

## OPTIMIZATION OF BREAST MILK PRODUCTION THROUGH A COMBINATION OF LACTATION ACUPRESSURE AND SWEDISH BACK MASSAGE AS A COMPLEMENTARY NURSING INTERVENTION FOR POSTPARTUM MOTHERS

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### ABSTRAK

**Pendahuluan:** Produksi air susu ibu (ASI) yang optimal merupakan faktor kunci keberhasilan pemberian ASI eksklusif pada ibu post partum. Namun, berbagai faktor fisik dan psikologis, seperti kelelahan, stres, dan ketidakseimbangan hormon, sering menjadi hambatan dalam proses laktasi. Intervensi keperawatan komplementer, seperti *lactation acupressure* dan *Swedish back massage*, diketahui mampu meningkatkan relaksasi, memperbaiki sirkulasi darah, serta menstimulasi hormon prolaktin dan oksitosin yang berperan dalam produksi ASI

**Tujuan:** untuk menganalisis efektivitas kombinasi *lactation acupressure* dan *Swedish back massage* dalam mengoptimalkan produksi ASI pada ibu post partum

**Metode:** menggunakan desain *quasi experiment* dengan pendekatan satu kelompok *pretest-posttest*. Sampel terdiri dari ibu post partum yang memenuhi kriteria inklusi, dipilih menggunakan teknik *purposive sampling*

**Hasil:** hasil statistik menggunakan uji *Wilcoxon Signed Rank Test* didapatkan nilai *p-value* 0,147

**Kesimpulan:** Kombinasi *lactation acupressure* dan *Swedish back massage* belum terbukti signifikan secara statistik, namun cenderung memberikan dampak positif secara deskriptif terhadap optimalisasi produksi ASI pada ibu post partum, juga meningkatnya rasa relaks, kenyamanan, dan berkurangnya nyeri pada payudara

### Kata Kunci:

Air Susu Ibu, *Acupressure*, *Swedish Back Massage*, Post Partum,

### ABSTRACT

**Introduction:** optimal breast milk production is a key factor in the success of exclusive breastfeeding among postpartum mothers. however, various physical and psychological factors, such as fatigue, stress, and hormonal imbalance, often become barriers to the lactation process. complementary nursing interventions, such as *lactation acupressure* and *swedish back massage*, are known to enhance relaxation, improve blood circulation, and stimulate prolactin and oxytocin hormones that play an important role in breast milk production.

**Objective:** to analyze the effectiveness of a combination of *lactation acupressure* and *swedish back massage* in optimizing breast milk production among postpartum mothers

**Method:** this study used a quasi-experimental design with a one-group pretest–posttest approach. the sample consisted of postpartum mothers who met the inclusion criteria and were selected using a *purposive sampling* technique.

**Results:** The statistical analysis using the *Wilcoxon Signed Rank Test* yielded a *p-value* of 0.147.

**Conclusion:** The combination of *lactation acupressure* and *Swedish back massage* has not been statistically proven to be significant; however, it tends to provide a positive descriptive effect on optimizing breast milk production in postpartum mothers, along with increased relaxation, improved comfort, and reduced breast pain.

### Keywords:

Breast Milk, *Acupressure*, *Swedish Back Massage*, Postpartum

## INTRODUCTION

Breast milk is defined as the primary source of infant nutrition, containing complete nutrients as well as immunological components that play a crucial role in reducing the risk of infant morbidity and mortality (WHO & UNICEF, 2023). The World Health Organization (WHO) recommends exclusive breastfeeding during the first six months of life, as it has been proven to support optimal growth and sustained neurological development in infants (WHO, 2024). In Indonesia, national reports indicate that the coverage of exclusive breastfeeding among infants aged 0–6 months has reached 66.4%; however, this figure has not yet met the national target and demonstrates considerable regional variation. National data further show that the practice of exclusive breastfeeding continues to face significant challenges, including limited access to health services and lactation education (Kementerian Kesehatan RI, 2023).

In South Sulawesi Province, the coverage of exclusive breastfeeding among infants aged 0–6 months showed an increase, reaching 75.88% in 2022 and rising to 77.2% in 2023 based on data from the Central Bureau of Statistics (BPS, 2024). Meanwhile, in 2022, the number of infants in Bone Regency who received exclusive breastfeeding was recorded at 14,907 infants (Dinas Kesehatan Kabupaten Bone, 2022).

Insufficient breast milk production in postpartum mothers is one of the main reasons for the failure of exclusive breastfeeding, particularly during the early period after childbirth (Dieterich et al., 2021; Jumhati, 2025). This condition is commonly experienced by postpartum mothers due to physiological changes, postnatal fatigue, pain, and emotional stress, all of which can inhibit the oxytocin reflex (Lajuna & Sriyanti, 2025). A reduction in oxytocin and prolactin reflexes directly affects the volume and smooth flow of breast milk, thereby influencing breastfeeding success (Nagel et

al., 2023; Sudani et al., 2025). In addition, non-pharmacological interventions that focus on maternal relaxation play an important role in supporting hormonal balance and the sustainability of the lactation process during the postpartum period (WHO & UNICEF, 2023).

In addition to hormonal factors, insufficient breast milk production is also influenced by inadequate maternal relaxation, limited support from healthcare professionals, and the lack of non-pharmacological interventions provided during the postpartum care period (Yang et al., 2025; Jumhati, 2025; Lajuna & Sriyanti, 2025). Recent studies indicate that postpartum stress and anxiety are significantly associated with decreased breast milk production through neuroendocrine mechanisms (Syam et al., 2021). Therefore, non-pharmacological interventions that are able to enhance relaxation and hormonal stimulation are essential in supporting successful lactation (Hernández Cordero et al., 2020; Lajuna & Sriyanti, 2025).

Complementary nursing interventions such as lactation acupressure have been reported to be effective in increasing breast milk production through stimulation of meridian points associated with prolactin and oxytocin secretion (Sembiring & Tarigan, 2025; Sudarianti & Susanti, 2025). Recent studies indicate that the application of acupressure in postpartum mothers can significantly increase breast milk volume compared with standard care without complementary interventions (Kustiyati & Ningrum, 2024). This approach is considered safe, noninvasive, and easy for nurses to apply in daily clinical practice (Peng et al., 2024). In addition to acupressure, Swedish back massage is a massage technique that focuses on relaxation of the back muscles and improvement of blood circulation, thereby contributing to reduced stress hormone levels and increased oxytocin release (Pome et al., 2024). Several studies have reported that



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regular back massage in postpartum mothers can improve the milk ejection reflex and enhance maternal comfort during breastfeeding (Sandriani et al., 2023). Lactation acupressure therapy can be combined with other types of massage to achieve better outcomes, with Swedish back massage presumed to provide a synergistic effect in optimizing breast milk production through complementary hormonal mechanisms and psychological relaxation (Wahyuni et al., 2023).

In addition to clinical relevance, research on complementary interventions such as lactation acupressure and Swedish back massage in postpartum mothers also has important implications for improving the quality of maternity nursing services. Nurses, as the healthcare professionals who are closest to postpartum mothers, have a strategic role in providing education, support, and safe, evidence-based non-pharmacological interventions to promote the lactation process (Rahmadani et al., 2025). The integration of lactation acupressure and Swedish back massage into maternity nursing care has the potential to enhance nurses' competencies in delivering holistic care that addresses both the physical and psychological needs of breastfeeding mothers (Rosa et al., 2025). This approach is aligned with the modern nursing paradigm, which emphasizes health promotion, complication prevention, and the empowerment of mothers to independently manage the breastfeeding process (Ambushe et al., 2023).

At the community level, optimizing breast milk production through complementary nursing interventions is also expected to contribute to the achievement of national and global targets related to increasing exclusive breastfeeding coverage. Improved breastfeeding success not only affects infant health but also provides long-term benefits for maternal health, including a reduced risk of postpartum hemorrhage,

breast cancer, and metabolic disorders (Zeng et al., 2025; Sierra Roca & Climent, 2025).

Thus, this study is expected to provide both scientific and practical contributions to the development of evidence-based nursing interventions that are applicable, easy to implement, and relevant to the context of maternal and child health services in Indonesia, particularly in primary healthcare facilities and community settings (Kementerian Kesehatan RI, 2024).

Although the benefits of lactation acupressure and Swedish back massage have been reported separately in enhancing relaxation and breast milk production among postpartum mothers, scientific evidence regarding the effectiveness of combining these two interventions remains limited, particularly within the context of maternity nursing practice in Indonesia (Triwidayanti et al., 2025). This lack of evidence indicates a need for nursing-based research that systematically integrates complementary interventions to support breast milk production and the success of exclusive breastfeeding. Therefore, this study aims to analyze the effectiveness of the combined application of lactation acupressure and Swedish back massage in optimizing breast milk production among postpartum mothers as an evidence-based complementary nursing intervention (Triwidayanti et al., 2025; Pujiastuti & Winarni, 2023).

## METHODS

This study employed a quasi-experimental design with a one-group pretest–posttest approach and was conducted at Biru Community Health Center, Bone Regency, in December 2025. The population of this study comprised all postpartum mothers at the study site. The sample consisted of postpartum mothers who met the inclusion and exclusion criteria, resulting in a total of 20 respondents. The sampling technique used was purposive sampling, in which respondents were selected based on

specific considerations aligned with the research objectives.

The inclusion criteria consisted of postpartum mothers on days 1 to 7, in stable general condition, directly breastfeeding their infants, and willing to participate as respondents by signing informed consent. The exclusion criteria included mothers with severe obstetric complications, breast disorders such as mastitis or abscess, and mothers who were taking medications that could affect breast milk production. Respondents who did not complete the entire intervention protocol were also excluded from the data analysis.

The independent variable in this study was a complementary nursing intervention consisting of a combination of lactation acupressure and Swedish back massage. The dependent variable was breast milk flow and production in postpartum mothers. Breast milk production was assessed based on maternal perception and indicators of milk flow, measured using a questionnaire. The research instruments included a respondent characteristics form and a breast milk flow questionnaire that had been tested for validity and reliability, with a Cronbach's alpha value of 0.908 (Alisa, 2016).

The lactation acupressure intervention was performed at lactation-related points in accordance with complementary nursing practice guidelines, namely SI1, ST15, ST16, ST18, CV17, SP9, and GB21 (Julianti, 2023). The Swedish back massage technique involved three methods, effleurage, petrissage, and friction, which were applied to the back area using systematic movements to enhance relaxation and improve blood circulation. The combined intervention was administered by the researcher or trained nurses, with the same duration and frequency for each respondent, lasting 15–20 minutes and conducted over three consecutive days. Data collection was carried out in two stages, namely pretest and posttest. The pretest was conducted prior to the intervention to measure baseline breast milk flow using the

breast milk flow questionnaire. The posttest was conducted after the completion of the entire intervention series to assess changes in breast milk flow following the combined application of acupressure and Swedish back massage.

Data analysis was conducted using univariate and bivariate approaches. Univariate analysis was used to describe respondent characteristics and the distribution of breast milk flow questionnaire scores. Bivariate analysis was performed to determine differences in breast milk flow scores before and after the intervention using statistical tests appropriate to the data distribution.

## RESULTS

The results of this study were obtained based on data analysis conducted in accordance with the research objectives. Data analysis in this study included univariate and bivariate analyses. Univariate analysis was used to describe respondent characteristics, while bivariate analysis was employed to analyze differences in values before and after the intervention. All analysis results are presented systematically in tabular form to facilitate data interpretation.

### Univariate Analysis Results

The univariate analysis in this study aimed to describe the demographic characteristics of the respondents. Respondent demographic data included variables such as age, education, occupation, and other characteristics relevant to the research objectives. All demographic data are presented in the form of frequency and percentage distribution tables to provide an overview of the profile of respondents involved in this study.

The demographic data of the respondents are presented in the table below.

**Table 1. Distribution Based on Respondent Characteristics (n = 20)**

Category	F	%
Age		



19-26 years	8	40
27-35 years	7	35
36-43 years	5	25
<b>Occupation</b>		
PNS	3	15
IRT	17	85
<b>Education</b>		
SD	3	15
SMP	2	10
SMA	12	60
S1	3	15
<b>Religion</b>		
Islam	20	100

Source: Primary Data, 2025

Based on Table 1 above, the respondent characteristics show that the majority of respondents were in the young adult age category of 19–26 years, totaling 8 individuals (40%), which represents the productive age group and is relevant to the population characteristics in this study. In terms of occupation, most respondents worked as housewives, totaling 17 individuals (85%). The respondents' education level was dominated by high school graduates, with 12 individuals (60%). In addition, all respondents in this study were Muslim, totaling 20 individuals (100%), indicating that the respondents' characteristics were relatively homogeneous in terms of religion.

The distribution of respondents based on breastfeeding factors, which include the number of children and breastfeeding status, is presented in the following table:

**Table 2. Distribution Based on Breastfeeding Factors (n = 20)**

Category	F	%
<b>Number of Children</b>		
1 child	6	30
2 children	6	30
3 children	3	15
4 children	2	10
5 children	3	15
<b>Breastfeeding Status</b>		
Yes	18	90
No	2	10

Source: Primary Data, 2025

Based on Table 2, most respondents had 1 or 2 children, with 6 respondents each (30%). In addition, the majority of respondents were still breastfeeding, totaling 18 individuals (90%), while those who were not breastfeeding amounted to only 2 individuals (10%). This indicates that most

respondents were actively breastfeeding with a relatively small number of children.

### Bivariate Test Results

Bivariate analysis in this study was conducted to determine the differences between pre-test and post-test scores of breast milk adequacy among respondents after receiving lactation acupressure and Swedish back massage interventions. This analysis aimed to observe changes in breast milk adequacy as a result of the intervention by comparing respondents' conditions before and after the treatment. Prior to conducting the difference test, a normality test was performed on the breast milk adequacy measurements obtained through the questionnaire to ensure the data distribution and determine the appropriate statistical test to use. Thus, the bivariate analysis is expected to provide a clear overview of the effectiveness of lactation acupressure and Swedish back massage interventions in improving breast milk adequacy among the study respondents.

The results of the normality test are presented in the table below:

**Table 3. Normality Test Results**

Variable	<i>p-value</i>
<i>Pre-test</i>	0,003
<i>Post-test</i>	0,001

Source: Primary Data, 2025

Based on Table 3, the normality test results show that the *p-value* for the pre-test data was 0.003 and for the post-test data was 0.001. Both values are less than 0.05, indicating that the pre-test and post-test data on breast milk adequacy were not normally distributed. Therefore, the analysis of differences between pre-test and post-test values after the lactation acupressure and Swedish back massage interventions did not meet the assumptions for parametric testing, and a nonparametric Wilcoxon Signed Rank Test was conducted to determine whether there was a significant difference between the pre-test and post-test scores.

The following table presents the results of the Wilcoxon Signed Rank Test:

**Table 4. Wilcoxon Test Results**

Variabel		Z	p-value
Breast Milk Adequacy		-1,451	0,147*

\*Uji Wilcoxon Signed Rank Test

Source: Primary Data, 2025

Based on the Wilcoxon test results, a Z value of -1.451 with a p-value of 0.147 was obtained. A p-value greater than 0.05 indicates that no statistically significant difference was found between breast milk adequacy scores before and after the lactation acupressure and Swedish back massage interventions. This result suggests that the intervention did not produce a statistically significant change in breast milk adequacy among the study respondents. Nevertheless, the observed changes in scores for some respondents indicate that the intervention has potential benefits, although a larger sample size or a longer intervention duration may be required to achieve more optimal results.

## DISCUSSION

This discussion section addresses the effect of lactation acupressure and Swedish back massage interventions on breast milk adequacy in breastfeeding mothers. In this study, a descriptive increase in the mean breast milk adequacy scores was observed; however, it did not reach statistical significance. Therefore, these results need to be analyzed comprehensively by linking empirical findings, lactation physiological theory, and relevant previous studies (Pujiastuti & Winarni, 2025; Suryani, 2024; Rosetti & Spatz, 2022). Theoretically, stimulation of lactation acupressure points and upper back massage can enhance the release of oxytocin and prolactin hormones, which play a crucial role in the milk ejection reflex. Therefore, the increase in breast milk adequacy observed in this study aligns with the biological mechanisms described in recent studies (Susilowati & Tridiyawati,

2023). The consistency of these findings with previous research indicates that touch-based nonpharmacological interventions have the potential to support successful breastfeeding, although their effectiveness may be influenced by various contextual factors (Susilowati & Tridiyawati, 2023; Sari et al., 2025).

The bivariate statistical test results in this study indicated that the difference between pre-test and post-test breast milk adequacy scores after the lactation acupressure and Swedish back massage interventions was not statistically significant. This is likely due to the relatively small sample size, which limited the statistical power (Anderson et al., 2019; Rahmanindar & Nisa, 2023; Chang et al., 2025). Several studies have noted that a small sample size can increase the risk of a type II error, meaning the inability to detect an actual difference even when a positive clinical change exists. The bivariate statistical test results in this study indicated that the difference between pre-test and post-test breast milk adequacy scores after the lactation acupressure and Swedish back massage interventions was not statistically significant. This is likely due to the relatively small sample size, which limited the statistical power (Anderson et al., 2019; Rahmanindar & Nisa, 2023; Chang et al., 2025). Several studies have noted that a small sample size can increase the risk of a type II error, meaning the inability to detect an actual difference even when a positive clinical change exists.

Qualitative findings from interviews with respondents indicated that most mothers experienced subjective benefits after receiving lactation acupressure and Swedish back massage, such as feelings of relaxation, comfort, reduced breast pain, and a lighter body sensation. These results are consistent with previous studies on the relaxation effects of touch-based therapies (Yulianti et al., 2024). This state of relaxation plays an important role in supporting the milk ejection



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reflex, as stress and anxiety are known to inhibit oxytocin release in breastfeeding mothers (Uvnäs-Moberg et al., 2020). Therefore, although the results were not statistically significant, the subjective benefits reported by respondents suggest positive psychological and physiological effects, aligning with the concept of complementary care in maternal nursing (Lima-de-la-Iglesia et al., 2024).

Most respondents also reported that their breast milk production felt increased, particularly on the 2<sup>nd</sup> and 3<sup>rd</sup> days after the massage, which aligns with studies indicating that the body's response to massage and acupressure stimulation is gradual and requires time to reach its maximum effect (Rahmanindar & Nisa, 2024). The increase in breast milk during the early post-intervention days supports the theory of physiological adaptation of the mammary glands to mechanical and hormonal stimulation. However, although mothers perceived an increase in milk production, most respondents still provided formula to their babies, indicating a gap between milk production and actual infant feeding practices. The reasons for continuing formula feeding included difficulty calming the baby during breastfeeding, the baby being calmer when using a bottle, and mothers' time constraints due to busy schedules, which is consistent with other studies highlighting behavioral and social factors in breastfeeding practices (Hudha & Tambun, 2025).

Overall, this discussion indicates that lactation acupressure and Swedish back massage are consistent with theories and previous studies in enhancing comfort, relaxation, and perceived breast milk adequacy in breastfeeding mothers, even though statistically significant results were not observed in this study. The lack of significance may have been influenced by the number of respondents, the duration and frequency of the interventions, as well as breastfeeding behaviors such as formula feeding and bottle use (Abrmanová et al.,

2023; Hudha & Tambun, 2025). Therefore, future research is recommended to use a larger sample size, longer intervention duration, and an educational approach for mothers regarding breastfeeding practices to achieve more optimal intervention effects (Patnode et al., 2025).

### **Conclusion**

Based on the results of this study, the lactation acupressure and Swedish back massage interventions showed a descriptive increase in breast milk adequacy among breastfeeding mothers after the intervention. However, the bivariate statistical test results indicated that the difference between pre-test and post-test scores was not statistically significant. This lack of significance may have been influenced by the limited number of respondents, suboptimal duration and frequency of the interventions, as well as variations in breastfeeding practices, such as formula feeding and bottle use, which can reduce physiological stimulation of milk production.

Nevertheless, interview results showed that most respondents experienced subjective benefits from lactation acupressure and Swedish back massage, such as increased relaxation, comfort, reduced breast pain, and a perceived increase in milk production, particularly on the 2<sup>nd</sup> and 3<sup>rd</sup> days after the intervention. These findings indicate that both interventions have the potential to serve as complementary nursing therapies to support mothers' comfort and breastfeeding experience, although further research with a larger sample size and more robust study design is needed to obtain statistically more meaningful results.

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