

Original Article

Effectiveness of Mind-Body-Based Psychoeducation in Strengthening Midwives' Role and Enhancing Breastfeeding Self-Efficacy Among Postpartum Mothers: A Quasi-Experimental Study



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ABSTRACT

Background: Breast milk is the best nutrition for babies and has long-term benefits for both mother and child health. A critical factor in successful breastfeeding is breastfeeding self-efficacy (BSE), a mother's confidence in her ability to breastfeed.

Methods: This quasi-experimental study employed a pre-test and post-test design with a control group and purposive sampling. The sample comprised 60 postpartum mothers: 30 in the intervention group and 30 in the control group. The intervention involved using the PIANA application for four weeks. Statistical tests were performed using SPSS 26 for univariate and bivariate data analysis. Outcomes were measured using the Wilcoxon and Mann-Whitney U tests to assess whether psychoeducation could increase postpartum mothers' confidence in breastfeeding.

Results: Bivariate analyses of the variables were conducted using statistical tests after the application, namely the Midwife's Role variable ($p = 0.023$), the Psychoeducation variable ($p = 0.032$), and the BSE variable ($p = 0.012$). The results of the bivariate analysis of the three variables showed that the Midwife's Role with BSE psychoeducation positively affected postpartum mothers' confidence in breastfeeding.

Conclusion: Psychoeducational applications using a mind-body approach have been shown to improve breastfeeding self-efficacy in postpartum mothers. Optimizing the role of midwives through this medium can serve as an effective, flexible educational tool to support postpartum mothers in achieving breastfeeding success.

Keywords: Breastfeeding Self-Efficacy; Mind-Body-Approach; Postpartum Mothers; Psychoeducational Applications; The Role of Midwives.

Implications for Practice:

- Midwife-delivered psychoeducation enhances maternal confidence and emotional readiness. Implementing psychoeducation by midwives—particularly using a mind-body approach—can strengthen mothers' confidence, reduce emotional distress, and foster readiness to breastfeed effectively. This empowers mothers to overcome psychological barriers that may hinder successful breastfeeding.
- Integrating mind-body relaxation techniques into postnatal visits supports better lactation outcomes. Combining relaxation exercises, mindfulness, or guided breathing into routine postnatal care can help reduce anxiety and tension, facilitating smoother milk flow and improving both maternal well-being and breastfeeding success.
- Incorporating psychoeducational content into midwifery curricula ensures sustainable practice. The study's findings highlight the need to include structured psychoeducational and mind-body intervention



Implications for Practice:

modules in midwifery education and training programs. This integration prepares midwives to deliver holistic care that supports both the physiological and psychological aspects of breastfeeding.

Introduction

Breast milk is the best food for babies because it contains complete nutrition and bioactive components that support optimal growth and development. In addition to providing essential macronutrients and micronutrients, breast milk is rich in immune cells, antibodies (especially IgA, IgG, and IgM), cytokines, hormones, enzymes, and microbiota that play a vital role in forming and maturing the infant's immune system, protecting against various infections and diseases ([Graciliano et al., 2025](#); [Lokossou et al., 2022](#)). The World Health Organization (WHO) and UNICEF recommend exclusive breastfeeding for the first six months of life, followed by complementary foods until the age of two years or beyond, due to its long-term benefits for the health of both the child and the mother ([Ames et al., 2023](#); [Vassilopoulou et al., 2021](#)).

Despite these recommendations, global exclusive breastfeeding coverage remains suboptimal—only 48% of infants are exclusively breastfed for the first six months. In Indonesia, the exclusive breastfeeding rate reached 72.2% in 2023, slightly below the national target of 80% set by the Ministry of Health. Regional disparities persist, with some provinces reporting rates below 60%. These gaps indicate that many infants still do not receive the full benefits of breast milk, making the strengthening of breastfeeding education and support a crucial public health priority ([Camacho-Morales et al., 2021](#); [Palmeira & Carneiro-Sampaio, 2016](#)).

Breastfeeding success is influenced not only by physiological factors—such as milk production and nipple health—but also by psychological determinants, including

maternal confidence, anxiety, and perceived support. Among these, breastfeeding self-efficacy (BSE)—a mother's belief in her ability to breastfeed—is recognized as a key predictor of breastfeeding duration and exclusivity ([Çetindemir & Cangöl, 2024](#); [McGovern et al., 2024](#)). Mothers with higher self-efficacy are more resilient in facing challenges and tend to maintain exclusive breastfeeding longer, while those with lower confidence often discontinue early ([Zulkarnaini et al., 2023](#)).

Previous studies have demonstrated that educational and counseling interventions improve breastfeeding self-efficacy ([Ayran & Çelebioğlu, 2022](#); [Tseng et al., 2020](#)). However, findings remain inconsistent regarding the relative impact of physical interventions (e.g., positioning and lactation techniques) versus psychological interventions (e.g., relaxation, mindfulness, and stress management). Some research emphasizes physiological readiness, while others underline psychological preparedness as the stronger determinant of breastfeeding success ([Dağlı & Aktas Reyhan, 2024](#); [Greenthal & Spatz, 2023](#)). These inconsistencies highlight a research gap in understanding how integrated interventions that address both physical and psychological dimensions can effectively enhance breastfeeding outcomes.

In recent years, digital psychoeducational applications have emerged as innovative tools to support postpartum mothers. These apps combine information delivery with cognitive-emotional regulation techniques, allowing mothers to access education, mindfulness, and stress reduction strategies anytime and anywhere ([Chan et al., 2019](#); [Daehn et al.,](#)

2023; [Hussain-Shamsy et al.](#), 2020). Such interventions are grounded in Bandura's Self-Efficacy Theory, which posits that confidence in one's ability to perform a behavior—shaped by mastery experience, verbal persuasion, and emotional state—directly influences performance outcomes ([Koli et al.](#), 2021; [Namasivayam et al.](#), 2021). The Mind-Body Connection further explains how relaxation and cognitive control can modulate stress responses, promote hormonal balance, and facilitate physiological processes such as milk let-down, thereby linking psychological readiness with lactation success ([Greenthal & Spatz](#), 2023; [Wang et al.](#), 2023).

Although the use of digital psychoeducation for postpartum mothers has shown positive results internationally, evidence in Indonesia remains limited, particularly regarding the mind-body approach integrated into midwife-led psychoeducation. Moreover, few studies have examined how such interventions can strengthen midwives' roles as educators and emotional supporters in community settings.

Therefore, this study aims to evaluate the effectiveness of a mind-body-based psychoeducational intervention in strengthening midwives' roles and enhancing breastfeeding self-efficacy among postpartum mothers. It is hypothesized that midwife-facilitated psychoeducation using the *PIANA* application will significantly improve mothers' breastfeeding self-efficacy compared to conventional care.

Methods

Study Design

This research employed a quasi-experimental pretest-posttest control group design conducted in Indonesia. The study followed the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) Statement to ensure

methodological transparency and reporting rigor for non-randomized intervention studies. The study was conducted between January and March 2025 in selected maternal and child health centers.

Participants

Participants were postpartum mothers (≤ 6 weeks postpartum) with healthy mother-infant pairs who attended postnatal care services in Indonesia. Inclusion criteria were: (1) mothers aged 18–40 years, (2) in good physical and mental health, and (3) possessing a smartphone to access the intervention application. Exclusion criteria included: (1) medical complications (e.g., postpartum hemorrhage, infection), (2) infants with congenital disorders or requiring intensive care, and (3) refusal to continue participation.

A purposive sampling technique was used to select participants who met the inclusion criteria. A total of 60 mothers participated, divided equally into an intervention group ($n = 30$) and a control group ($n = 30$). The sample size was determined using G*Power version 3.1 with an effect size of 0.5, $\alpha = 0.05$, and power = 0.80, which yielded a minimum requirement of 52 participants; this was increased to 60 to account for potential attrition. During the study, two participants (one per group) dropped out due to relocation, leaving 58 participants who completed all sessions. The participant flow is shown in Figure 1, illustrating recruitment, allocation, follow-up, and analysis stages.

Instruments

Breastfeeding Self-Efficacy Scale–Short Form (BSES-SF), developed by Dennis (2003), was used to measure mothers' confidence in breastfeeding. The instrument consists of 14 items rated on a 5-point Likert scale (1 = not at all confident

to 5 = always confident). Total scores range from 14–70, with higher scores indicating stronger self-efficacy. The Indonesian version of the BSES-SF has demonstrated excellent reliability (Cronbach's $\alpha = 0.92$) and has been previously validated in postpartum populations. The scores were categorized as low (14–32), moderate (33–51), and high (52–70) self-efficacy.

The Midwife's Role Scale (adapted from Rohemah, 2023) and the Mind–Body Psychoeducation Adherence Checklist (developed by the researchers based on Tseng et al., 2020) were used to assess midwives' support and participants' compliance with psychoeducation activities. Both instruments underwent content validity testing by three midwifery experts and achieved a Content Validity Index (CVI) = 0.91. Internal consistency reliability testing yielded Cronbach's $\alpha = 0.88$ for the Midwife's Role Scale and 0.86 for the Psychoeducation Checklist.

Intervention

The intervention was based on Bandura's Self-Efficacy Theory and the Mind–Body Connection Model, which emphasize the interaction between cognitive, emotional, and physiological processes in shaping behavioral outcomes such as breastfeeding success.

The intervention was implemented using the PIANA psychoeducational mobile application over four weeks, delivered in three structured 60-minute sessions facilitated by trained midwives. Each session followed a standardized Standard Operating Procedure (SOP) to ensure fidelity: Session 1 (Education): Psychoeducation about breastfeeding physiology, benefits, and problem-solving strategies. Session 2 (Mind–Body Relaxation): Guided breathing, positive affirmation, and mindfulness exercises for stress reduction. Session 3 (Feedback and Reflection): Discussion on breastfeeding

challenges, progress, and reinforcement of self-efficacy through feedback.

All midwives delivering the intervention completed a two-day training program on psychoeducational facilitation, communication skills, and mind–body techniques. Intervention fidelity was maintained using an observation checklist completed by an independent observer in 20% of sessions. Safety monitoring confirmed no adverse events during the intervention. The control group received routine postnatal care without additional psychoeducation. Both groups were followed for four weeks, with post-test data collected immediately after the intervention.

Data Collection

Data collection was conducted by four trained enumerators with midwifery backgrounds. Before fieldwork, enumerators received standardized training on data collection procedures and confidentiality. Data were collected from January to March 2025, with both pre- and post-tests administered via structured questionnaires.

Quality assurance included double data entry and cross-verification to minimize transcription errors. Missing data were handled using listwise deletion. Attrition and missing response rates were recorded and reported.

Data Analysis

Data were analyzed using SPSS version 26. The Kolmogorov–Smirnov test confirmed that the data were not normally distributed; therefore, non-parametric tests were applied. The Wilcoxon signed-rank test was used for within-group comparisons, while the Mann–Whitney U test compared between-group differences.

A significance level of $\alpha = 0.05$ was used. Effect size (r) was calculated for each test using the formula $r = Z / \sqrt{N}$ to quantify

intervention impact. Descriptive statistics summarized demographic characteristics, and all results were presented in tables.

Ethical Considerations

To ensure internal validity, both groups received consistent pre- and post-test procedures. External validity was strengthened through standardized intervention delivery and expert-validated instruments. Reflexivity was maintained as researchers minimized bias through adherence to the TREND reporting

guidelines and regular supervision of field activities.

Results

A total of 60 postpartum mothers were recruited, of whom 58 completed the study (attrition rate = 3.3%). **Table 1** illustrates participant characteristics in both the intervention and control groups. The two groups were comparable in demographic distribution. Most participants were aged 26–40 years, had higher education, and were employed.

Table 1. Demographic characteristics of respondents (n = 58)

Characteristic	Category	Intervention n (%)	Control n (%)
Age (years)	< 20	4 (13.3)	0 (0.0)
	20–25	6 (20.0)	10 (33.3)
	> 25–40	20 (66.7)	20 (66.7)
Education level	Low (≤ High School)	14 (46.7)	12 (40.0)
	High (Diploma +)	16 (53.3)	18 (60.0)
Occupation	Not employed	9 (30.0)	7 (23.3)
	Employed	21 (70.0)	23 (76.7)

Note. No significant differences were observed between groups on demographic variables ($p > 0.05$).

Table 2 presents pre- and post-test results for both groups, including mean ± SD, 95% confidence intervals (CI), and effect sizes. The mind–body–based

psychoeducational intervention significantly improved all measured outcomes compared to the control group.

Table 2. Pre- and post-intervention comparison of study variables (Mean ± SD, 95% CI, n = 58)

Variable	Group	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference (95% CI)	Effect Size (r)
Midwives' Role in Breastfeeding Support	Intervention	2.27 ± 0.69	1.00 ± 0.00	1.27 (1.11–1.43)	0.68
	Control	2.23 ± 0.63	1.00 ± 0.00	1.23 (1.04–1.42)	0.65
Psychoeducation (Mind–Body Approach)	Intervention	1.00 ± 0.00	1.87 ± 0.35	0.87 (0.74–0.99)	0.71
	Control	1.00 ± 0.00	1.80 ± 0.41	0.80 (0.67–0.94)	0.69
Breastfeeding Self-Efficacy (BSES-SF)	Intervention	1.40 ± 0.50	2.60 ± 0.50	1.20 (0.99–1.41)	0.74
	Control	1.53 ± 0.51	2.40 ± 0.50	0.87 (0.68–1.06)	0.70

Note. CI = confidence interval; r = effect size calculated as Z/\sqrt{N} ; p-values based on the Wilcoxon signed-rank test.

Between-group comparisons using the Mann–Whitney U test indicated that improvements in all variables were significantly greater in the intervention group than in the control group: Midwives' Role in Breastfeeding Support: $U = 284.5$, $p = 0.023$, $r = 0.41$; psychoeducation (Mind–Body Approach): $U = 288.0$, $p = 0.032$, $r =$

0.38 ; and breastfeeding self-efficacy: $U = 275.5$, $p = 0.012$, $r = 0.44$. These results demonstrate that the mind–body–based psychoeducation had a medium-to-large effect size across variables, confirming its positive impact on midwives' support behaviors and maternal self-efficacy outcomes.

As shown in **Table 1**, participant demographics were balanced between groups. **Table 2** demonstrates that mothers who received the mind–body–based psychoeducation exhibited greater improvements in all study variables compared to those in the control group. The most substantial improvement was observed in breastfeeding self-efficacy, indicating that the combination of midwife-delivered psychoeducation and relaxation-based training effectively enhanced mothers' confidence and emotional readiness to breastfeed.

Discussion

The findings of this study demonstrate that a mind–body–based psychoeducational intervention effectively enhanced midwives' supportive role, improved engagement in psychoeducation, and strengthened breastfeeding self-efficacy (BSE) among postpartum mothers in Indonesia. These results are consistent with Bandura's Self-Efficacy Theory, which emphasizes that confidence in performing a specific behavior is shaped by mastery experience, vicarious experience, verbal persuasion, and emotional regulation. The psychoeducational approach in this study facilitated all four elements: mothers gained knowledge through structured education (mastery experience), received encouragement and affirmation from midwives (verbal persuasion), observed positive examples through digital materials (vicarious learning), and practiced relaxation techniques to manage stress (emotional regulation).

Consistent with previous studies, midwife-delivered psychoeducation significantly improved maternal self-efficacy and exclusive breastfeeding success ([Dagla et al., 2021](#); [Fahim et al., 2023](#); [Rodríguez-Gallego et al., 2024](#)). The present findings expand on these by demonstrating that the mind–body component—

integrating guided relaxation, mindfulness, and positive affirmations—further strengthens psychological readiness for breastfeeding. This is supported by earlier research indicating that mindfulness and hypno-breastfeeding interventions reduce postpartum anxiety, enhance maternal calmness, and improve lactation performance ([Dağlı & Aktas Reyhan, 2024](#); [Greenthal & Spatz, 2023](#)).

From a psychophysiological perspective, the intervention's effectiveness can be explained through mind–body mechanisms. Relaxation and mindfulness exercises are known to reduce cortisol levels, enhance oxytocin release, and promote autonomic balance, thereby improving the milk ejection reflex and maternal bonding ([Wang et al., 2023](#); [Xu, 2025](#)). As mothers learned to regulate stress and emotions, they experienced greater confidence and comfort during breastfeeding sessions—key factors in sustained lactation. Moreover, emotional reassurance from midwives functioned as social persuasion, reinforcing self-efficacy and reducing fear of breastfeeding failure, as proposed by Bandura's theoretical framework.

In the Indonesian context, these findings are particularly significant. Cultural norms in many communities often place breastfeeding success on the mother's sole responsibility, while emotional and informational support from health workers remains limited. Integrating midwife-facilitated psychoeducation with digital platforms, such as the PIANA app, offers a culturally adaptable and accessible approach that aligns with Indonesia's maternal health programs, which emphasize early initiation and exclusive breastfeeding ([Meher & Zaluchu, 2024](#)). The flexibility of digital delivery also bridges gaps in rural areas where face-to-face counseling is less available, reflecting a

sustainable innovation for community midwifery practice.

This study also contributes to the growing body of literature highlighting the synergistic role of cognitive and physiological interventions. Unlike purely physical training focused on latching or positioning, the inclusion of a psychological readiness component addresses maternal anxiety—a frequently overlooked determinant of breastfeeding outcomes ([Chipojola et al., 2020](#); [Seyyedi et al., 2021](#)). By integrating both physiological and emotional elements, the mind-body psychoeducation created a holistic experience that empowered mothers to persevere through lactation challenges.

These findings reinforce the idea that breastfeeding behavior is both a biological and psychological process, influenced by maternal mindset, perceived capability, and hormonal balance. When midwives deliver interventions that foster calmness and confidence, the outcomes extend beyond breastfeeding duration—contributing to maternal well-being and infant health.

This study has several limitations. The relatively small sample size and short intervention duration may limit generalizability. Self-reported measures of breastfeeding self-efficacy may introduce bias, and physiological markers such as oxytocin or cortisol levels were not assessed. Additionally, participants were primarily urban mothers with access to digital technology, which may not reflect the experiences of rural populations. Future studies should examine long-term effects and incorporate biomarker data to better understand the physiological mechanisms underlying the relationships among psychoeducation, stress reduction, and lactation outcomes.

Implications and limitations

This study extends Bandura's Self-Efficacy Theory and the Health Belief Model

(HBM) to postpartum care, demonstrating that mind-body-based psychoeducation enhances maternal confidence and breastfeeding behavior by regulating stress and fostering emotional readiness. The findings highlight the importance of integrating psychoeducational and relaxation components into midwifery practice and curricula to promote holistic maternal-infant care supported by digital innovation. This study was limited by a small sample size, a short follow-up duration, and a single-site setting, which may limit generalizability. Self-reported data may also introduce bias. Future studies should involve larger samples, multiple locations, and longer follow-up to confirm these findings.

Relevance to Practice

This study demonstrates that integrating a mind-body-based psychoeducational approach into postnatal care can strengthen midwives' roles as both educators and emotional supporters. By combining breastfeeding education with relaxation and mindfulness techniques, midwives can reduce maternal anxiety, enhance breastfeeding self-efficacy, and promote the success of exclusive breastfeeding. The digital delivery through the PIANA application increases accessibility, especially in community and rural settings, aligning with Indonesia's national maternal-child health programs. This innovation offers a sustainable, holistic framework for midwifery practice that supports both the psychological and physiological needs of postpartum mothers.

Conclusion

This study aimed to evaluate the effectiveness of a mind-body-based psychoeducational intervention in enhancing breastfeeding self-efficacy among postpartum mothers. The findings revealed that midwife-delivered

psychoeducation using the PIANA application significantly improved maternal confidence, emotional readiness, and breastfeeding outcomes. These results suggest that integrating mind-body approaches into midwifery practice and education can promote holistic postpartum care. Future research should involve larger, multicenter studies with longer follow-up periods to assess long-term effects and the biological mechanisms underlying these improvements.

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CrediT Authorship Contributions Statement

Rasmi Manullang: Conceptualization, Methodology, Supervision

Imarina Tarigan: Software, Validation, Formal Analysis, Writing - Review & Editing

Anna Waris Nainggolan: Investigation, Resources, Data Curation, Project Administration

Lasria Yolivia Aruan: Investigation, Resources, Data Curation, Project Administration

Yesica Geovany Sianipar: Writing - Original Draft, Review & Editing

Lira Agnes Monica Damanik: Writing - Original Draft, Visualization, Funding Acquisition

Sastra Amelia Siahaan: Writing - Original Draft, Visualization, Funding Acquisition

Conflicts of Interest

There is no conflict of interest.

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Supplementary Materials

Supplementary File S1: Questionnaire contains the full questionnaire used for data collection.

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