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Effect of Breastfeeding Technique Education on Breastfeeding Success Among Primiparous Postpartum Mothers in Magetan

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ABSTRACT Exclusive breastfeeding rates in Indonesia remain below national and global targets, with a substantial proportion of postpartum mothers experiencing breastfeeding difficulties, particularly among primiparous women. Inadequate breastfeeding technique is a major contributing factor, often resulting from limited experience, insufficient education, and lack of hands-on guidance during the early postpartum period. These challenges may compromise breastfeeding success, maternal confidence, and infant nutrition outcomes. This study aimed to examine the effect of structured breastfeeding technique education on breastfeeding success among primiparous postpartum mothers. A quantitative pre-experimental study with a one-group pretest–posttest design was conducted at RSUD dr. Sayidiman Magetan. Forty primiparous postpartum mothers were recruited using non-probability sampling based on predefined inclusion criteria. The intervention consisted of structured breastfeeding technique education delivered by trained midwives through direct explanation, visual leaflets, practical demonstrations, and interactive discussion sessions. Breastfeeding success was assessed before and after the intervention using the LATCH scoring system, which evaluates latch, audible swallowing, nipple type, maternal comfort, and infant positioning. Data were analyzed using the Wilcoxon Signed-Rank Test. The results demonstrated a statistically significant improvement in breastfeeding success following the educational intervention ($Z = -5.35$, $p < 0.005$), with a large effect size ($r = 0.85$). Prior to education, 75% of mothers were classified in the "not successful" category, while none achieved a "good" score. After the intervention, 70% of participants attained good breastfeeding success, and the proportion of mothers with inadequate scores decreased to 2.5%. Improvements were consistently observed across all LATCH components. In conclusion, structured breastfeeding technique education significantly enhances breastfeeding success among primiparous postpartum mothers. Integrating systematic, hands-on breastfeeding education into routine postnatal care is strongly recommended to promote effective breastfeeding practices and support exclusive breastfeeding goals.

INDEX TERMS Breastfeeding Technique Education, Breastfeeding Success, Primiparous Mothers, Postpartum Care, LATCH Score

I. INTRODUCTION

Exclusive breastfeeding (EBF) is internationally recognized as a cornerstone of infant health, providing optimal nutrition, immune protection, and long-term developmental benefits. The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life; however, global and national adherence to this recommendation remains suboptimal [1], [2]. In Indonesia, recent national health reports indicate that exclusive breastfeeding coverage has not reached targeted levels, with early initiation and sustained breastfeeding practices continuing to decline [3], [4]. A significant proportion of postpartum mothers report breastfeeding-related difficulties, particularly during the early postnatal period, which contributes to premature cessation of exclusive breastfeeding [5].

Primiparous postpartum mothers represent a high-risk group for breastfeeding failure due to limited experience, insufficient confidence, and lack of practical breastfeeding skills [6], [7]. Inadequate breastfeeding technique including poor latch, incorrect infant positioning, and ineffective suckling can result in nipple trauma, breast engorgement, mastitis, reduced milk transfer, and suboptimal infant weight gain [8]–[10]. Empirical evidence consistently demonstrates that technical errors during breastfeeding are a major determinant of maternal discomfort and early breastfeeding discontinuation [11]. Local clinical observations at RSUD dr. Sayidiman Magetan in 2025 further confirmed that many first-time mothers experienced breastfeeding problems following hospital discharge, highlighting gaps in postnatal breastfeeding education and support [12].

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State-of-the-art interventions to improve breastfeeding outcomes emphasize structured breastfeeding education that combines theoretical explanation with hands-on demonstration and individualized counseling [13], [14]. Recent studies have shown that educational strategies using visual aids, practical demonstrations, and direct supervision by trained health professionals significantly enhance maternal breastfeeding competence and confidence [15]–[17]. Digital and mobile-based education tools have also gained attention; however, evidence suggests that face-to-face, technique-focused education remains the most effective approach during the immediate postpartum period [18], [19]. To objectively evaluate breastfeeding effectiveness, the LATCH scoring system has been widely adopted due to its reliability and clinical applicability in assessing latch quality, audible swallowing, nipple condition, maternal comfort, and infant positioning [20], [21].

Despite growing literature on breastfeeding education, several research gaps remain evident. First, many studies focus primarily on knowledge outcomes rather than objective measures of breastfeeding technique and success [22]. Second, limited research in Indonesia specifically targets primiparous postpartum mothers using standardized assessment tools such as the LATCH score [23]. Third, evidence from regional and district hospitals regarding the immediate effectiveness of structured breastfeeding technique education is still scarce, limiting the generalizability of existing findings [24]. Addressing these gaps is essential to strengthen evidence-based breastfeeding interventions that are contextually relevant and feasible within routine maternal healthcare services.

Therefore, this study aims to determine the effect of structured breastfeeding technique education on breastfeeding success among primiparous postpartum mothers at RSUD dr. Sayidiman Magetan. Breastfeeding success is assessed using the LATCH scoring system before and after the educational intervention. This study is expected to contribute valuable empirical evidence supporting the integration of structured breastfeeding education into standard postnatal care.

The contributions of this study are threefold. First, it provides objective evidence of the effectiveness of breastfeeding technique education among primiparous mothers using the LATCH score. Second, it identifies specific components of breastfeeding technique that improve following targeted education, offering practical implications for midwifery practice. Third, it proposes a feasible and scalable education model that can be implemented in regional hospitals to support national exclusive breastfeeding programs [25].

The remainder of this article is structured as follows. Section II describes the research methodology, including study design, participants, instruments, and data analysis. Section III presents the results of the study. Section IV discusses the findings in relation to current literature, limitations, and clinical implications. Finally, Section V concludes the study and provides recommendations for future research.

II. METHOD

A. STUDY DESIGN

This study employed a quantitative pre-experimental design using a one-group pretest–posttest approach. The design was selected to evaluate changes in breastfeeding success following a structured breastfeeding technique education intervention within a single group of participants. This approach allows direct comparison of outcomes before and after the intervention in the same subjects, thereby controlling for inter-individual variability. However, no randomization or control group was applied, which limits causal inference but remains appropriate for preliminary effectiveness evaluation in clinical settings [26], [27].

B. STUDY SETTING AND PERIOD

The study was conducted in the Maternity Ward (Srikandi Room) of RSUD dr. Sayidiman Magetan, a regional public hospital under the Magetan Regency Health Office, East Java, Indonesia. Data collection took place on March 10, 2025, between 08:00 and 12:00 WIB, during routine postpartum care activities. The hospital was selected due to its role as a referral center for maternal and neonatal services and the observed prevalence of breastfeeding difficulties among primiparous mothers.

C. POPULATION AND SAMPLE

The target population consisted of all primiparous postpartum mothers hospitalized at RSUD dr. Sayidiman Magetan during the study period, totaling 60 individuals. Sample size determination followed feasibility considerations and adherence to inclusion and exclusion criteria. A final sample of 40 respondents was obtained using non-probability sampling, specifically accidental sampling, whereby participants were recruited based on availability and willingness to participate at the time of data collection [28].

D. ELIGIBILITY CRITERIA

1. Inclusion criteria were: (a) primiparous postpartum mothers, (b) currently breastfeeding, (c) rooming-in with their infants, (d) mothers and infants without medical contraindications to breastfeeding, and (e) ability to complete both pretest and posttest observations.
2. Exclusion criteria included: (a) mothers or infants requiring intensive care, (b) mothers with physical or functional impairments limiting breastfeeding ability, (c) infants with congenital conditions affecting feeding (e.g., cleft lip or palate), and (d) incomplete participation in study procedures.

E. VARIABLES AND OPERATIONAL DEFINITIONS

The independent variable was breastfeeding technique education, defined as a structured educational intervention delivered by trained midwives. The dependent variable was breastfeeding success, operationalized using the LATCH scoring system. LATCH evaluates five components Latch, Audible swallowing, Type of nipple, Comfort, and Hold each scored from 0 to 2, producing a total score ranging from

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0 to 10. Higher scores indicate more effective breastfeeding technique [29], [30].

F. INTERVENTION PROCEDURE

The intervention consisted of structured breastfeeding technique education delivered individually to each participant. Education was conducted by certified midwives and included:

1. verbal explanation of breastfeeding principles,
2. demonstration of correct breastfeeding positions and latch techniques using the mother–infant dyad,
3. distribution of visual educational leaflets, and
4. interactive discussion and question-and-answer session.

Each education session lasted approximately 30–45 minutes. The content focused on correct infant positioning, effective latch, recognizing swallowing cues, nipple care, and maternal comfort. The intervention was conducted immediately after the pretest assessment and followed standardized educational guidelines to ensure consistency across participants [31].

G. DATA COLLECTION INSTRUMENTS

Breastfeeding success was assessed using a standardized LATCH assessment sheet administered before (pretest) and after (posttest) the intervention. Observations were conducted directly by trained researchers to minimize reporting bias. The LATCH tool has demonstrated acceptable reliability and validity in clinical breastfeeding assessment and is widely used in maternal health research [32].

H. DATA ANALYSIS AND ETHICAL CONSIDERATIONS

Data were analyzed using non-parametric statistical methods due to the ordinal nature of LATCH scores and the paired study design. The Wilcoxon Signed-Rank Test was employed to compare pretest and posttest scores. Statistical significance was set at $p < 0.005$. Effect size was calculated using the formula $r = Z/\sqrt{N}$ to assess the magnitude of the intervention effect [33].

Ethical approval was obtained from the Health Research Ethics Committee of Poltekkes Kemenkes Surabaya (Approval No. EA/3148/KEPK-Poltekkes_Sby/V/2025). All participants provided informed consent prior to participation. Confidentiality and anonymity were maintained throughout data collection and analysis, and participants retained the right to withdraw at any time without consequences.

III. RESULT

The results of the study entitled Breastfeeding Technique Education on the success of breastfeeding in primiparous postpartum mothers conducted on March 10, 2025, starting at 08.00 WIB to 12.00 WIB are as follows:

This research was conducted at RSUD Sayidiman Mageetan located at Jl. Raya Sarangan No. 2, Tambran, Magetan District, Magetan Regency. Postal Code 63318. RSUD dr. Sayidiman Magetan is a regional general hospital in Magetan under the auspices of the Magetan Regency Health Office. According to the history of the establishment of RSUD Dr. Sayidiman Magetan originated from a barracks for Plague sufferers and was established during the Dutch era, namely in 1914. The original location was not at the current location of the hospital but was in the Kauman area, Magetan Village. In this study, researchers took a population of primiparous postpartum mothers at Dr. Sayidiman Hospital, Magetan, with a total of 60 people. Of this number, 40 people were selected as samples who met the inclusion and exclusion criteria.

TABLE 1
Distribution of Frequency of Breastfeeding Success of Postpartum Mothers Before and After Being Given Education in the Srikandi Room of Dr. Sayidiman Hospital, Magetan

Variable	Breastfeeding Success			
	Before		After	
	F	%	F	%
Attachment				
Bad	27	67,5	0	0
Not good	11	27,5	9	22,5
Good	2	5	31	77,5
Total	40	100	40	100
Swallowing Sound				
Not Heard	23	57,5	0	0
Rarely Heard Of	15	37,5	9	22,5
Often Heard	2	5	31	77,5
Frequently And Regularly	40	100	40	100
Nipple Shape				
Sunset	3	7,5	0	0
Flat Nipples	28	70	9	22,5
Stand Out	9	22,5	31	77,5
Total	40	100	40	100
Comfort				
Cracked Nipples	3	2,5	0	0
Sore Nipples	4	10	3	22,5
No Complaints	35	87,5	37	77,5
Total	40	100	40	100
Baby's Position				
Helped	35	87,5	2	5
A Little Help	5	12,5	9	22,5
Not Helped	0	0	29	72,5
Total	40	100	40	100

TABLE 1 shows that prior to receiving breastfeeding technique education, the majority of mothers had poor attachment (67.5%), flat nipple shape (70.0%), and unassisted infant positioning (87.5%). After the intervention, 77.5% demonstrated good attachment, regular swallowing sounds, and prominent nipple shape, while 72.5% were able to breastfeed without assistance, suggesting notable improvements across key breastfeeding indicators.

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TABLE 2
Distribution of Frequency of Breastfeeding Technique Education on Breastfeeding Success in Postpartum Mothers Before and After Being Given Breastfeeding Techniques at RSUD Dr. Sayidiman Magetan

Education On Breastfeeding Techniques	Breastfeeding Success							
	Good (8-10)		Enough (4-7)		Not Enough (0-3)		Amount	
	F	%	F	%	F	%	F	%
Before	0	0	10	25,5	30	75.0	40	100
After	28	70	11	27.5	1	2.5	40	100

TABLE 2 indicates that prior to the breastfeeding technique education, most mothers fell within the 'not good' category for breastfeeding success (75.0%), with the remainder classified as 'sufficient' (25.0%) and none achieving a 'good' rating. Post-intervention, 70.0% of mothers demonstrated good breastfeeding success, 27.5% were sufficient, and only 2.5% remained in the 'not good' category suggesting a substantial improvement following the education program.

TABLE 3
The Average Value of the Influence of Breastfeeding Technique Education on Breastfeeding Success in Primiparous Postpartum Mothers at Dr. Sayidiman Hospital, Magetan

		N	Mean Ranks	Sum Of Ranks	Z	Asymp Sig (2-Taired)
Before	Negative	40	19	703.00	-	0.0000
After	Rank	0	Nan	.00	5.35	5355
	Positif Ranks	0				
	Ties	40				
	Total					

Based on TABLE 3, A Wilcoxon signed-rank test indicated a significant improvement in breastfeeding success following the breastfeeding technique education, Z = -5.35, $p < .005$, r = .85. (Large effect size based on Cohen's criteria, where $r = Z / \sqrt{N} \rightarrow -5.35 / \sqrt{40} \approx .85$).The intervention led to a marked shift in breastfeeding success: prior to education, 75% of mothers scored in the 'not enough' category, which dropped to 2.5% after education. Conversely, the proportion achieving 'good' breastfeeding success surged from 0% to 70%. These improvements were consistent across multiple indicators attachment, nipple comfort, and infant positioning highlighting the education program's broad impact. Effect size calculations (r = .85) suggest a large and meaningful clinical effect.

IV. DISCUSSION

A. Interpretation of Breastfeeding Practices Among Primiparous Mothers

The findings of this study demonstrate that breastfeeding success among primiparous postpartum mothers prior to the educational intervention was predominantly low. The majority of participants exhibited inadequate breastfeeding technique, as reflected by low LATCH scores across multiple indicators, including poor latch, minimal audible swallowing, suboptimal nipple condition, maternal discomfort, and reliance on assistance for infant positioning. This pattern underscores the vulnerability of first-time mothers during the early postpartum period, when breastfeeding skills are still developing and confidence remains limited.

From a physiological perspective, ineffective breastfeeding technique directly compromises milk transfer and hormonal stimulation. Proper latch and sustained suckling are essential for triggering the release of prolactin and oxytocin, which regulate milk production and let-down reflexes [34]. When technique is inadequate, these mechanisms are disrupted, increasing the likelihood of early breastfeeding difficulties, maternal pain, and infant dissatisfaction. The high prevalence of poor technique observed in this study aligns with prior evidence indicating that technical errors are a primary cause of early breastfeeding failure among primiparous mothers [35].

Following the structured breastfeeding technique education, a marked and statistically significant improvement in breastfeeding success was observed. Post-intervention, the majority of mothers achieved high LATCH scores, indicating effective latch, regular swallowing sounds, improved nipple condition, greater maternal comfort, and independent infant positioning. The large effect size (r = 0.85) further confirms that the observed changes were not only statistically significant but also clinically meaningful. This finding suggests that breastfeeding technique education has a direct and substantial impact on maternal breastfeeding performance when delivered in a structured and practical manner.

Behavioral theory provides a useful framework for interpreting these results. According to health behavior models, knowledge acquisition alone is insufficient to change behavior unless accompanied by skill development and increased self-efficacy [36]. The educational intervention in this study emphasized hands-on demonstration and supervised practice, enabling mothers to immediately apply correct techniques. This experiential learning process likely strengthened maternal confidence and facilitated rapid behavioral change, resulting in improved breastfeeding outcomes.

B. Comparison with Previous and Similar Studies

The results of this study are consistent with a growing body of international and national research demonstrating the effectiveness of breastfeeding education interventions. Systematic reviews and meta-analyses have reported that structured breastfeeding education significantly improves breastfeeding technique, maternal confidence, and exclusive breastfeeding rates, particularly among primiparous mothers [37], [38]. Similar to the present findings, Kehinde et al. reported that mothers who received practical breastfeeding education showed significantly higher breastfeeding effectiveness scores compared to those receiving routine information only [39].

Studies conducted in hospital-based settings further support the effectiveness of hands-on breastfeeding education during the immediate postpartum period. Rohini et al. found that mothers who received direct demonstration and counseling exhibited higher LATCH scores and were

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more likely to initiate exclusive breastfeeding before discharge [40]. These findings align closely with the present study, which demonstrated substantial improvements across all LATCH components following education.

However, some contrasts with previous research warrant discussion. Several studies have explored digital or mobile-based breastfeeding education interventions and reported moderate improvements in breastfeeding knowledge but less pronounced effects on practical breastfeeding technique [41]. This contrast highlights the importance of direct, face-to-face education when addressing skill-based behaviors such as infant positioning and latch. The superior outcomes observed in the present study may be attributed to the use of direct observation, individualized feedback, and immediate correction of technique elements that are difficult to replicate through digital platforms alone.

Additionally, some longitudinal studies have reported that the effects of breastfeeding education diminish over time without continued support [42]. While the present study demonstrated strong immediate post-intervention effects, the lack of long-term follow-up limits conclusions regarding sustained breastfeeding success. This difference suggests that while short-term education is effective, ongoing support mechanisms may be necessary to maintain breastfeeding behaviors over several months.

C. Limitations, Weaknesses, and Implications of the Findings

Despite its strengths, this study has several limitations that should be acknowledged. First, the use of a pre-experimental one-group pretest–posttest design without a control group limits causal inference. Although the significant improvements observed are strongly associated with the educational intervention, other unmeasured factors such as increased attention from health staff or peer influence may have contributed to the outcomes. Second, the relatively small sample size and single-center setting restrict the generalizability of the findings to broader populations or different healthcare contexts.

Another limitation relates to the short follow-up period. Breastfeeding success was assessed immediately after the intervention, preventing evaluation of long-term breastfeeding continuation or exclusive breastfeeding rates at later postpartum stages. Additionally, while the LATCH score is a validated and widely used tool, it relies partly on observer judgment and maternal reporting, which may introduce subjective bias [43]. Finally, the use of non-probability sampling may have resulted in selection bias, as participants who agreed to participate may have been more motivated to improve their breastfeeding practices.

Despite these limitations, the findings have important practical and theoretical implications. Clinically, the results support the integration of structured breastfeeding technique education into routine postnatal care, particularly for primiparous mothers. Hospitals and maternity facilities are encouraged to allocate dedicated time and trained personnel to deliver hands-on breastfeeding education before discharge. The use of standardized assessment tools such as the LATCH score can aid early identification of mothers requiring additional support.

From an institutional perspective, the findings highlight the critical role of midwives and nursing staff in breastfeeding promotion. Continuous professional training in lactation support and the establishment of breastfeeding-friendly environments such as lactation corners and follow-up counseling services may enhance the sustainability of breastfeeding success [44]. At the policy level, the study reinforces national and global recommendations advocating for structured breastfeeding support as a key strategy to improve exclusive breastfeeding coverage.

For future research, larger multi-center studies with randomized controlled designs are recommended to strengthen causal inference and generalizability. Longitudinal follow-up studies examining breastfeeding outcomes at three and six months postpartum would provide valuable insight into the durability of educational interventions. Furthermore, future research should explore the combined effects of education, family involvement, and community-based support to develop comprehensive breastfeeding promotion models [45].

V. CONCLUSION

This study aimed to determine the effect of structured breastfeeding technique education on breastfeeding success among primiparous postpartum mothers at RSUD dr. Sayidiman Magetan. The findings demonstrate that breastfeeding technique education produced a substantial and clinically meaningful improvement in breastfeeding success. Prior to the intervention, the majority of participants (75%) were categorized as having inadequate breastfeeding success based on LATCH scores ranging from 0 to 3, while none achieved a “good” breastfeeding category. Following the educational intervention, the proportion of mothers with inadequate breastfeeding success decreased sharply to 2.5%, whereas 70% of participants achieved good breastfeeding success with LATCH scores between 8 and 10. Statistical analysis using the Wilcoxon Signed-Rank Test confirmed a significant improvement in breastfeeding success after the intervention ($Z = -5.35$, $p < 0.005$), accompanied by a large effect size ($r = 0.85$), indicating a strong impact of the educational program. Improvements were consistently observed across all LATCH components, including latch quality, audible swallowing, nipple condition, maternal comfort, and infant positioning, reflecting enhanced technical competence and maternal confidence in breastfeeding practices. These results highlight the effectiveness of structured, hands-on breastfeeding technique education delivered during the early postpartum period, particularly for first-time mothers who are more vulnerable to breastfeeding difficulties. The findings support the integration of standardized breastfeeding education into routine postnatal care services as a strategy to promote effective breastfeeding and support national exclusive breastfeeding goals. Despite these positive outcomes, future research is warranted to strengthen and extend the evidence base. Subsequent studies should employ randomized controlled designs with larger and

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more diverse samples across multiple healthcare settings to improve generalizability and causal inference. Longitudinal follow-up at three and six months postpartum is recommended to evaluate the sustainability of breastfeeding success and exclusive breastfeeding duration. Additionally, future research should explore the role of complementary factors such as partner involvement, family support, and community-based lactation programs, as well as the integration of digital education tools alongside face-to-face instruction, to develop comprehensive and sustainable breastfeeding support models.

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DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTION

Nunung Devi M was responsible for the study conception, data collection, and initial manuscript drafting. Nurlailis Saadah contributed to research design, methodological supervision, and critical revision of the manuscript. Astuti Setiyani participated in data analysis, interpretation of results, and manuscript editing. Budi Joko Santosa provided statistical guidance, contributed to data interpretation, and reviewed the manuscript for intellectual content. All authors read and approved the final version of the manuscript.

DECLARATIONS

ETHICAL APPROVAL

This study received ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Surabaya (Approval No. EA/3148/KEPK-Poltekkes_Sby/V/2025). Written informed consent was obtained from all participants prior to their involvement in the study.

CONSENT FOR PUBLICATION PARTICIPANTS.

Not applicable.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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