7
Primary source of information		
Family	47	8.8
Healthcare personnel	425	79.6
Others	62	11.6

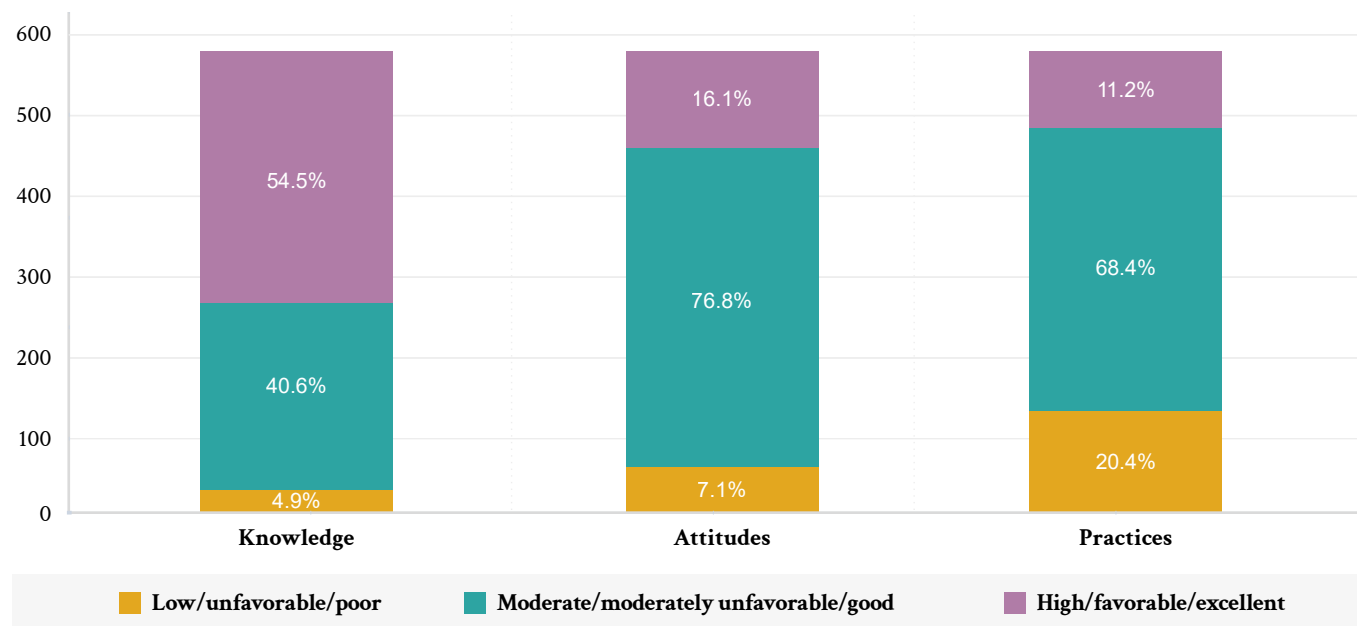


Figure 1. Levels of knowledge, attitudes, and practices regarding exclusive breastfeeding among first-time mothers

Figure 1 shows that although more than half of the mothers demonstrated high levels of knowledge regarding EBF (54.5%), practices were predominantly good (68.4%), while favorable attitudes were notably low (16.1%).

Table 2, which examines correct and incorrect knowledge about EBF, shows that the dimensions of breast milk composition and understanding of exclusive breastfeeding had the highest percentages of correct responses

(97.85% and 89.9%, respectively). Regarding breastfeeding technique, 23.4% of mothers were unaware that a proper latch prevents nipple injury and pain. The dimensions of milk production and benefits of breastfeeding showed lower proportions of correct responses (76.7% and 67.6%, respectively). Notably, 30.9% were unaware that nighttime breastfeeding increases milk production, and 32.4% did not know that breastfeeding protects mothers against breast and ovarian cancer.

Table 2. Correct and incorrect knowledge regarding exclusive breastfeeding, by dimension, among first-time mothers

Dimensions	Items	Correct		Incorrect	
		n	%	n	%
Understanding of exclusive breastfeeding	Exclusive breastfeeding means feeding the baby only breast milk. (True)	512	95.9	22	4.1
	Exclusive breastfeeding is recommended up to 6 months. (True)	508	95.1	26	4.9
	The infant should empty one breast before being offered the other. (True)	419	78.5	115	21.5
Breast milk composition	Breast milk contains protective factors against infectious diseases. (True)	532	99.6	2	0.4
	Breast milk is more nutritious than infant formula. (True)	513	96.1	21	3.9
Benefits of breastfeeding	Formula-fed children are more intelligent. (False)	398	74.5	136	25.5
	Breastfeeding protects the mother against breast and ovarian cancer. (True)	361	67.6	173	32.4
	Breast milk is always ready whenever the baby needs it. (True)	324	60.7	210	39.3
Milk production	Mothers with small breasts produce less milk. (False)	425	79.6	109	20.4
	An infant receiving sufficient breast milk wets more than six diapers a day. (True)	423	79.2	111	20.8
	The more often the baby nurses, the more milk will be produced. (True)	411	77.0	123	23.0
	Nighttime breastfeeding increases milk production. (True)	369	69.1	165	30.9

Table 2. (Continuation).

Dimensions	Items	Correct		Incorrect	
		n	%	n	%
Breastfeeding technique	The use of pacifiers or artificial nipples interferes with effective breastfeeding. (True)	434	81.3	100	18.7
	Infant positioning during breastfeeding influences latch quality. (True)	421	78.8	113	21.2
	Nipple injury and pain can be prevented with proper latch and positioning. (True)	409	76.6	125	23.4

Table 3, which examines attitudes toward EBF, shows that the willingness of mothers to breastfeed was nearly universal: 94.1% valued successful breastfeeding, and 93.1% supported breastfeeding even while working.

However, within the myths and beliefs dimension, 20.4% believed that breastfeeding harms their body, and 17.0% thought that breastfeeding should be discontinued if the infant gets sick.

Table 3. Attitudes toward exclusive breastfeeding, by dimension, among first-time mothers

Dimensions	Items	Agree		Neutral		Disagree	
		n	%	n	%	n	%
Willingness	Breastfeeds her baby even when tired.	532	99.6	0	0.0	2	0.4
	Always organizes her time to breastfeed her baby.	531	96.4	0	0.0	3	0.6
	Cannot breastfeed the baby in public places.	5	0.9	0	0.0	529	99.1
	Should offer the breast whenever the baby desires.	528	98.8	0	0.0	6	1.1
Successful breastfeeding	Giving infant formula makes babies healthier.	4	0.7	0	0.0	530	99.3
	Being comfortable and stress-free helps the mother produce more milk.	530	99.3	0	0.0	4	0.7
	Breastfeeding strengthens emotional bonding between mother and infant.	528	98.9	0	0.0	6	1.1
	Waking up at night to breastfeed causes discomfort for the mother.	10	1.9	0	0.0	524	98.1
Breastfeeding and work	Expressed breast milk can be given to the infant in a bottle.	9	1.7	0	0.0	525	98.3
	Infant formula is the best option for mothers who work or study.	10	1.9	0	0.0	524	98.1
Myths and beliefs	All women are prepared to breastfeed their babies.	11	2.1	0	0.0	523	97.9
	Consuming cocoa, oatmeal, and other liquids increases breast milk production.	84	15.7	4	0.8	446	83.5
	Family support is unnecessary during breastfeeding.	87	16.3	2	0.4	445	83.3
	Breastfeeding should be discontinued if the infant gets sick.	91	17.0	3	0.6	440	82.4
	Breastfeeding damages the breasts and the woman's body.	109	20.4	4	0.7	421	78.9

Regarding EBF practices, efficiency was observed in the breastfeeding technique (latch, infant positioning, and sucking). However, contrasts were identified in relation to signs of effective breastfeeding and breast

condition. A total of 30.7% of mothers did not practice on-demand feeding in response to hunger cues, and 42.5% reported pain or physical discomfort during breastfeeding (Table 4).

Table 4. Exclusive breastfeeding practices among first-time mothers.

Dimensions	Items	Yes		No	
		n	%	n	%
General signs of effective breastfeeding	The mother looks relaxed, comfortable, and shows signs of emotional bonding with her baby.	511	95.7	23	4.3
	The mother seeks a comfortable breastfeeding position, supporting her back.	390	73.0	144	27.0
	The baby looks healthy, calm, and relaxed. The baby seeks the breast when hungry.	386	72.3	148	27.7
	The mother recognizes her baby's hunger cues, such as rooting movements.	383	71.7	151	28.3
	The mother offers the breast in response to hunger cues (on-demand feeding).	370	69.3	164	30.7
Breast condition	The mother holds her breast with her fingers away from the nipple.	416	77.9	118	22.1
	When releasing the breast, it appears healthy, without engorgement or discoloration.	376	70.4	158	29.6
	The nipple protrudes and looks healthy, with no cracks, reddened areas, or bleeding.	369	69.1	165	30.9
	The mother does not exhibit signs of discomfort or breast pain.	307	57.5	227	42.5
Infant positioning	Provides support under the infant's buttocks (e.g., pillow or folded blanket).	486	91.0	48	9.0
	Positions the infant in alignment: ear, shoulder, and hip form a straight line.	433	81.1	101	18.9
	Holds the infant close to her abdomen.	406	76.0	128	24.0
	Places her baby facing her breast, as if looking at the nipple.	366	68.5	168	31.5
Latch	Waits for the infant to open the mouth and brings the infant to the breast, ensuring a deep latch (the mother does not lean toward the infant).	473	88.6	61	11.4
	Proper latch is observed: more areola visible above the mouth, wide-open mouth, chin touching the breast, and lips flanged outward.	403	75.5	131	24.5
	Stimulates the rooting reflex by brushing the nipple against the infant's upper lip, cheeks, or mouth corners.	397	74.3	137	25.7
Infant Sucking	The infant releases the breast spontaneously.	467	87.5	67	12.5
	No noises or clicking sounds are heard during sucking.	419	78.5	115	21.5
	Sucking is slow and deep; swallowing occurs every 3–4 sucks.	404	75.7	130	24.3
	The infant's cheeks remain rounded during feeding.	365	68.4	169	31.6
Risks for successful breastfeeding	The mother uses a bottle or pacifier.	438	82.0	96	18.0
	The mother gives her baby formula or water.	421	78.9	113	21.1

DISCUSSION

The results of this study show that among first-time mothers at the Santa Anita Maternal and Child Health Center, acceptable levels of knowledge regarding EBF exceed 95%, and favorable attitudes reach 83%. However, adequate practices do not exceed 88%, highlighting the presence of a gap between acquired knowledge and its practical application. These findings are consistent with KAP studies indicating that general knowledge about the benefits of breastfeeding and favorable attitudes do not automatically translate into effective practices, particularly among primiparous women, where vulnerability to technical difficulties and pain is associated with a higher risk of early breastfeeding discontinuation (6, 13, 14).

In the assessment of knowledge, a dissociation was observed between the favorable valuation of breastfeeding and the level of technical knowledge required for its sustained practice. Although most mothers recognize the superior nutritional value of breast milk, significant gaps persist in key aspects of breastfeeding physiology, such as the role of nighttime breastfeeding in milk production, the need to empty one breast before offering the other, and the relationship between proper latch and the prevention of pain and nipple injury, as well as persistent myths regarding breast size. These results reveal limitations in maternal autonomy to manage common breastfeeding challenges (pain, perceived low milk supply, and engorgement), emphasizing the need to reorient breastfeeding counseling and education programs implemented at the primary care level, shifting from a predominantly prescriptive approach to comprehensive interventions that include evidence-based information, practical demonstrations, myth correction, and ongoing support, as indicated by recent research on self-efficacy and pain management during breastfeeding (6–8, 15, 16).

Regarding attitudes, the results indicate that first-time mothers face significant cultural tensions and risk perceptions that may affect the continuity of EBF. Although only a minority perceive nighttime awakening as a burden or consider formula feeding the best option for working mothers, it is important to mention that a considerable proportion of women express concern about potential negative effects of breastfeeding on their bodies, and a significant proportion believe that breastfeeding should be discontinued if the infant gets sick. These findings are consistent with previous studies identifying concerns about body image, physical changes, and aesthetic alterations as important psychological barriers to sustained breastfeeding, even among mothers who recognize its benefits (7, 17, 18). Similarly, several studies indicate that the lack of clear and consistent information regarding breastfeeding management during infant illness generates uncertainty and unnecessary discontinuation decisions, influenced by both

family norms and conflicting messages (17, 19). In that sense, the data suggest that positive attitudes toward breastfeeding may reflect normative adherence rather than deeply internalized personal conviction, rendering them vulnerable to aesthetic expectations, work-related demands, and concerns about infant health. This supports existing evidence that sociocultural barriers and persistent myths (e.g., body damage, incompatibility with infant illness, and idealization of formula feeding among working mothers) constitute key psychological obstacles that can reduce maternal commitment and promote early discontinuation of EBF if not explicitly addressed in counseling and support interventions.

Regarding practices, the results indicate that mothers have only partially incorporated technical recommendations. While basic behaviors—such as waiting for the infant to open the mouth before approaching the breast—show high adherence, accuracy declines significantly in more nuanced skills. These include proper stimulation of the rooting reflex and strict face-to-face alignment, both of which are critical for effective latch and pain prevention. This finding is consistent with previous research indicating that mothers can replicate general positioning but struggle with specific technical components (such as body alignment, maximal mouth opening, and close contact). These deficiencies compromise effective feeding and increase the risk of nipple fissures, breast engorgement, and perceived insufficient milk supply, particularly among first-time mothers (7, 20). The study findings reinforce the hypothesis that an acceptable cognitive foundation alone does not guarantee optimal practices. Translation of knowledge into practical skills requires both supervised training and a supportive attitudinal and sociocultural environment that values the time and privacy necessary to learn and refine breastfeeding techniques—conditions that are often more fragile among first-time mothers.

In general terms, results indicate that the main challenge is no longer convincing mothers of the value of breastfeeding, but ensuring that they have enough technical knowledge, practical skills, and emotional support to sustain it in the face of pain, difficulties, and sociocultural pressures. This justifies reorienting primary healthcare interventions toward more intensive and continuous practical counseling programs, correcting myths (related to body image, infant illness, and breast size), and prioritizing first-time mothers as a strategic group for preventing early EBF discontinuation.

A central and distinctive aspect of this study is the development and application of a tailored instrument specifically designed to assess KAP regarding EBF among first-time mothers, explicitly incorporating myths, beliefs, and cultural perceptions that are often not comprehensively addressed in standardized instruments. This methodological approach allows for a deeper unders-

tanding of the phenomenon, considering that primiparity represents a stage of particular susceptibility to the influence of the family and social environment. Unlike other studies that use questionnaires focused primarily on technical or biomedical aspects of breastfeeding (4, 21, 22), the instrument developed in this study broadens the evaluative scope by including common beliefs such as perceived “insufficient milk,” the association of crying with persistent hunger, discontinuation of breastfeeding due to breast pain, fear of body changes, and the negative influence of maternal fatigue. The literature recognizes these myths as major contributors to early EBF discontinuation, particularly among first-time mothers (23–25).

Future researchers are encouraged to validate and apply the developed instrument in diverse sociocultural contexts and healthcare levels to strengthen its reliability and comparative utility. Additionally, longitudinal studies and probability-based sampling are recommended to analyze the evolution of KAP over time, as well as the incorporation of qualitative approaches to further explore the influence of myths, beliefs, and family support networks on EBF, thus contributing to the design of more effective and culturally sensitive educational interventions.

Although the study is limited by the use of non-probability sampling, the size of the study cohort strengthens the consistency of the results.

The educational strategies implemented during data collection highlight the active role of nursing in promoting EBF. Overall, the developed instrument and the findings

represent a significant methodological and practical contribution that can serve as a foundation for future research and interventions in maternal and child health.

CONCLUSIONS

The study shows that although mothers recognize the benefits of breast milk, significant gaps persist in technical knowledge regarding breastfeeding physiology (nighttime feeding, complete breast emptying, the role of proper latch, and long-term maternal benefits). These gaps limit mothers’ autonomous ability to prevent and manage common difficulties, potentially favoring early formula introduction and premature discontinuation of EBF. Attitudes are generally positive but tend to weaken under aesthetic pressures, work-related demands, or infant illness, leading many mothers to perceive formula as a convenient alternative. Although basic breastfeeding techniques are generally mastered, difficulties remain in fine motor skills (such as stimulating the rooting reflex and ensuring proper face-to-face alignment), indicating that education has been predominantly theoretical and that there is a lack of practical training, particularly among first-time mothers.

The main challenge is to develop continuous counseling programs based on effective communication skills, providing mothers with relevant information, guidance, and practical support to dismantle myths and beliefs, with special attention to first-time mothers, to prevent early breastfeeding discontinuation.

Conflict of interest:

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Authorship contribution:

JNLS: conceptualization, data curation, formal analysis, research, methodology, supervision, validation, writing of original draft, writing - review & editing.

MNRJ, GECS: methodology, validation, writing - review & editing.

JAVM: conceptualization, formal analysis, methodology, validation, writing of original draft, writing - review & editing.

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Corresponding author:

Jesusa Nicol Lucio Sulca

✉ 2024026998@unfv.edu.pe

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