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The Effect of Slow Stroke Back Massage (SSBM) on Breast Milk Production in Postpartum Mothers on Days 3–5

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ABSTRAK

Latar Belakang: Pengeluaran ASI yang tidak optimal pada ibu postpartum masih menjadi tantangan dalam pemberian ASI eksklusif, khususnya di Kecamatan Kaliwates yang memiliki cakupan sebesar 17.9%. Sebanyak 6 dari 10 ibu postpartum di wilayah kerja Puskesmas Kaliwates mengeluhkan ASI tidak lancar dalam satu minggu pertama pasca melahirkan. Terapi komplementer seperti Slow Stroke Back Massage (SSBM) merupakan teknik pijatan lembut yang dilakukan secara ritmis pada punggung bagian atas hingga bawah, bertujuan menstimulasi pelepasan hormon oksitosin dan endorfin yang berperan dalam proses laktasi. **Tujuan**: Penelitian ini dilakukan untuk mengetahui pengaruh SSBM terhadap pengeluaran ASI pada ibu postpartum hari ke 3 – 5 di wilayah kerja Puskesmas Kaliwates. **Metode**: Penelitian ini dilakukan secara kuantitatif dengan one group pretest – posstest design menggunakan total sampling pada 23 responden. Data dikumpulkan melalui kuesioner dan dianalisis dengan Wilcoxon Signed Rank Test. **Hasil**: Sebelum intervensi, sebagian besar responden memiliki pengeluaran ASI yang lancar (60.9%) dan tidak lancar (34.8%). Setelah intervensi, sebagian besar responden mengalami peningkatan menjadi sangat lancar (60.9%) dan lancar (30.4%). Analisis data pada SPSS menunjukkan nilai signifikansi 0.0000 ($p<0.05$) yang menunjukkan adanya pengaruh signifikan SSBM terhadap pengeluaran ASI. **Kesimpulan**: SSBM dapat meningkatkan pengeluaran ASI pada ibu postpartum hari ke 3 – 5 di wilayah kerja Puskesmas Kaliwates tahun 2025.

ABSTRACT

Background*: Suboptimal breast milk expression in postpartum mothers remains a challenge in achieving exclusive breastfeeding, particularly in Kaliwates District, where the coverage is only 17.9%. Six out of ten postpartum mothers in the working area of Puskesmas Kaliwates reported poor milk flow during the first week after delivery. Complementary therapies such as Slow Stroke Back Massage (SSBM) is a gentle, rhythmic massage technique applied from the upper to lower back, aimed at stimulating the release of oxytocin and endorphins, both of which play crucial roles in lactation.* ***Purpose:*** *This study aims to determine the effect of SSBM on breast milk expression in postpartum mothers on day 3–5 in the working area of Puskesmas Kaliwates.* ***Methods****: This research was conducted quantitatively using a one-group pretest-posttest design with*

total sampling involving 23 respondents. Data were collected through questionnaires and analyzed using the Wilcoxon Signed Rank Test. ***Results****: Before the intervention, most respondents had smooth (60.9%) and poor (34.8%) milk output. After the intervention, most respondents experienced improvement, with 60.9% showing very smooth and 30.4% showing smooth milk output. The analysis showed a significance value of 0.0000 (p<0.05), indicating a significant effect of SSBM on breast milk expression.* ***Conclusion****: SSBM can effectively improve breast milk expression in postpartum mothers on days 3–5 in the working area of Puskesmas Kaliwates in 2025.*

BACKGROUND

Breast milk (Air Susu Ibu or ASI) is the optimal source of nutrition for infants, particularly during the first six months of life. Exclusive breastfeeding—defined as providing only breast milk without any additional food or drink from birth until the infant reaches six months of age—is the gold standard recommended by the World Health Organization (2020, 2025). Failure to adhere to this practice is often caused by inhibited milk flow (bendungan ASI) during the first week postpartum. Smooth milk ejection is crucial; it not only ensures the infant receives essential nutrients and immunological protection but also influences the success of milk production and the sustainability of exclusive breastfeeding in the future. Therefore, ensuring smooth milk ejection is a primary concern for postpartum mothers to achieve optimal exclusive breastfeeding coverage.

Despite its importance, the global target for exclusive breastfeeding coverage remains unachieved. The global target set by the WHO for 2023 is 70%; however, realization has only reached 48%. At the national level, Indonesia demonstrates better results, with the 2023 Indonesian Health Profile recording exclusive breastfeeding coverage at 63.9%, surpassing the national target of 50% (East Java Provincial Health Office, 2024). While East Java Province recorded an even higher figure of 72%, conditions in Jember Regency show a concerning trend. Exclusive breastfeeding coverage in Jember declined from 73.1% in 2022 to 67% in 2023. The most drastic decline occurred in Kaliwates District, where coverage reached only 17.9%. A preliminary study in this area corroborates these data, revealing that 6 out of 10 postpartum mothers complained of non-smooth milk ejection, resulting in the failure of exclusive breastfeeding.

Successful milk ejection relies heavily on the mother's endocrine system becoming active immediately following the expulsion of the placenta. This process is triggered by a precipitous drop in estrogen and progesterone levels, which are antagonistic to lactation hormones during pregnancy. This decline facilitates an increase in prolactin for milk production and oxytocin for milk ejection. The primary stimulus for the secretion of oxytocin and endorphins is the infant's suckling on the nipple. If the secretion of these hormones is suboptimal, milk ejection will be inhibited, preventing the infant from obtaining adequate nutrition and immunological protection against various infections and diseases (Agustin, 2018).

Various efforts have been undertaken to address issues regarding milk ejection, one of which includes complementary therapy in the form of massage. Oxytocin massage and endorphin massage are two methods known to stimulate the secretion of relevant hormones. However, these techniques focus on localized stimulation of specific points; if performed incorrectly, they pose a risk of causing pain or discomfort to the mother. These limitations highlight the need for a more holistic massage intervention that is not only effective but also provides comfort and is easy to apply.

Slow Stroke Back Massage (SSBM) presents a potential solution as a complementary therapy. This massage focuses on stimulating the parasympathetic nervous system through slow, gentle strokes along the back area (Saidi & Andrianti, 2021). The SSBM technique involves massaging the back using the palm in a circular motion (60 strokes/minute) for 10 minutes per session over three consecutive days. This extensive and soothing stimulation sends signals to the hypothalamus, which subsequently stimulates the pituitary gland to release endorphins and oxytocin simultaneously (Khajehei & Behroozpour, 2018). Endorphins provide a relaxation

effect and reduce pain, while oxytocin directly triggers the milk ejection reflex. Although therapies such as oxytocin and endorphin massage are known to enhance milk flow, their limitations lie in patient comfort and technique efficacy. Consequently, a more comprehensive and comfortable intervention like SSBM is required. However, studies regarding the effectiveness of SSBM on milk ejection, particularly among postpartum mothers in Kaliwates District, remain limited. Based on this background, the researchers are interested in examining the effect of SSBM on milk ejection in postpartum mothers.

RESEARCH METHODS

This study employed a quantitative approach utilizing a pre-experimental one-group pretest-posttest design. The objective was to determine the difference in breast milk ejection within a single group before and after the administration of the Slow Stroke Back Massage (SSBM) intervention. The study was conducted from August 2024 to June 2025, with data collection taking place between February and March 2025.

The population comprised postpartum mothers on days 3–5 in the working area of the Kaliwates Public Health Center (Puskesmas). A total sampling technique was employed, resulting in a sample size of 23 respondents. Data were collected using a pre-test questionnaire, followed by the SSBM intervention, and concluded with a post-test questionnaire to record the results. The instrument consisted of 20 questions utilizing the Guttman scale, which provides definitive responses ("Yes" or "No"). A "Yes" response was assigned a value of 1, while "No" was assigned 0. The total score was converted into a percentage ranging from 0 to 100. Based on these percentages, milk ejection was classified into four hierarchical categories: Very Non-Smooth, Non-Smooth, Smooth, and Very Smooth. This categorization aligns with Azwar (2020), who states that categorization involves placing individuals into separate hierarchical groups based on a continuum of the measured attribute, typically consisting of 3–5 levels.

Prior to data collection, the questionnaire underwent validity and reliability testing. Due to the limited number of respondents, these tests were conducted on 10 respondents outside the study sample within the Kaliwates Puskesmas area. The validity test results showed that each item had an r-count greater than 0.632, and the reliability test yielded a Cronbach’s Alpha of 0.761, indicating that the instrument was valid and reliable.

The SSBM intervention was administered to assess its influence on milk ejection. The procedure was performed by the researcher, who had previously undergone specific training. The intervention consisted of three sessions conducted daily for three consecutive days (postpartum days 3–5) at each participant's home. Each SSBM session lasted 10 minutes and was performed between 10:00 AM and 12:00 PM. Data analysis included univariate and bivariate analyses, utilizing the Wilcoxon signed-rank test.

RESULTS

Data collection was conducted using a questionnaire assessing breast milk ejection. The sampling process adhered to the specific inclusion criteria established for this study. Upon confirming their willingness to participate and signing the informed consent forms, a total of 23 respondents were recruited.

Table 1. Distribution of respondents by age in the Working Area of Kaliwates Public Health Center in 2025

Age Groups	N	%
20-35 years old	21	91.3
>35 years old	2	8.7
Total	**23**	**100**

As shown in Table 1, the vast majority of respondents fell within the 20–35 year age range, accounting for 21 respondents (91.3%).

Table 2. Distribution of respondents by education level in the Working Area of Kaliwates Public Health Center in 2025

Education	N	%
Primary School	1	4.3
Middle School	3	13
High School	14	60.9
Diploma/Bachelor	5	21.7
Total	**23**	**100**

Based on Table 2, it can be observed that the majority of respondents were High School graduates, comprising 14 respondents (60.3%).

Table 3. Distribution of respondents by working classifications in the Working Area of Kaliwates Public Health Center in 2025

Working Classifications	N	%
Unemployed	21	91.3
Employed	2	8.7
Total	**23**	**100**

Based on Table 3, it can be observed that the majority of respondents were unemployed, comprising 21 respondents (91.3%).

Table 4. Distribution of respondents by parity in the Working Area of Kaliwates Public Health Center in 2025

Parity	N	%
Primipara	10	43.5
Multipara	13	56.5
Total	**23**	**100**

Based on Table 4, it can be observed that the majority of respondents were multipara, comprising 13 respondents (56.5%).

Table 5. Distribution of respondents by income in the Working Area of Kaliwates Public Health Center in 2025

Income	N	%
Below UMR	13	56.5
Meets UMR	2	8.7
Above UMR	8	34.8
Total	**23**	**100**

As shown in Table 5, the majority of respondents earned a monthly income below the Regional Minimum Wage (Upah Minimum Regional or UMR), comprising 13 respondents (56.5%). For reference, the 2025 UMR for Jember Regency is IDR 2,838,642.00..

Table 6. Distribution of respondents by meal frequency in the Working Area of Kaliwates Public Health Center in 2025

Frequency	N	%
≥3x a day	23	100
<3x a day	0	0
Total	**23**	**100**

As shown in Table 6, all respondents (n=23, 100%) reported a meal frequency of more than three times per day.

Table 7. Distribution of respondents by daily water intake in the Working Area of Kaliwates Public Health Center in 2025

Water Intake	N	%
≥3500 ml	22	95.7
<3500 ml	1	4.3
Total	**23**	**100.0**

As shown in Table 7, the vast majority of respondents consumed more than 3500 ml of water daily, comprising 22 respondents (95.7%).

Table 8. Distribution of respondents by dietary restrictions in the Working Area of Kaliwates Public Health Center in 2025

Dietary Restrictions	N	%
Yes	0	0
No	23	100
Total	**23**	**100**

As shown in Table 8, all respondents (n=23, 100%) reported having no dietary restrictions.

Table 9. Distribution of respondents by adequacy of daily rest in the Working Area of Kaliwates Public Health Center in 2025

Daily Rest	N	%
7-8 hours	21	91.3
<7 hours	2	8.7
Total	**23**	**100**

As shown in Table 9, the vast majority of respondents rested for 7–8 hours daily, accounting for 21 respondents (91.3%).

Table 10. Distribution of respondents by husband support for exclusive breastfeeding in the Working Area of Kaliwates Public Health Center in 2025

Husband Support	N	%
Yes	23	100
No	0	0
Total	**23**	**100**

As shown in Table 10, all respondents (n=23, 100%) reported receiving husband support for exclusive breastfeeding.

Table 11. Distribution of respondents by medication consumption in the Working Area of Kaliwates Public Health Center in 2025

Medications	N	%
Yes	0	0
No	23	100
Total	**23**	**100**

As shown in Table 11, all respondents (n=23, 100%) reported no medication consumption.

The specific data in this study encompass the assessment of breast milk ejection in postpartum mothers before and after the SSBM intervention, as well as the analysis of the differences between pre- and post-intervention measurements. These results are presented in tabular form, based on scores from the breast milk ejection questionnaire completed by respondents who met the predetermined inclusion criteria.

Table 12. Frequency distribution of breast milk ejection before the SSBM intervention in the Working Area of Kaliwates Public Health Center in 2025

Pretest Score	N	%
Very Non-smooth	1	4.3
Non-smooth	8	34.8
Smooth	14	60.9
Very Smooth	0	0
Total	**23**	**100**

As shown in Table 12, the majority of respondents (n=14, 60.9%) achieved a "Smooth" result on the pre-test. This indicates that most participants fell into this category prior to the SSBM intervention.

Table 13. Frequency distribution of breast milk ejection after the SSBM intervention in the Working Area of Kaliwates Public Health Center in 2025

Posttest Score	N	%
Very Non-smooth	0	0
Non-smooth	2	8.7
Smooth	7	30.4
Very Smooth	14	60.9
Total	**23**	**100**

As shown in Table 13, the majority of respondents achieved a "Very Smooth" result, comprising 14 respondents (60.9%). This indicates that most participants fell into this score category following the SSBM intervention.

Table 14. Frequency distribution of breast milk ejection before and after the SSBM intervention in the Working Area of Kaliwates Public Health Center in 2025

Posttest / ***Pretest***	Very Non-smooth	Non-smooth	Smooth	**Very** Smooth	**Total**	**%**
Very Non-smooth	0	1	0	0	**1**	**4.3**
Non-smooth	0	1	5	2	**8**	**34.8**
Smooth	0	0	2	12	**14**	**60.9**
Very Smooth	0	0	0	0	**0**	**0**
Total	**0**	**2**	**7**	**14**	**23**	**100**

As shown in Table 14, respondents experienced an improvement in scores from the pre-test to the post-test, with varying degrees of increase. The lowest level of improvement was observed in one respondent who progressed from "Very Non-Smooth" to "Non-Smooth," while one respondent remained in the "Non-Smooth" category during both the pre-test and post-test.

DISCUSSIONS

Breast milk ejection before the SSBM intervention in the Working Area of Kaliwates Public Health Center

Breastfeeding mothers require substantial nutritional intake from their diet to meet their body's physiological demands (Hastuti et al., 2017). Hastuti et al. (2017) also observed insufficient breast milk production among mothers who ate three times daily but with small portions and limited variety of side dishes, lacked vegetable and fruit consumption, and failed to meet daily water intake requirements. The recommended daily water intake for breastfeeding mothers is at least 14 glasses, or approximately 3500 ml. Furthermore, mothers suffering from sleep deprivation may experience physiological fatigue, which subsequently inhibits breast milk synthesis and ejection. Other factors influencing milk ejection include spousal support and maternal age. Mothers under the age of 35 tend to produce more milk compared to older mothers. However, very young mothers (under 20 years) may also experience suboptimal production due to maturity factors. Additionally, maternal physical factors affecting breast milk production include endocrine disorders and hypoplastic breast tissue. Parity also influences milk flow, as multiparous mothers benefit from prior breastfeeding experience (Rahmawati & Saidah, 2021).

In this study, the researchers observed that the majority of respondents (n=21, 91.3%) fell within the 20–35 year age range. This age group represents the reproductive prime, characterized by superior lactation capability compared to mothers over 35, whose milk ejection may be diminished due to declining hormonal function. Additionally, the majority of respondents (n=21, 91.3%) reported adequate rest periods of 7–8 hours per day. Insufficient rest can impede milk ejection due to elevated cortisol levels, which suppress oxytocin production. Most respondents (n=22, 95.7%) also maintained adequate water intake; breastfeeding mothers are advised to consume at least 14 glasses or 3500 ml of water daily to facilitate smooth milk ejection. The researchers posit that the instances of "Very Non-Smooth" and "Non-Smooth" milk ejection observed among some respondents may be attributed to maternal age over 35, sleep deprivation, insufficient water intake, as well as suboptimal breastfeeding positioning and frequency.

Breast milk ejection after the SSBM intervention in the Working Area of Kaliwates Public Health Center

Slow Stroke Back Massage (SSBM) is a comfort measure capable of alleviating tension, inducing patient relaxation, and enhancing circulation (Saidi & Andrianti, 2021). SSBM involves tactile stimulation and pressure application, which facilitates increased blood flow to the massaged area. This process stimulates the autonomic nervous system to enhance the release of endorphins. Furthermore, SSBM activates the parasympathetic nervous system, which is responsible for promoting relaxation and mitigating stress by counteracting the stress response mediated by the sympathetic nervous system. Consequently, the posterior pituitary gland is stimulated to secrete oxytocin, thereby facilitating the milk ejection reflex.

The researchers posit that the SSBM intervention administered to the respondents played a significant role in improving breast milk ejection. This attribution is supported by the observation that respondents' water intake and rest duration remained constant; thus, SSBM constituted the sole variable intervention. This intervention facilitated the secretion of endorphins, which enhance mood, and oxytocin,

which induces somatic relaxation. The upregulated production of these hormones directly contributed to smoother milk ejection. However, 8.7% of the sample (n=2) continued to experience non-smooth milk ejection. The researchers suggest that this lack of improvement may be attributed to insufficient water intake and inadequate rest duration among these specific respondents. This finding indicates that while SSBM is effective in facilitating milk ejection, the fundamental needs of breastfeeding mothers—including adequate rest, nutrition, and hydration—must concurrently be met to ensure optimal improvement in milk ejection.

Differences in breast milk ejection before and after the SSBM intervention in the Working Area of Kaliwates Public Health Center

The results indicate a significant difference in breast milk ejection before and after the administration of the Slow Stroke Back Massage (SSBM) intervention in the working area of Kaliwates Public Health Center in 2025.

SSBM functions by triggering the release of endorphins within the body, which serve to inhibit pain signal transmission in the nervous system. This technique involves slow, rhythmic stroking of the client's skin using the hands. SSBM benefits the body by stimulating sensory receptors located in the skin. When these receptors are activated by tactile stimulation and pressure, signals are transmitted to the brain, subsequently triggering the pituitary gland to release endorphins, thereby inducing a state of calmness and improved mood. Furthermore, the tactile and pressure components of SSBM enhance blood flow to the massaged area. This improved circulation not only increases the supply of oxygen and nutrients to body tissues but also facilitates metabolic processes and stimulates the posterior pituitary gland to secrete oxytocin. Oxytocin stimulates the contraction of smooth muscles surrounding the alveoli to propel milk into the ducts, playing a critical role in the let-down or milk ejection reflex. Elevated endorphin levels also influence the maternal-infant bond and provide a calming effect, enabling breastfeeding mothers to maintain milk production sufficient for the infant (Asvadi et al., 2014).

The researchers interpret these findings as evidence of improved breast milk ejection following the SSBM intervention. The majority of respondents experienced improvements, achieving "Smooth" or "Very Smooth" milk ejection categories post-intervention. However, outliers remained. Two respondents initially classified as "Smooth" did not progress to the "Very Smooth" category. The stagnation in one respondent was attributed to primiparity, implying a lack of physical and psychological habituation to breastfeeding. The other respondent remained in the "Smooth" category due to receiving less than 7 hours of sleep daily, which hindered further improvement to the "Very Smooth" level.

Furthermore, one respondent progressed from "Very Non-Smooth" to "Non-Smooth," indicating that milk ejection remained suboptimal despite the intervention. This outcome is attributed to the respondent’s insufficient water intake (<3500 ml/day), which directly impacts milk volume, and inadequate rest (<7 hours/day). The lack of rest prevents the body from relaxing and may lead to elevated cortisol levels, which suppress the production of oxytocin required for milk ejection. Consequently, despite the improvement observed relative to the pre-intervention state, milk ejection remained in the "Non-Smooth" category.

Finally, one respondent exhibited "Non-Smooth" milk ejection both before and after the SSBM intervention, showing no improvement. Questionnaire data revealed this respondent was a primipara, suggesting a lack of understanding and habituation

to breastfeeding. Crucially, this respondent did not breastfeed at least every two hours; consequently, the breasts did not receive adequate stimulation to trigger prolactin production and oxytocin secretion. Ultimately, despite external stimulation via SSBM, the respondent's body could not secrete milk effectively. The researchers conclude that while SSBM is effective in facilitating milk ejection, it must be supported by the concurrent fulfillment of the breastfeeding mother's nutritional, hydration, and rest requirements to achieve optimal results.

CONLUSIONS AND RECOMMENDATIONS

Based on this study regarding the effect of Slow Stroke Back Massage (SSBM), it can be concluded that this therapy significantly enhances breast milk ejection in postpartum mothers, as evidenced by the majority of respondents whose classification improved from "Smooth" to "Very Smooth."

In light of these findings, it is recommended that future researchers utilize a control group design to further validate these results. Educational institutions are advised to incorporate SSBM into their curricula as a complementary therapy, while midwives and community health workers (kader) are encouraged to implement this intervention within the community. Furthermore, postpartum mothers are advised to learn and practice SSBM independently at home, with family assistance, to maintain optimal breast milk production.

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