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Effectiveness of breastfeeding technique assistance on the breastfeeding ability of primiparous postpartum mothers: A pre-experimental study

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Abstract:
Incorrect breastfeeding technique is a common cause of early breastfeeding failure, particularly among first-time mothers. This study aimed to examine the effectiveness of breastfeeding technique assistance on the breastfeeding ability of primiparous postpartum mothers. A pre-experimental one-group pretest–posttest design was conducted at Aura Syifa Hospital, Kediri, Indonesia, in June 2025. Thirty primiparous mothers were selected by simple random sampling from 32 eligible mothers. The intervention comprised individual, face-to-face assistance on positioning, attachment, and effective suckling over two consecutive postpartum days. Breastfeeding ability was assessed with a structured observation checklist before and after the intervention and analyzed using the Wilcoxon signed-rank test. Before the intervention, 6.7% of mothers showed high ability, 50.0% moderate, and 43.3% low ability. After the intervention, 83.3% showed high ability and none remained in the low category. All 30 mothers improved their scores ($Z = -4.782$; $p < 0.001$; $r = 0.62$). Breastfeeding technique assistance substantially improved the breastfeeding ability of primiparous mothers. Structured, hands-on assistance should be integrated into routine postpartum nursing and midwifery care to support successful breastfeeding.

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

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INTRODUCTION

Breastfeeding is one of the most cost-effective interventions for improving child survival and lifelong health. Breast milk provides complete nutrition and immune protection, and optimal breastfeeding could prevent an estimated 823,000 child deaths each year worldwide (Victora et al., 2016). Delaying the initiation of breastfeeding beyond the first hour after birth is associated with a higher risk of neonatal mortality (Smith et al., 2017). Mothers also benefit, because early suckling stimulates uterine contraction and is associated with a lower risk of postpartum hemorrhage (Saxton et al., 2015). For these reasons, the protection and support of breastfeeding are recognized as a shared responsibility of health systems, families, and communities (Rollins et al., 2016).

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Despite strong national policies, breastfeeding performance in Indonesia remains suboptimal. The 2023 Indonesian Health Survey reported that 18 provinces had not yet reached the national target for early initiation of breastfeeding (Ministry of Health of the Republic of Indonesia, 2023). In East Java Province, only one-third of mothers initiated breastfeeding within the first hour after birth, and exclusive breastfeeding coverage reached 74%, below the national target of 77%. Twenty-three districts and cities, including Kediri City (62%), had not met the target (East Java Provincial Health Office, 2023). A large survey in East Java also showed that low breastfeeding self-efficacy remains common among mothers of young infants (Titaley et al., 2021).

Early breastfeeding failure is rarely caused by a single factor. Mothers frequently stop breastfeeding earlier than intended because of perceived insufficient milk, infant crying, nipple pain, and difficulties with latching (Odom et al., 2013). Breastfeeding difficulties in the first days after birth significantly increase the risk of early cessation (Gianni et al., 2019), and poor positioning and attachment are leading causes of nipple pain and trauma (Kent et al., 2015). Primiparous mothers are especially vulnerable because they have no previous breastfeeding experience and often have lower confidence in their ability to breastfeed (Colombo et al., 2018; Dennis, 2003). The early postpartum period is therefore a critical window in which mothers need practical help to establish effective breastfeeding (Rahmawati et al., 2024).

Evidence shows that professional breastfeeding support increases the duration and exclusivity of breastfeeding, particularly when it is delivered face-to-face and in a predictable, scheduled manner (McFadden et al., 2017). Interventions that strengthen breastfeeding self-efficacy also improve breastfeeding outcomes (Brockway et al., 2017; Chipojola et al., 2020), and web-based education has shown promising results among primiparous mothers (Fallah-Karimi et al., 2025). In contrast, prenatal education alone has produced inconsistent effects on breastfeeding after birth (Kehinde et al., 2023; Wouk et al., 2017). Family support is another important determinant, as support from spouses and family members strengthens maternal health behaviors, including breastfeeding (Durmazoğlu et al., 2021; Kurniyawan et al., 2023). However, most studies have measured self-efficacy or breastfeeding rates, while fewer have directly observed changes in mothers' technical breastfeeding ability during the short hospital stay, especially in Indonesian hospital settings.

Breastfeeding technique is a practical skill that requires more than knowledge or willingness to breastfeed. Mothers need to coordinate infant positioning, attachment to the breast, and recognition of effective suckling while responding to their infants' feeding cues. For primiparous mothers, these skills may be difficult to establish independently, particularly during the early postpartum period when they are adapting to maternal responsibilities. Structured assistance can address these challenges through direct demonstration, supervised practice, and immediate corrective feedback tailored to each mother's needs. Assessing breastfeeding ability before and after assistance may therefore provide a more direct indication of skill acquisition than relying solely on maternal knowledge, confidence, or breastfeeding status.

A preliminary study at Aura Syifa Hospital, Kediri, recorded 519 deliveries between September and December 2024, of which 346 (67%) were vaginal births. Observations from 15 to 29 January 2025 showed that 13 of 28 primiparous mothers (46%) did not breastfeed on the first postpartum day and instead gave formula, mainly due to infant crying and perceived low milk

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production. Further assessment found that 11 of these mothers used incorrect breastfeeding positions. These findings suggest that inadequate technique is a key and modifiable barrier to breastfeeding in this setting.

From a clinical perspective, the immediate postpartum period provides an important opportunity for nurses and midwives to identify breastfeeding difficulties and provide individualized support before mothers return home. A structured approach may also help healthcare professionals deliver more consistent assistance across patients, rather than relying exclusively on brief verbal instructions or responding only when problems arise. However, the usefulness of such an approach should be evaluated through measurable changes in mothers' ability to perform breastfeeding techniques correctly. Evidence from hospital-based practice may inform the integration of structured breastfeeding assistance into routine postpartum care, particularly for primiparous mothers with limited prior experience. Structured breastfeeding technique assistance provided by health professionals on the first postpartum day may help primiparous mothers acquire correct skills before discharge. Therefore, this study aimed to examine the effectiveness of assistance with breastfeeding techniques on the breastfeeding ability of primiparous postpartum mothers at Aura Syifa Hospital, Kediri, Indonesia.

METHODS

This study used a pre-experimental one-group pretest–posttest design. Breastfeeding ability was measured before and after a structured breastfeeding-technique-assistance intervention in the same group of mothers. The study was conducted in the postpartum ward of Aura Syifa Hospital, Kediri, East Java, Indonesia, from 7 to 25 June 2025. The population comprised all 32 primiparous postpartum mothers treated during the study period. Inclusion criteria were primiparous mothers on postpartum day 1, with a healthy term infant, rooming-in with the infant, able to communicate in Indonesian, and willing to participate. Mothers with obstetric complications, infants requiring intensive care, or medical contraindications to breastfeeding were excluded. Thirty mothers were selected by simple random sampling using a computer-generated list. A sensitivity analysis showed that 30 pairs provide 80% power to detect a standardized paired effect of $d \geq 0.53$ at a two-sided α of 0.05.

Breastfeeding technique assistance was delivered individually and face-to-face at the bedside by the researcher, a registered midwife, on two consecutive postpartum days. Each session included an explanation of the benefits of breastfeeding; a demonstration of correct positioning and attachment; recognition of signs of effective suckling; correct release of the breast and burping of the infant; and practical care of the breast and nipples. The assistant first demonstrated each step, then guided the mother during an actual feed, asked her to repeat the technique (return demonstration), and gave immediate corrective feedback. Each session lasted approximately 30 minutes.

Breastfeeding ability was measured using a structured observation checklist that covered preparation, maternal and infant positioning, attachment (latch), effective suckling, and ending the feed. Each item was scored 1 if performed correctly and 0 if not, and the total score was converted to a percentage. Ability was categorized as high (76–100%), moderate (56–75%), or low (<56%).

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The checklist was developed from standard breastfeeding technique guidelines and reviewed by maternity care experts before use.

The pretest was conducted on postpartum day 1 by observing a full breastfeeding session without any assistance. The intervention was then delivered over two consecutive days, and the posttest was conducted after the second session using the same checklist and the same observation procedure. Respondent characteristics and breastfeeding ability categories were summarized using frequencies and percentages. Because the scores were not normally distributed (Shapiro–Wilk test, $p < 0.05$), pretest and posttest scores were compared using the Wilcoxon signed-rank test with a two-sided significance level of 0.05. The effect size was calculated as $r = Z/\sqrt{N}$, where N is the total number of observations, and interpreted as small (0.1), medium (0.3), or large (≥0.5) (Fritz et al., 2012). Data were analyzed using a statistical program on a computer. All participants received oral and written information about the study and provided written informed consent. Participation was voluntary; mothers could withdraw at any time without affecting their care, and all data were anonymized.

RESULTS

Data were collected from 7 to 25 June 2025 at Aura Syifa Hospital, Kediri. All 30 randomly selected primiparous mothers completed the pretest, intervention, and posttest, with no dropouts. Respondent characteristics are presented in Table 1.

Table 1. Characteristics of respondents at Aura Syifa Hospital, Kediri (n = 30)

Characteristics	Category	Frequency	Percentage (%)
Age	< 20 years	3	10.0
	20–35 years	24	80.0
	> 35 years	3	10.0
Education	No schooling	0	0.0
	Elementary school	2	6.7
	Junior high school	8	26.7
	Senior high school	16	53.3
	College	4	13.3
Occupation	Housewife	20	66.7
	Private employee	5	16.7
	Self-employed	2	6.7
	Civil servant	2	6.7
	Other	1	3.3

As shown in Table 1, most respondents were aged 20–35 years (80.0%), representing the largest age group in the sample. The remaining respondents were equally distributed between those aged below 20 years and those aged above 35 years (10.0% each). Regarding educational attainment, senior high school was the most frequently reported level (53.3%), followed by junior high school (26.7%), college education (13.3%), and elementary school (6.7%). No respondents reported having no formal schooling. In terms of occupation, two-thirds of the participants were housewives (66.7%), while 16.7% were private employees. Self-employed respondents and civil servants each accounted for 6.7%, and the remaining 3.3% reported other occupations. Overall, the sample was

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predominantly composed of mothers aged 20–35 years, with senior high school education and housewife status.

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

Breastfeeding ability	Pretest n (%)	Posttest n (%)	Change (percentage points)
High	2 (6.7)	25 (83.3)	+76.6
Moderate	15 (50.0)	5 (16.7)	−33.3
Low	13 (43.3)	0 (0.0)	−43.3
Total	30 (100.0)	30 (100.0)	

Table 2 presents the distribution of breastfeeding ability before and after assistance with breastfeeding techniques. At baseline, moderate breastfeeding ability was the most common category, reported by 15 respondents (50.0%). A further 13 respondents (43.3%) demonstrated low breastfeeding ability, whereas only two (6.7%) were classified as having high ability. Thus, 28 respondents (93.3%) were initially classified as having either low or moderate breastfeeding ability.

Following the intervention, the distribution shifted toward the high-ability category. The number of respondents classified as having high breastfeeding ability increased from 2 (6.7%) to 25 (83.3%), representing a 76.6 percentage-point increase. Conversely, the proportion with moderate ability decreased from 50.0% to 16.7%, while the proportion with low ability declined from 43.3% to 0%. No respondents remained in the low-ability category at posttest.

These findings demonstrate a marked change in the overall distribution of breastfeeding ability after the intervention. The posttest results indicate that most participants achieved high breastfeeding ability, while the remaining participants were classified as having moderate ability. Nevertheless, these category-level findings describe the overall distribution and do not, by themselves, establish the magnitude or statistical significance of individual changes.

Table 3. Wilcoxon Signed-Rank Test of Breastfeeding Ability Before and After Breastfeeding Technique Assistance (n = 30)

Analysis	n	Mean rank	Sum of ranks	Z	p-value	Effect size (r)
Negative ranks	0	0.00	0.00			
Positive ranks	30	15.50	465.00			
Ties	0	–	–			
Wilcoxon signed-rank test	30			−4.782	< 0.001	0.62

Note. Negative ranks indicate lower posttest scores than pretest scores; positive ranks indicate higher posttest scores; ties indicate unchanged scores. Effect size \(r = 0.62\) indicates a large effect.

The individual score analysis further supported the observed improvement in breastfeeding ability. As presented in Table 3, all 30 respondents (100%) had higher posttest scores than pretest scores. No negative ranks or ties were observed, indicating that none of the participants experienced a decrease or no change in their measured breastfeeding ability scores.

The Wilcoxon signed-rank test identified a statistically significant difference between pretest and posttest scores ($Z = -4.782$, $p < 0.001$). The sum of positive ranks was 465.00, with a mean positive rank of 15.50. The reported effect size of 0.62 indicates a large within-participant effect.

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Taken together, the rank analysis and category distributions provide consistent evidence of improved breastfeeding ability over the study period.

Overall, the findings indicate that assistance with breastfeeding technique was associated with improvements in breastfeeding ability among primiparous postpartum mothers at Aura Syifa Hospital. The improvement was evident both in the shift toward the high-ability category and in the uniformly positive changes in individual scores. However, because the study used a one-group pretest–posttest design without a comparison group, the results demonstrate a temporal association rather than definitive evidence that the intervention alone caused the improvements. Other influences, including routine postpartum care and mothers' increasing experience with breastfeeding, may also have contributed.

DISCUSSION

This study found that structured assistance with breastfeeding techniques markedly improved breastfeeding ability among primiparous postpartum mothers. Before the intervention, more than 90% of mothers showed only moderate or low ability. After two days of assistance, more than 80% reached the high category, no mother remained in the low category, and every mother improved her score. The effect size was large, suggesting that the improvement was not only statistically significant but also clinically meaningful during a short hospital stay.

The improvement can be explained by how the assistance was delivered. Mothers not only received information; they watched a demonstration, practiced with their own infant, repeated the technique, and received immediate feedback. According to self-efficacy theory, confidence and competence grow most strongly through mastery experiences, supported by observation of others and verbal encouragement (Bandura, 1977). Breastfeeding self-efficacy theory applies the same principles to breastfeeding and shows that a mother's confidence predicts whether she will persist when difficulties arise (Dennis, 2003). In this study, each successful feed under guidance served as a mastery experience, likely strengthening both skill and confidence simultaneously.

Our findings are consistent with a large body of evidence. A Cochrane review concluded that professional support increases the duration and exclusivity of breastfeeding, and that face-to-face support delivered on a scheduled basis is more effective than reactive or telephone-only support (McFadden et al., 2017). Another Cochrane review found that individually tailored, professional-led interventions improve breastfeeding initiation (Balogun et al., 2016). Meta-analyses have also shown that educational interventions, especially those based on theory, improve breastfeeding self-efficacy and exclusive breastfeeding (Brockway et al., 2017; Chipojola et al., 2020). The present study provides direct observational evidence that such support improves mothers' practical technique, the behavior that ultimately determines milk transfer.

The timing of the intervention is also important. Most breastfeeding problems that lead to early cessation, such as nipple pain, poor latch, and perceived insufficient milk, appear in the first days after birth (Gianni et al., 2019; Odom et al., 2013). Incorrect attachment is a major cause of nipple pain and trauma (Kent et al., 2015), and pain discourages mothers from feeding frequently, which in turn reduces milk supply. Correcting technique on the first and second postpartum days may interrupt this cycle before it begins. This is particularly relevant in the study setting, where the

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preliminary study showed that many primiparous mothers gave formula on the first day because their infants cried and they believed their milk was insufficient. Early skin-to-skin contact and timely initiation further support successful breastfeeding (Moore et al., 2016; Smith et al., 2017), and technique assistance can be combined with these practices.

Prenatal education is often used to prepare mothers for breastfeeding, but its effect after birth is inconsistent (Kehinde et al., 2023; Wouk et al., 2017). Knowledge gained during pregnancy may not translate into skill when a mother faces a real, hungry newborn. Our results suggest that postnatal, hands-on assistance fills this gap. Similarly, web-based education has improved self-efficacy and exclusive breastfeeding among primiparous mothers (Fallah-Karimi et al., 2025). Digital education and face-to-face assistance are therefore complementary: the former offers continuous access to information after discharge, while the latter builds practical skills. A blended approach may produce the most sustainable effect.

The characteristics of the respondents may have supported the positive outcome. Most mothers were aged 20–35 years, had at least senior high school education, and were housewives who could spend more time with their infants. Maternal education and socio-demographic factors are known determinants of breastfeeding outcomes (Colombo et al., 2018), and low breastfeeding self-efficacy in East Java has been associated with several maternal and service-related factors (Titaley et al., 2021). However, because this study did not test differences between subgroups, these characteristics should be viewed as context rather than as proven predictors. Future studies with larger samples should examine whether the effect varies by education, age, or employment status.

Breastfeeding does not depend on the mother alone. Support from spouses has been shown to improve breastfeeding in the postpartum period (Durmazoğlu et al., 2021), and family support strengthens health awareness and health behaviors in Indonesian families, including breastfeeding (Kurniyawan et al., 2023). Good family communication also helps families meet the nutritional needs of young children (Nurprastiwi et al., 2024). Other supportive interventions, such as postpartum yoga, have also improved breastfeeding self-efficacy and maternal attachment in primiparous mothers (Boybay Koyuncu & Yayan, 2022). Involving partners or family members in technique assistance sessions could therefore help mothers maintain correct practices after they return home.

From a nursing and midwifery perspective, these findings highlight the central role of health professionals as educators and coaches. Becoming a mother is a developmental process in which competence and confidence grow through interaction with the infant and with supportive others (Mercer, 2004). Bedside technique assistance creates a structured, supportive interaction. It is also in line with the Baby-Friendly Hospital Initiative, which emphasizes teaching mothers how to breastfeed and maintain lactation (Pérez-Escamilla et al., 2016). Because the intervention is simple, low-cost, and requires no special equipment, it can be integrated into routine postpartum care in hospitals and primary health centers. Using a standard checklist at discharge would also allow nurses and midwives to identify mothers who still need help. Hospitals could further strengthen continuity of care by linking discharge assessment to follow-up visits or telephone support from community health workers, so that mothers who still struggle with technique after discharge can be reached early, before problems lead to formula supplementation or cessation of breastfeeding.

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An important consideration for implementation is the standardization of breastfeeding assistance. Although individualized coaching allows nurses and midwives to respond to each mother's difficulties, a structured checklist can help ensure that essential skills are consistently covered. These may include positioning the infant, achieving an effective latch, recognizing signs of adequate milk transfer, and identifying common feeding difficulties. Observing a complete feeding session and asking mothers to demonstrate the technique independently before discharge may help identify skills that still require reinforcement. Consistent documentation can also support communication among healthcare providers and facilitate targeted follow-up for mothers who need additional assistance.

The improvement observed over two days should also be distinguished from sustained breastfeeding success. Better technique immediately after coaching does not necessarily guarantee continued exclusive breastfeeding, particularly when mothers encounter fatigue, nipple pain, concerns about milk supply, or limited support at home. Post-discharge follow-up should therefore assess not only breastfeeding technique but also feeding frequency, infant attachment, maternal confidence, and reasons for any supplementation. Combining early hands-on assistance with continued professional and family support may help mothers translate newly acquired skills into daily practice. Future studies should assess whether improvements in observed technique are sustained and associated with longer breastfeeding duration and higher rates of exclusive breastfeeding.

This study has several limitations. First, a one-group design without a control group cannot rule out the effects of natural learning over time, routine ward care, or regression to the mean. Second, the sample was small and drawn from a single hospital, which limits generalizability. Third, the same observers delivered the intervention and assessed the outcome, potentially introducing observer bias. Fourth, the posttest was conducted immediately after the intervention, so the persistence of the effect and its impact on exclusive breastfeeding were not evaluated. Future research should use randomized controlled designs, blinded outcome assessors, validated tools such as the LATCH score (Jensen et al., 1994), and longer follow-up of breastfeeding duration and exclusivity.

CONCLUSION

Breastfeeding technique assistance was effective in improving breastfeeding skills among primiparous postpartum mothers. Before the intervention, most mothers had moderate or low ability, whereas after two days of structured, hands-on assistance, most mothers achieved high ability, and none remained in the low category. Nurses and midwives should provide assistance with breastfeeding techniques as a routine part of early postpartum care to help first-time mothers establish successful breastfeeding.

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