

The Effect Of Oxytocin Massage On Breast Milk Flow In Postpartum Mothers At PMB Wanti, Medan Deli

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ABSTRACT

Global exclusive breastfeeding coverage remains a significant concern in maternal and child health. According to the WHO (2022), only about 44% of infants worldwide receive exclusive breastfeeding, far below the 70% target set for 2030. Oxytocin massage is one nonpharmacological approach that can help facilitate breast milk release. This study aimed to determine the effect of oxytocin massage on breast milk flow among postpartum mothers at PMB Wanti, Medan Deli District. A quasi-experimental design with a non-equivalent control group (pre-test–post-test) was employed, involving 28 postpartum mothers on their first to third postpartum days, divided into an intervention group ($n = 14$) and a control group ($n = 14$). The intervention group received oxytocin massage twice daily (morning and evening) for three consecutive days, while the control group received only standard postpartum care. Data were analyzed using the Mann-Whitney U test as a nonparametric alternative to the independent t-test. The analysis revealed a significant difference between the two groups ($p = 0.001$); 78.6% of mothers in the intervention group experienced smooth breast milk flow after three days of treatment, compared with only 35.7% in the control group. The asymptotic significance (2-tailed) value of 0.001 (< 0.05) confirmed the effect of oxytocin massage on breast milk flow. It can be concluded that oxytocin massage effectively improves breast milk flow among postpartum mothers and is worth recommending as a nonpharmacological intervention. Health care providers are encouraged to educate postpartum mothers on oxytocin massage techniques to support successful exclusive breastfeeding.

Keywords: oxytocin massage; breast milk flow; postpartum mothers

INTRODUCTION

The postpartum period begins immediately after the delivery of the placenta and lasts approximately six weeks (42 days), during which the mother's reproductive organs return to their pre-pregnancy state. During this period, the mother's body undergoes various physiological adjustments that often cause discomfort, including issues related to lactation. After the placenta is delivered, estrogen and progesterone levels decline sharply, triggering increased prolactin secretion by the anterior pituitary gland to support milk production (lactogenesis). At the same time, the posterior pituitary releases oxytocin, which plays a role in the milk let-down reflex and also helps the uterus contract to prevent postpartum hemorrhage. The interaction between these two hormones determines the smoothness of

breast milk production and release during the postpartum period (Apriani & Nurjannah, 2022).

Breast milk flow is considered smooth when its production and release are adequate to meet the infant's needs. Signs of smooth milk flow include the infant feeding effectively and frequently, appearing satisfied after feeding, gaining weight appropriately, and the mother's breasts feeling softer after breastfeeding. Conversely, poor milk flow is characterized by difficulty releasing milk, breast engorgement, a fussy infant, and low infant urination frequency. This condition is common in the early postpartum period and is one of the main reasons exclusive breastfeeding is not achieved (Susanto, 2023).

Low rates of smooth breast milk flow represent a global maternal and child health issue. Data from the World Health Organization (2022) show that exclusive breastfeeding coverage for infants aged 0–6 months worldwide is only about 44%, well below the global target of 70% by 2030. This gap indicates that many mothers still face challenges during breastfeeding, particularly in the early postpartum period, such as delayed milk release, insufficient production, and suboptimal stimulation of oxytocin (World Health Organization & UNICEF, 2022).

The Indonesian government, through the Ministry of Health, has set a national target of 80% exclusive breastfeeding coverage. Based on the 2022 Indonesia Health Profile, the national exclusive breastfeeding rate for infants aged 0–6 months reached only 67.96%. Although this represents an increase compared with previous years, the figure remains below the target, indicating that efforts to improve breastfeeding success at the national level still need to be strengthened (Rani et al., 2022).

A similar situation is observed at the regional level. Data from the Medan City Health Office (2022) show that exclusive breastfeeding coverage in the city ranges only from 60–65%. Records from the local health office indicate that many postpartum mothers still experience milk stasis, delayed lactogenesis, and poor milk flow in the first days after delivery, partly due to limited education on breastfeeding techniques and limited intervention from health care providers (Dinas Kesehatan Kota Medan, 2022).

Beyond physiological factors, breastfeeding success is also influenced by psychological, social, and mechanical factors. Infant suckling on the nipple stimulates the release of prolactin and oxytocin through the central nervous system; however, the oxytocin reflex is

highly sensitive to the mother's emotional state. Mothers who experience stress, anxiety, fatigue, or a lack of social support tend to experience inhibition of the let-down reflex, resulting in poor milk flow, whereas mothers who feel comfortable and supported by family and health care providers tend to produce and release milk more easily. This is consistent with UNICEF's (2021) view emphasizing the importance of emotional and environmental support for breastfeeding success.

Poor breast milk production and release can lead to various consequences, ranging from milk stasis, mastitis, to breast abscess in mothers, as well as risks of malnutrition, infection, and growth impairment in infants. This condition can ultimately undermine exclusive breastfeeding and increase infant morbidity, highlighting the need for appropriate intervention, particularly during the early postpartum period, which is a critical period for breastfeeding success (Sambas et al., 2022).

One safe and easily applicable nonpharmacological intervention to support smooth breast milk flow is oxytocin massage, which involves massaging along the spine to stimulate the release of the hormone oxytocin. This stimulation is expected to strengthen the let-down reflex, making it easier for milk to be released. In addition to its physiological effects, oxytocin massage also has a relaxing effect that helps reduce stress levels in postpartum mothers, thereby supporting breastfeeding success (Naimah et al., 2025).

A study by Putri et al. (2025), which used a quasi-experimental design with relatively homogeneous intervention and control groups, found that 83.3% of postpartum mothers in the intervention group experienced smooth milk production and release, compared with only 46.7% in the control group, accompanied by a greater increase in milk volume in the intervention group ($p < 0.05$). These findings are consistent with a literature review by Nurainun and Susilowati (2021), which concluded that oxytocin massage—performed along the vertebrae down to the fifth and sixth ribs to stimulate prolactin and oxytocin—is an effective alternative for addressing poor breast milk production, as indicated by a significant difference in milk volume before and after the intervention.

Nevertheless, the application of oxytocin massage at primary health care facilities remains suboptimal, resulting in a gap between theoretical recommendations and practice in the field. This underscores the need for further research to demonstrate the effectiveness of oxytocin massage in improving breast milk flow, particularly among the postpartum population in the study area.

A preliminary study conducted by the researchers using medical record data from the Independent Midwifery Practice (PMB) Wanti for the 2023–2025 period showed a fairly high trend of poor milk flow: in 2023, 240 of 316 breastfeeding mothers (75.9%) experienced poor milk production; in 2024, 213 of 283 mothers (75.3%); and in 2025, 169 of 226 mothers (74.8%). These data indicate that the majority of breastfeeding mothers over the past three years have experienced obstacles in milk production during the early postpartum period. A further preliminary survey conducted on 20 April 2026 among 12 second-day postpartum mothers found that 9 showed signs of poor milk flow—such as prolonged but unsatisfying feeding, urination frequency of 2–5 times per day, concentrated urine, and a lethargic-appearing infant—while the remaining 3 mothers showed signs of smooth milk flow, such as feeding frequency of 8–12 times per day and urination 6–8 times per day. Interview results also revealed that none of the respondents were familiar with oxytocin massage as a nonpharmacological method for facilitating milk flow, underscoring the need for this study.

Based on the above, this study aimed to analyze the effect of oxytocin massage on breast milk flow among postpartum mothers at PMB Wanti, Medan Deli District.

METHODS

This study used a quasi-experimental design with a post-test only control group design, involving two groups selected according to inclusion and exclusion criteria. The intervention group received oxytocin massage lasting approximately 15 minutes, administered 1–2 times per day, after which breast milk flow was measured (post-test). The control group did not receive the intervention but had their breast milk flow measured at the same time for comparison.

The study population consisted of all postpartum mothers who gave birth at PMB Wanti during the April–July 2026 period, totaling 30 mothers. Using purposive sampling, 28 postpartum mothers who met the inclusion criteria were obtained—namely, having given birth at PMB Wanti and being willing to participate as respondents, having delivered vaginally without complications, and having an infant with no congenital abnormalities. Exclusion criteria included mothers with delivery complications or surgical procedures, infants requiring special care, and mothers with chronic illness. The eligible sample was then divided into two equal groups: 14 mothers in the intervention group and 14 in the

control group. The intervention group received oxytocin massage for three days in the morning and evening, while the control group received only standard postpartum care.

The collected data were analyzed by comparing the measured breast milk flow between the two groups using the nonparametric Mann-Whitney U test, in order to determine the effect of oxytocin massage on breast milk flow among postpartum mothers at PMB Wanti.

RESULTS

Sociodemographic Characteristics of Postpartum Mothers

The age, education, and parity characteristics of the postpartum mothers at PMB Wanti are presented in Table 1:

Table 1. Sociodemographic Characteristics of Postpartum Mothers at PMB Wanti

Characteristic		Intervention Group (n=14)		Control Group (n=14)	
		n	%	n	%
Age	< 20 years	4	28,6	2	14,3
	20-30 years	10	71,4	12	85,7
	>30 years	0	0	0	0
Education	Primary	4	28,6	2	14,3
	Secondary	9	64,3	11	78,6
	Higher	1	7,1	1	7,1
Parity	Primiparous	3	21,4	2	14,3
	Multiparous	11	78,6	12	85,7
	Grand multiparous	0	0	0	0
TOTAL		14	100	14	100

Table 1 shows that the sociodemographic characteristics of the two groups were relatively homogeneous. The majority of postpartum mothers in both the intervention and control groups were aged 20–30 years (71.4% vs. 85.7%), had a secondary/high-school education (64.3% vs. 78.6%), and were multiparous (78.6% vs. 85.7%), indicating that most respondents had previous childbirth experience.

Breast Milk Flow

Breast milk flow in the two study groups was categorized as smooth or not smooth, as presented in Table 2:

Table 2. Distribusi Kelancaran Pengeluaran ASI Ibu Nifas di PMB Wanti

Breast Milk Flow	Intervention Group (n=14)		Control Group (n=14)	
	n	%	n	%
Smooth	11	78,6	5	35,7
Not Smooth	3	21,4	9	64,3
Total	14	100	14	100

Table 2 shows a fairly marked difference between the two groups: 78.6% of mothers in the intervention group experienced smooth milk flow after receiving oxytocin massage for three days, whereas in the control group, 64.3% of mothers still experienced poor milk flow even after reaching the third postpartum day.

Effect of Oxytocin Massage on Breast Milk Flow in Postpartum Mothers

The comparison of breast milk flow between the intervention and control groups is presented in Table 3:

Table 3. Comparison of Oxytocin Massage and Breast Milk Flow among Postpartum Mothers at PMB Wanti

Group	Kelancaran Pengeluaran ASI						<i>p</i> value
	Smooth		Not Smooth		Total		
	n	%	n	%	N	%	
Intervention	11	78,6	3	21,4	14	100	0,001
Control	5	35,7	9	64,3	14	100	

Based on Table 3, a statistically significant difference was found between the two groups ($p = 0.001$; < 0.05), indicating an association between oxytocin massage and breast milk flow. A total of 78.6% of mothers in the intervention group achieved smooth milk flow after three days of treatment, compared with only 35.7% in the control group, while the remaining 64.3% had not yet achieved smooth milk flow.

Table 4. Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total <i>p</i>	.288	28	.000	.714	28	.000

a. Lilliefors Significance Correction

The normality test results in Table 4 show a significance value of 0.000 (< 0.05) for both the Kolmogorov-Smirnov and Shapiro-Wilk methods, indicating that the data were not normally distributed; the analysis therefore proceeded using a nonparametric test.

Table 5. Mann-Whitney U Test Results

Test Statistics ^b	Total <i>p</i>
Mann-Whitney U	34.000
Wilcoxon W	139.000
Z	-3.204
Asymp. Sig. (2-tailed)	.001
Exact Sig. [2*(1-tailed Sig.)]	.002 ^a
Exact Sig. (2-tailed)	.001
Exact Sig. (1-tailed)	.001
Point Probability	.000

a. Not corrected for ties. b. Grouping variable: group

The Mann-Whitney U test results in Table 5 show an asymptotic significance (2-tailed) value of 0.001 (< 0.05), confirming the effect of oxytocin massage on breast milk flow among postpartum mothers at PMB Wanti.

DISCUSSION

Effect of Oxytocin Massage on Breast Milk Flow in Postpartum Mothers

The lactation process depends heavily on two main hormones: prolactin, which is responsible for milk production, and oxytocin, which is responsible for its release. Oxytocin massage is a nonpharmacological technique involving massage along the spine,

from the cervical vertebrae 5–6 to the thoracic vertebrae 5–6, which stimulates sensory nerves to send impulses through the spinal cord to the hypothalamus. The hypothalamus then stimulates the posterior pituitary to release oxytocin into the bloodstream, causing contraction of the myoepithelial cells surrounding the breast alveoli and triggering the let-down reflex. This mechanism explains why milk can be released more smoothly and infants can feed more effectively, consistent with the findings of Noviyana et al. (2022) that stimulation of the back area can increase blood oxytocin levels and accelerate milk release.

In addition to its physiological effects, oxytocin massage also provides psychological benefits for postpartum mothers. The postpartum period is often marked by anxiety, stress, fatigue, and low breastfeeding confidence, conditions that can raise stress hormones such as cortisol and adrenaline, thereby suppressing hypothalamic activity and inhibiting both milk production and release. The gentle touch involved in oxytocin massage stimulates the parasympathetic nervous system, helping mothers feel calmer, which in turn lowers stress hormones and increases the secretion of oxytocin and prolactin. This relaxed state supports a more optimal lactation process, as noted by Saleha & Sulastriningsih (2022), who found that psychological support and relaxation play an important role in breastfeeding success through their influence on lactation hormones.

The findings of this study are consistent with those of Putri et al. (2025), who also found a significant difference between the oxytocin massage group and the control group ($p = 0.001$), with the mean breast milk volume in the intervention group increasing by 65.4% after three consecutive days of treatment. The researchers concluded that the effectiveness of oxytocin massage stems from its ability to stimulate oxytocin release while providing a relaxing effect for the mother.

Similarly, Rumpun et al. (2021) reported that the mean breast milk production in the intervention group was 120.5 ml higher than in the control group, which averaged only 70.2 ml ($p = 0.000$). That study also found that oxytocin massage accelerated the time to first milk release, averaging 4–6 hours postpartum in the intervention group compared with 18–24 hours in the control group, underscoring the role of oxytocin massage in accelerating early lactation initiation.

A study by Lestari et al. (2024) further noted that combining oxytocin massage with family support produced better outcomes than oxytocin massage alone in improving breast milk

flow ($p = 0.002$), along with reduced postpartum anxiety and increased maternal breastfeeding confidence. A similar finding was reported by Iriani (2022) among 30 postpartum mothers, with 86.7% of the intervention group experiencing smooth milk flow after oxytocin massage, compared with only 40% in the control group. That study concluded that oxytocin massage is an effective, safe, and easy-to-perform intervention for both health care providers and family members.

The significant difference between the intervention and control groups in this study may also be attributable to the education provided alongside oxytocin massage, which covered the importance of exclusive breastfeeding, correct breastfeeding techniques and positioning, and signs of adequate milk intake in infants. This education increased mothers' knowledge and confidence in breastfeeding, which in turn made them calmer and less prone to stress, thereby supporting a smoother lactation process. This is consistent with the view of Widayanti and Mawardika (2023) that breastfeeding success is influenced by three main factors: physiological, psychological, and support from health care providers and family.

CONCLUSION

This study found a statistically significant difference between the intervention and control groups ($p = 0.001$; < 0.05), indicating an effect of oxytocin massage on breast milk flow among postpartum mothers at PMB Wanti. A total of 78.6% of mothers in the intervention group experienced smooth breast milk flow after three days of treatment, compared with only 35.7% in the control group, while the remaining 64.3% had not yet achieved smooth milk flow. These findings suggest that oxytocin massage can be recommended as a nonpharmacological intervention to support successful exclusive breastfeeding, and health care providers are advised to educate postpartum mothers so that they can practice the technique independently.

LIMITATION

This study has several limitations. First, the relatively small sample size ($n = 28$) and the use of purposive sampling at a single midwifery practice limit the generalizability of the results to a broader population of postpartum mothers. Second, the study design did not fully control for confounding factors such as family support, nutritional status, and maternal psychological condition, which may also influence breast milk flow. Third, breast

milk flow was assessed observationally based on clinical indicators, without direct measurement of oxytocin hormone levels, so the underlying biological mechanism could not be confirmed through laboratory analysis. Future research is recommended to use larger samples, a randomized experimental design, and biochemical measurements to further strengthen the evidence for the effectiveness of oxytocin massage.

REFERENCES

- Apriani, W., & Nurjannah, D. (2022). Faktor-faktor yang memengaruhi kelancaran produksi ASI pada ibu nifas. *Jurnal Sains Kesehatan*, 27(1), 23–29.
- Balqis, N., Rahmawati, D., & Nurhasanah, S. (2023). Breastfeeding and infant nutritional status: A review of its impact on child health. *Jurnal Kesehatan Ibu dan Anak*, 8(2), 55–62.
- Dinas Kesehatan Kota Medan. (2022). Profil kesehatan tahun 2022 Kota Medan. Dinas Kesehatan Kota Medan.
- Iriani, I. (2022). Pengaruh pijat oksitosin terhadap produksi ASI pada ibu. *Jurnal Ners dan Kebidanan Indonesia*, 1(1), 36–43.
- Kementerian Kesehatan Republik Indonesia. (2023). Profil kesehatan Indonesia 2022. Kementerian Kesehatan Republik Indonesia.
- Lestari, D., Aulia, N., Anjani, A. D., Siahaan, W. W., & Diana, S. (2024). ASI eksklusif melalui edukasi pijat oksitosin. *Jurnal Kebidanan*, 1(2), 16–21.
- Naimah, J., Salmarini, D. D., Fitri, T. M., & Rahmawati, D. (2025). Pengaruh pijat oksitosin terhadap kecukupan ASI pada ibu nifas di PMB Nurul Hikmah Kecamatan Sungai Tiung Kabupaten Banjarbaru. *Jurnal Kebidanan*, 4(2), 71–75.
- Noviyana, P., Lina, P. H., Diana, S., Dwi, U., Eni, N., & Lataminarni, S. (2022). Efektivitas pijat oksitosin dalam pengeluaran ASI. *Jurnal Kesehatan*.
- Nurainun, E., & Susilowati, E. (2021). Pengaruh pijat oksitosin terhadap produksi ASI pada ibu nifas: Literature review. *Jurnal Kebidanan Khatulistiwa*, 7(1), 20.
- Putri, V. S., Sanjaya, R., Komalasari, K., & Primadevi, I. (2025). Pengaruh pijat oksitosin pada ibu nifas untuk meningkatkan produksi ASI. *Jurnal Kesehatan Amanah*, 9(1), 11–20.
- Rani, H., Yunus, M., Katmawanti, S., & Wardani, H. E. (2022). Systematic literature review determinan pemberian ASI eksklusif di Indonesia. *Sport Science and Health*, 4(4), 376–394.
- Rumpun, J., Ismanti, R., Musfirowati, F., & Feletahan, U. (2021). Pengaruh pijat oksitosin terhadap produksi ASI pada ibu postpartum. *Jurnal Kesehatan*, 1(1).
- Saleha, S., & Sulastriningsih, K. (2022). Pengaruh pijat oksitosin terhadap lama persalinan kala I fase aktif di Klinik PIM Kota Depok tahun 2021. *Jurnal Kebidanan*, 6(1).
- Sambas, E. K., Nurliawati, E., & Zakiatulrahmi, T. (2022). Review literature: Efektivitas tindakan suportif terhadap kelancaran ASI. *Jurnal Kesehatan*, 22.
- Susanto, A. H. (2023). Pengaruh terapi pijat oksitosin terhadap kelancaran ASI pada ibu nifas di wilayah kerja Puskesmas M. Taha Bengkulu Selatan. *Jurnal Kebidanan*, 4(1), 88–100.
- UNICEF. (2021). Indicators for assessing infant and young child feeding practices. World Health Organization.
- Widayanti, A., & Mawardika, T. (2023). Pengaruh pendidikan kesehatan ASI eksklusif terhadap pengetahuan dan sikap ibu nifas. *Jurnal Ilmiah Kesehatan*, 4(2), 177–188.

World Health Organization, & UNICEF. (2022). Global breastfeeding scorecard 2022: Protecting breastfeeding through further investments and policy actions. World Health Organization.