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The effectiveness of breastfeeding technique guidance on the ability of primiparous postpartum mothers to provide breastfeeding

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Abstract:
Incorrect breastfeeding technique is a common and modifiable reason why first-time mothers start formula feeding early. This study aimed to examine the effect of breastfeeding technique guidance on the breastfeeding ability of primiparous postpartum mothers. A pre-experimental one-group pretest–posttest study was conducted at Aura Syifa Hospital, Kediri, Indonesia, from 7 to 25 June 2025. Thirty primiparous mothers were selected by simple random sampling from 32 eligible mothers. Each mother received individual bedside guidance on positioning, attachment, effective suckling, and post-feed care on postpartum days 1 and 2. Breastfeeding ability was observed with a structured checklist before and after guidance and analyzed with the Wilcoxon signed-rank test. Before guidance, most mothers had moderate (50.0%) or low (43.3%) ability, and only 6.7% had high ability. After guidance, 83.3% reached the high category, 16.7% remained moderate, and none were low. Every mother improved her score ($Z = -4.782$, $p < 0.001$, $r = 0.62$). Brief, hands-on breastfeeding technique guidance during the first two postpartum days markedly improved breastfeeding ability among primiparous mothers. Midwives and nurses should provide this guidance routinely before hospital discharge.

Keywords:
breastfeeding; breastfeeding technique; health education; postpartum period; primiparous mothers

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INTRODUCTION

Breastfeeding is one of the most effective and least expensive ways to protect child health. Breast milk provides the nutrients, antibodies, and bioactive factors that support infant growth, lower the risk of infection, and improve survival, while breastfeeding also benefits mothers by promoting uterine involution, reducing postpartum blood loss, and lowering the long-term risk of breast and ovarian cancer (Victora et al., 2016). Starting breastfeeding within the first hour after birth matters: delayed initiation is linked to a higher risk of neonatal death (Smith et al., 2017). Scaling up optimal breastfeeding could prevent many child deaths each year and yield substantial economic returns to countries (Rollins et al., 2016). Even so, breastfeeding rates remain below global targets, partly because families receive too little skilled support and are exposed to the aggressive marketing of commercial milk formula (Pérez-Escamilla et al., 2023).

Volume 02 Number 01 (May 2026)
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Indonesia faces the same gap. The 2023 Indonesian Health Survey (SKI), a national survey that combines basic health research and monitoring of nutritional status, reported that 18 provinces had not met the national target for early breastfeeding coverage, including East Java (Ministry of Health of the Republic of Indonesia, 2023). In East Java, only 33.5% of mothers started breastfeeding within one hour of birth. Exclusive breastfeeding coverage in the province reached 74% in 2023, below the target of 77%; 23 of 38 districts and cities did not meet the target, with Kediri among the lowest at 62% (East Java Provincial Health Office, 2024). Low breastfeeding coverage threatens infant growth and is closely tied to the national effort to prevent stunting, which relies on good infant feeding supported by health workers and community cadres (Ardiana et al., 2020).

Many mothers who intend to breastfeed stop or add formula in the first days after birth. The most common reasons are the perception that breast milk is insufficient, a baby who cries or seems unsatisfied, and nipple pain (Gatti, 2008; Odom et al., 2013). These problems often share one cause: incorrect positioning and attachment. When the infant is poorly attached, milk transfer is inefficient, the breast is not emptied well, and milk production can decline, which can confirm the mother's fear that she does not have enough milk. Observational studies have found ineffective breastfeeding technique in a large share of mothers, especially young mothers, first-time mothers, and those who received no breastfeeding counseling (Tiruye et al., 2018; Degefa et al., 2019). Primiparous mothers are particularly vulnerable because they have no previous experience and often lack confidence in their ability to breastfeed (Dennis, 2002; Meedya et al., 2010).

There is strong evidence that support from health workers improves breastfeeding. Systematic reviews show that education and counseling increase early initiation and exclusive breastfeeding, and that face-to-face support is more effective than information alone (Haroon et al., 2013; Sinha et al., 2015; Balogun et al., 2016). A Cochrane review concluded that offering breastfeeding support to all mothers increases both the duration and exclusivity of breastfeeding (Gavine et al., 2022). Self-efficacy theory explains why practical support helps: confidence grows most through mastery experiences, that is, by successfully performing a skill with guidance and feedback (Bandura, 1977). Interventions that strengthen breastfeeding self-efficacy improve breastfeeding rates (Brockway et al., 2017; Piro & Ahmed, 2020). In Indonesia, a community-based promotion program also extended the duration of exclusive breastfeeding (Susiloretni et al., 2015).

Importantly, breastfeeding support should extend beyond information transfer to include direct assessment of mothers' practical abilities. Knowing the recommended breastfeeding techniques does not necessarily mean that mothers can apply them correctly when positioning and attaching their infants. Practical demonstration, supervised practice, and immediate corrective feedback provide opportunities for mothers to develop the skills and confidence needed to breastfeed effectively. This approach is consistent with self-efficacy theory, which identifies mastery experiences as a central mechanism for developing confidence in performing a specific behavior (Bandura, 1977). Therefore, observing an actual breastfeeding session may help health workers identify technique-related difficulties that could remain undetected through verbal counseling or knowledge assessment alone.

However, in many hospitals, breastfeeding education after birth is still delivered mainly as brief verbal advice or leaflets, and the mother's actual technique is rarely observed. Most published

Volume 02 Number 01 (May 2026)
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studies also measure knowledge or self-reported confidence rather than observed skill. Evidence on short, hands-on guidance given during the brief postnatal hospital stay of primiparous mothers in Indonesian private hospitals remains limited.

The early postpartum period provides an important opportunity to establish effective breastfeeding practices before mothers and infants transition to home-based care. During the first days after birth, mothers are adapting to physical recovery, learning to recognize infant feeding cues, and developing confidence in their ability to breastfeed. For primiparous mothers, the absence of previous breastfeeding experience may make this transition particularly challenging (Dennis, 2002; Meedya et al., 2010). Providing individualized guidance during this period may allow health workers to identify positioning and attachment problems early, demonstrate appropriate techniques, and reinforce mothers' practical skills before hospital discharge. Such timely support may help address preventable breastfeeding difficulties and provide a stronger foundation for continued breastfeeding after discharge.

This gap is evident at Aura Syifa Hospital in Kediri. From September to December 2024, the hospital recorded 519 births, of which 346 (67%) were vaginal, averaging 87 vaginal births per month. A preliminary observation from 15 to 29 January 2025 included 28 primiparous postpartum mothers. Thirteen of them (46%) did not breastfeed on the first postpartum day and gave formula instead, because their infants cried frequently and they felt their milk supply was inadequate. Further assessment showed that 11 mothers used incorrect breastfeeding positions or improper infant attachment. These findings suggest that early, structured guidance on breastfeeding technique could prevent avoidable formula use. Therefore, this study aimed to examine the effect of guidance on breastfeeding techniques on the breastfeeding ability of primiparous postpartum mothers at Aura Syifa Hospital, Kediri. We hypothesized that breastfeeding ability would be higher after guidance than before guidance.

METHODS

This study used a pre-experimental one-group pretest–posttest design. Breastfeeding ability was measured in the same mothers before and after breastfeeding technique guidance. The study was conducted in the postnatal ward of Aura Syifa Hospital, Kediri Regency, East Java, Indonesia, from 7 to 25 June 2025. The population comprised all primiparous postpartum mothers treated during the data collection period (N = 32). Inclusion criteria were primiparous mothers on the first postpartum day after a vaginal birth, with a healthy term newborn in rooming-in care, able to communicate in Bahasa Indonesia, and willing to participate. Mothers or infants with conditions that required separation or contraindicated breastfeeding, and mothers discharged before the posttest, were excluded. The sample size was calculated using Slovin's formula with a 5% margin of error, yielding 30 participants. Participants were chosen by simple random sampling (lottery method) from the list of eligible mothers.

The intervention consisted of two individual bedside guidance sessions delivered by the researcher, a midwife, on postpartum day 1 (immediately after the pretest) and day 2 (before the posttest). Each session lasted about 30 minutes. The content followed standard breastfeeding counseling principles: hand hygiene and a comfortable maternal posture; expressing a few drops

Volume 02 Number 01 (May 2026)
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of breast milk onto the nipple and areola before feeding; infant positioning (head and body in a straight line, held close, facing the breast, with the shoulders supported); attachment (wide-open mouth, chin touching the breast, lower lip turned outward, more areola visible above than below the mouth); signs of effective suckling and swallowing; releasing the latch and switching breasts; and burping the infant after feeding. Each session followed four steps: explanation, demonstration with the mother's own infant, supervised practice by the mother, and immediate corrective feedback. The second session reviewed the techniques and corrected any remaining errors.

Breastfeeding ability was assessed using a structured observation checklist that covered the components listed above. The checklist contained [number] items, each scored 1 when performed correctly and 0 when not performed or performed incorrectly. Total scores were converted to percentages and classified as high (76–100%), moderate (56–75%), or low (< 56%). The checklist was reviewed for content validity by maternity care experts.

The pretest was conducted through direct observation of a complete breastfeeding session on postpartum day 1, before any guidance was provided. The posttest was conducted on postpartum day 2 by observing a complete breastfeeding session following the second guidance session. The same observer completed both observations using the same checklist. Demographic data (age, education, and occupation) were collected by structured interview.

Participant characteristics and breastfeeding ability categories were described using frequencies and percentages. Because the outcome was ordinal and the data were paired, pretest and posttest scores were compared using the Wilcoxon signed-rank test at a two-tailed significance level of 0.05. Effect size was calculated as $r = Z/\sqrt{N}$, where N is the total number of observations; values of 0.1, 0.3, and 0.5 indicate small, medium, and large effects, respectively (Fritz et al., 2012). Analyses were performed with a computer program. All mothers received verbal and written information about the study and gave written informed consent before participation. Participation was voluntary; mothers could withdraw at any time without affecting their care, and all data were kept confidential and analyzed anonymously.

RESULTS

All 30 mothers completed both the pretest and the posttest. Table 1 shows that most mothers were aged 20–35 years (80.0%), while 10.0% were younger than 20 years and 10.0% were older than 35 years. More than half had completed senior high school (53.3%), followed by junior high school (26.7%), college (13.3%), and elementary school (6.7%). Most mothers were housewives (66.7%).

Table 2 shows that, before guidance, half of the mothers (50.0%) had moderate breastfeeding ability, 43.3% had low ability, and only 6.7% had high ability. After guidance, 83.3% of mothers were in the high ability category, 16.7% remained in the moderate category, and none were in the low ability category. The number of mothers in the high category increased from 2 to 25, while the number in the low category fell from 13 to 0.

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

Table 1. Characteristics of respondents (n = 30)

Characteristics	Frequency	Percentage
Age		
< 20 years	3	10
20 - 35 years	24	80
> 35 years	3	10
Education		
No school	0	0
Elementary school	2	6.7
Junior high school	8	26.7
Senior high school	16	53.3
College	4	13.3
Work		
Housewife	20	66.7
Private employees	5	16.7
Self-employed	2	6.7
civil servant	2	6.7
Other	1	3.3

Table 2. Breastfeeding ability of primiparous postpartum mothers before and after breastfeeding technique guidance (n = 30)

Breastfeeding Ability	Before guidance		After guidance		Z
	Frequency	Percentage	Frequency	Percentage	
High	2	6.7	25	83.3	−4.782*
Moderate	15	50	5	16.7	
Low	13	43.3	0	0	

*Wilcoxon signed-rank test, $p < 0.001$ (two-tailed).

Table 3. Wilcoxon signed-rank test of breastfeeding ability scores before and after guidance (n = 30)

Ranks	n	Mean rank	Sum of ranks
Negative ranks (posttest < pretest)	0	0.00	0.00
Positive ranks (posttest > pretest)	30	15.50	465.00
Ties (posttest = pretest)	0	–	–
Total	30		
Z	−4.782		
p-value (two-tailed)	< 0.001		
Effect size (r)	0.62 (large)		

Note: Wilcoxon signed-rank test; effect size $r = |Z|/\sqrt{N}$, with N = 60 observations (30 mothers × 2 measurements).

Table 3 presents the results of the Wilcoxon signed-rank test. All 30 mothers had higher scores after guidance than before (30 positive ranks, no negative ranks, and no ties). The difference was statistically significant ($Z = -4.782$, $p < 0.001$), and the effect size was large ($r = 0.62$).

Posttest observations showed that technique errors fell sharply. Twenty-nine mothers (96.7%) held and positioned their infants correctly: the infant's head rested on the mother's forearm near the elbow, the shoulders were supported with one hand, one of the infant's arms was placed behind the mother's body and the other in front, and the infant's ear and arm were in a straight line. The five mothers who remained in the moderate category performed some steps incompletely; most often, they did not express a few drops of milk onto the nipple before feeding, or they put

Volume 02 Number 01 (May 2026)
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the infant to sleep without burping. All four college-educated mothers reached the high category on the posttest, and the two mothers with high ability on the pretest were both college graduates.

DISCUSSION

This study found that two short sessions of individual, hands-on guidance in breastfeeding techniques on the first and second postpartum days clearly improved the breastfeeding ability of primiparous mothers. Every mother improved; the proportion with high ability rose from 6.7% to 83.3%, no mother remained in the low category, and the effect size was large. These findings support the study hypothesis and show that simple guidance delivered at the bedside can correct most technique errors before mothers go home.

The baseline findings deserve attention. Before guidance, more than nine in ten mothers had only moderate or low ability, even though all were in a hospital with skilled staff. This is consistent with studies that found ineffective positioning and attachment in a large share of breastfeeding mothers, particularly first-time mothers and those who had not received counseling (Tiruye et al., 2018; Degefa et al., 2019). It also explains the preliminary observation at the same hospital, where almost half of primiparous mothers gave formula on the first day because their infants cried and their milk seemed insufficient. Perceived insufficient milk is one of the most frequent reasons for early supplementation and early weaning (Gatti, 2008; Odom et al., 2013). Our data suggest that in many cases this perception may result from poor technique rather than a true lack of milk.

The improvement observed here agrees with a large body of evidence. Systematic reviews show that breastfeeding education and counseling improve early initiation and exclusive breastfeeding, and that interventions delivered in person, and in combination, are the most effective (Haroon et al., 2013; Sinha et al., 2015). Cochrane reviews have reached similar conclusions for interventions that promote breastfeeding initiation and for support offered to all healthy mothers (Balogun et al., 2016; Gavine et al., 2022). In Indonesia, a structured promotion program extended the duration of exclusive breastfeeding in rural communities (Susiloretni et al., 2015). The present study adds evidence from an Indonesian hospital setting and shows that benefits can appear within 48 hours when the outcome is observed skill rather than self-reported knowledge.

Several mechanisms may explain why the guidance worked. First, the sessions were practical. Mothers did not only listen to explanations; they practiced with their own infants while the midwife watched and corrected them. Bandura's self-efficacy theory holds that successful performance, or mastery experience, is the strongest source of confidence (Bandura, 1977). Seeing their infant attach well and swallow effectively probably increased mothers' belief that they could breastfeed, which in turn encouraged them to keep trying. Interventions designed to strengthen breastfeeding self-efficacy have consistently improved breastfeeding outcomes (Brockway et al., 2017; Piro & Ahmed, 2020). Second, the guidance was individual. One-to-one sessions allowed the midwife to identify each mother's specific errors and to address them directly. Individual education has also reduced anxiety and improved coping in other patient groups, because the content is tailored to the person's needs (Azkiya et al., 2024). Third, the second session served as reinforcement. Repeating and

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

reviewing the skill on the following day helped mothers consolidate what they had learned and correct remaining mistakes.

The timing of the guidance is also important. The first two postpartum days are when breastfeeding is established and when mothers decide whether to supplement with formula. Guidance at this stage can break the cycle in which poor attachment leads to a crying infant, perceived insufficient milk, formula use, and reduced milk production. Because most mothers in Indonesia are discharged within one or two days after a vaginal birth, the hospital stay may be the only opportunity for a health professional to observe a complete feed. Using this short window well is therefore essential.

An important consideration is whether the breastfeeding skills acquired during hospitalization can be maintained after mothers return home. Although direct guidance helps mothers correct positioning and attachment, the transition to home-based care may introduce new challenges, including fatigue, uncertainty about milk sufficiency, limited family support, and difficulties responding to infant feeding cues. These challenges may undermine mothers' confidence and hinder the consistent application of appropriate breastfeeding techniques. Continued support from family members and health professionals is therefore important to reinforce the skills established during the early postpartum period. Integrating practical breastfeeding education with post-discharge counseling and community-based follow-up may help mothers maintain effective breastfeeding practices beyond the initial hospital stay (Meedya et al., 2010; Rollins et al., 2016).

Education level appeared to influence both baseline and final ability. The two mothers who already had high ability at pretest were college graduates, and all college-educated mothers reached the high category after guidance. Some mothers with senior high school education remained in the moderate category. Education may help mothers understand and apply new information more quickly. This does not mean that less-educated mothers benefit less; rather, they may need more time, simpler language, and additional demonstrations. Health workers should adapt the method to each mother's background, as is recommended in health education with other groups (Afandi et al., 2023).

The five mothers who stayed in the moderate category mainly missed two steps: expressing a few drops of milk onto the nipple before feeding and burping the infant after feeding. Both steps are easy to forget because they come before and after the feed itself. These steps may seem minor, but they affect comfort, attachment, and infant settling. Future guidance should explicitly emphasize them, for example, with a simple visual checklist that mothers can keep at the bedside.

Support from outside the hospital also matters. Mothers who perceive strong support from their husbands are more successful at breastfeeding in the postpartum period (Durmazoğlu et al., 2021). Family members, especially husbands and grandmothers, influence decisions about formula use after discharge. Community health cadres can extend hospital guidance into the home, as shown by programs that empowered cadres to prevent stunting through better infant nutrition in East Java (Ardiana et al., 2020). Linking hospital-based technique guidance with family involvement and community follow-up could help mothers maintain the skills they learned and continue exclusive breastfeeding for six months (Meedya et al., 2010; Rollins et al., 2016).

Volume 02 Number 01 (May 2026)
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Breastfeeding technique should also be considered an important intermediate outcome rather than a substitute for longer-term breastfeeding indicators. Appropriate positioning, effective attachment, and coordinated infant feeding are essential practical skills, but successful breastfeeding is also influenced by maternal health, milk production, infant conditions, and the availability of continued support. Therefore, an improvement in observed technique does not necessarily guarantee exclusive or sustained breastfeeding. Nevertheless, strengthening these basic skills during the early postpartum period provides an important foundation for effective feeding and may help reduce avoidable difficulties that contribute to early supplementation. Future interventions should consequently evaluate both immediate improvements in breastfeeding ability and subsequent outcomes, including exclusive breastfeeding, breastfeeding self-efficacy, and maternal experiences after discharge (Haroon et al., 2013; Sinha et al., 2015; Gavine et al., 2022).

These findings have clear implications for practice. Breastfeeding technique guidance should become a routine part of postnatal care for every primiparous mother rather than an optional activity. Midwives and nurses should observe at least one complete feed before discharge, using a short checklist, and provide hands-on correction when needed. Hospitals could include this observation in their discharge criteria and train staff in practical breastfeeding counseling. Because the intervention requires no special equipment and only two short sessions, it is feasible even in busy wards with limited resources.

This study has several limitations. First, the one-group pretest–posttest design without a control group cannot fully separate the effect of the guidance from other influences, such as natural learning over time, routine ward care, or increased attention from being observed. Second, the sample was small and came from a single private hospital, which limits the generalizability of the findings. Third, the same person delivered the guidance and assessed the outcome, which may have introduced observer bias. Fourth, follow-up was limited to the second postpartum day, so we do not know whether the improved ability was maintained or whether it led to higher rates of exclusive breastfeeding at six months. Future studies should use a randomized or quasi-experimental design with a control group, blinded outcome assessors, a larger, multi-site sample, and longer follow-up that includes measures of exclusive breastfeeding duration and breastfeeding self-efficacy.

Despite these limitations, the study has important strengths. Breastfeeding ability was measured by direct observation rather than self-report, the intervention was standardized and practical, and every participant completed both measurements. The results provide useful, context-specific evidence for midwives and nurses in Indonesia who seek simple, low-cost ways to improve breastfeeding among first-time mothers.

CONCLUSION

Breastfeeding technique guidance improved breastfeeding ability among primiparous mothers at Aura Syifa Hospital, Kediri. Following two individualized, hands-on guidance sessions on the first and second postpartum days, the proportion of mothers demonstrating high breastfeeding ability increased, while no mothers remained in the low-ability category. These findings highlight the value of early, practical breastfeeding support in helping first-time mothers establish effective breastfeeding techniques. Midwives and nurses should integrate individualized

breastfeeding guidance into routine postpartum care to ensure mothers receive adequate practical support before hospital discharge.

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CONFLICT OF INTEREST

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

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Volume 02 Number 01 (May 2026)
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