



## THE EFFECT OF REFLEXOLOGY MASSAGE AND OXYTOCIN MASSAGE ON BREAST MILK ADEQUACY LEVELS IN BREASTFEEDING MOTHERS

Dian Nur Adkhana Sari<sup>1\*</sup>, Usman<sup>2</sup>, Suryati<sup>1</sup>

<sup>1</sup>Nursing Study Program, Sekolah Tinggi Ilmu Kesehatan Surya Global Yogyakarta, Jln Ringroad Selatan Blado, Jl. Monumen Perjuangan, Balong Lor, Potorono, Banguntapan, Bantul, Yogyakarta 55194, Indonesia

<sup>2</sup>Nursing Study Program, Institusi Teknologi dan Kesehatan Muhammadiyah Kalimantan Barat, Jl. Sungai Raya Dalam, Sungai Raya, Sungai Raya, Kubu Raya, Kalimantan Barat 78117, Indonesia

\*[adkhanadian@gmail.com](mailto:adkhanadian@gmail.com)

### ABSTRACT

Increasing breast milk supply for breastfeeding mothers aged 0-6 months is a crucial step in supporting optimal infant growth and development. Many mothers experience challenges in producing sufficient breast milk, necessitating interventions that can support successful breastfeeding. Oxytocin massage and reflexology are methods to support breast milk production, each with its own distinct mechanisms. The purpose of this study was to determine the effect of reflexology and oxytocin massage on breast milk supply in breastfeeding mothers. This research method used a pre-experimental design with a one-group pretest-posttest design. Statistical testing used the Wilcoxon test to demonstrate significant changes before and after the intervention. The p-value was used to determine differences. A sample of 40 breastfeeding mothers was divided into two intervention groups. sampling using purposive sampling technique. The results of this study, using the Wilcoxon test, showed a significant change in breast milk sufficiency before the intervention of 4.80 and after the oxytocin massage intervention of 7.56, a difference from the pre-post results of 2.85 with a p-value of 0.000 (p-value <0.005). Meanwhile, the difference between reflexology massage before and after the reflexology massage intervention was 5.55 and 7.85, a difference from the pre-post results of 2.85 with a p-value of 0.000 (p-value <0.005). This indicates that breast milk sufficiency with oxytocin massage and reflexology massage can both increase breast milk sufficiency, but there is no significant difference between the two.

Keywords: breast milk sufficiency; breastfeeding mothers; oxytocin massage; reflexology

### How to cite (in APA style)

Sari, D. N. A., Usman, U., & Suryati, S. (2025). The Effect of Reflexology Massage and Oxytocin Massage on Breast Milk Adequacy Levels in Breastfeeding Mothers. *Indonesian Journal of Global Health Research*, 8(2), 7–12. <https://doi.org/10.37287/ijghr.v8i2.84>.

## INTRODUCTION

Breast milk, often referred to as ASI, is the single best food for babies, as it contains the most complete nutritional composition for growth and development. However, mothers sometimes experience challenges producing breast milk. The biggest obstacle is low milk supply (Magdalena et al., 2020). In 2020, the percentage of infants under 6 months of age in Indonesia who received exclusive breastfeeding was approximately 66.1%. The percentage index of infants under 6 months who were breastfed has reached the 2020 target of 40%. The national target is 80%, so this achievement needs to be further improved to achieve the national target. (Pertiwia A, 2022). In 2023, the percentage of infants under 6 months of age in Indonesia who received exclusive breastfeeding was approximately 73.97%. In Yogyakarta, the percentage in 2023 was approximately 78.25% (Statistik, 2024). In 2023, data was obtained for each district regarding breastfeeding rates for infants under 6 months. These rates included 88.1% in Sleman Regency, 85.06% in Bantul Regency, 83.46% in Kulon Progo Regency, 81.2% in Yogyakarta Regency, 79.26% in Gunung Kidul Regency, and 84.16% in the Special Region of Yogyakarta Province (Pembangunan Nasional Veteran Jakarta & Raya Limo Kecamatan Limo, 2022).

Breast milk production and release are influenced by two hormones: prolactin and oxytocin. Prolactin influences the amount of milk produced, and oxytocin influences the process of milk release (Rahayu & Wijayanti, 2022). The irregular production and release of breast milk during this

period can be caused by a lack of stimulation of the hormones prolactin and oxytocin, which are very important for the smooth process of breast milk production and release (Magdalena et al., 2020). Babies are expected to get enough breast milk at the age of 0-6 months, adequate breast milk in babies can be interpreted as a condition where the baby receives enough breast milk to meet his nutritional needs (Anggraeni & Randayani Lubis, 2021). Ideally, a baby should breastfeed 8-12 times in 24 hours, or approximately every 2 hours. The duration of each feeding is approximately 10 to 20 minutes per breast. This depends on the strength of the baby's suck, swallowing speed, and comfort (Rahmi & Merleni, 2019).

Malnutrition in babies due to not getting exclusive breastfeeding can result in growth faltering (failure to thrive), inhibit cognitive development, inhibit recovery from illness, babies who do not get exclusive breastfeeding have a higher risk of contracting infectious diseases which can cause death in babies (Hidayah & Dian Anggraini, 2023). Breast milk sufficiency in infants can be influenced by various factors, including the massage techniques used by breastfeeding mothers. Oxytocin massage and reflexology are two techniques believed to increase milk production in breastfeeding mothers (Wulandari & Mayangsari, 2019). The mechanism of oxytocin massage is that during massage, the mother feels more comfortable and relaxed, thus reducing stress, which causes a decrease in the hormone cortisol, which results in there being no obstruction of the hormone oxytocin, which plays a role in the smooth release of breast milk produced by the hypothalamus. One of the benefits of oxytocin massage is increasing the let-down reflex, meaning it makes breast milk flow more quickly (D. A. Wulandari & Mayangsari, 2019). In addition to oxytocin massage, reflexology can also maintain lactation and increase breast milk production. Stimulating the medulla oblongata, which sends commands to the hypothalamus to produce milk in the posterior pituitary gland, is one way massage therapy works to increase breast milk production (Anggraeni & Randayani Lubis, 2021). The aim of this study was to determine the effectiveness of oxytocin massage and reflexology massage.

## METHOD

This research was a quantitative study with an experimental design and a one-group pretest-posttest design. A sample of 40 breastfeeding mothers was divided into two intervention groups. The sampling technique used purposive sampling based on predetermined criteria. The sample was divided into two groups, each with a breast milk sufficiency measurement. Then, the first group received reflexology massage, and the second group received oxytocin massage. After the intervention, the infants' breast milk sufficiency was measured again. This study has received ethical approval under ethics number NO. 5.13/KEPK/SSG/I/2025, and the ethics review was conducted at Surya Global Health College. The measurement instrument used was a breast milk sufficiency questionnaire. Validity testing was conducted in 2022 and the questionnaire was declared valid. With the calculated  $r$  value  $>$   $r$  table, the  $r$  table obtained was 0.361 and from the questionnaire the adequacy of breast milk production. The results of the reliability test conducted by (Telaumbanua, 2022) stated that the results of the questionnaire reliability test showed that the questionnaire remained consistent when used more than once with a Cronbach's Alpha value of  $0.930 > 0.60$ .

## RESULT

**The effectiveness of oxytocin massage on breastfeeding mothers of babies aged 0-6 months before and after the intervention.**

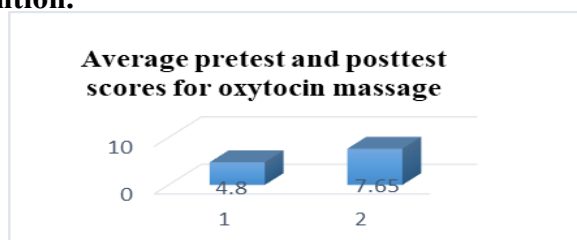
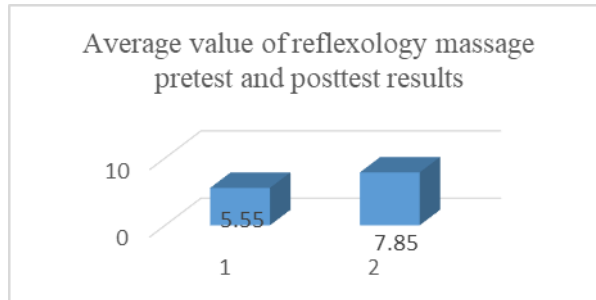


Figure 1. Adequacy of breast milk before and after oxytocin massage intervention

Based on Figure 1, it can be seen that there was an increase in the effectiveness of mothers breastfeeding babies 0-6 months before and after being given an oxytocin massage intervention using olive oil. Before the intervention, the value in bar chart number 1 was a mean value of 4.8, and after the intervention in bar chart number 2, the mean value changed to 7.65. From the results above, it is known that there was an increase in the value of breast milk sufficiency in the pretest and posttest results of oxytocin massage.

**The effectiveness of reflexology massage on breastfeeding mothers of babies aged 0-6 months before and after intervention.**



Picture 2. Adequacy of breast milk before and after reflexology massage intervention

Based on figure 2, it can be seen that there was an increase in the effectiveness of mothers breastfeeding babies 0-6 months before and after the reflexology massage intervention using olive oil. Before the intervention, the value in bar chart number 1 was 5.55, and after the intervention in bar chart number 2, the mean value was 7.85. From the results above, it is known that there was an increase in the value of breast milk sufficiency in the results of the reflexology massage pretest and posttest.

**Bivariat Analise  
Data Normality Test**

Tabel 1  
Results of the Normality Test of Oxytocin Massage Data

	Value p
Preetest	0,005
Posttest	0,000

The table 1 shows the results of the normality test to determine whether the data distribution is normally distributed or not. This data normality test uses the Kolmogorov-Smirnov test because the sample size is >50. The results obtained before the oxytocin massage were 0.000 (p-value <0.05) and after the oxytocin massage were 0.000 (p-value <0.05). Therefore, the results of the normality test were declared not normally distributed, so the next test was the Wilcoxon test. The following table shows the results of the normality test before and after the intervention of the effectiveness of reflexology massage on breastfeeding mothers of babies aged 0-6 months

Table 2  
Reflexology Data Normality Test Results

	Value p
Preetest	0,002
Posttest	0,000

Table 2 shows the results of the normality test to determine whether the data distribution was normally distributed. This test used the Kolmogorov-Smirnov test because the sample size was >50. The results obtained before reflexology massage were 0.002 (p-value <0.05) and after reflexology massage were 0.000 (p-value <0.05). Therefore, the results of the normality test were declared not normally distributed. The next test was the Wilcoxon test. The conclusion of the changes in both was that the average increase in scores after oxytocin massage was 0.000 (p-value <0.05) and after reflexology massage was 0.000 (p-value <0.05). Therefore, the results of the normality test were declared not normally distributed. The next test to determine the difference between oxytocin massage and reflexology massage was to examine the p-values of both massages.

### The Effectiveness of Oxytocin Massage and Reflexology Massage on Breast Milk Adequacy for Breastfeeding Mothers Aged 0-6 Months

This study was conducted to determine whether there is an Influence of the Effectiveness of Oxytocin Massage and Reflexology Massage on Breast Milk Adequacy for Breastfeeding Mothers 0-6 Months Old. The influence test was conducted using the Wilcoxon test, a nonparametric statistical test. The test was used to compare the average effectiveness before and after being given oxytocin massage with reflexology massage on breast milk adequacy for breastfeeding mothers 0-6 months old. The results of the Wilcoxon test are presented in the following table:

Table 3

Results of Wilcoxon Test Analysis on breastfeeding mothers of babies aged 0-6 months before and after being given oxytocin massage intervention

	Mean	Men- Maks	Δ Mean	Z	Std Deviasi	Value p
Before intervention	4,80	3 – 6	2,85	-3,970	1,005	0,000
After intervention	7,65	7 – 8			0,489	

\*Uji Wilcoxon: negatif rank=0; positive rank=20; ties=0

Table 3 shows an increase in breast milk sufficiency scores before oxytocin massage intervention, from 4.80 (median 4) to 7.65 after oxytocin massage (median 7). The P-value is 0.000 (p-value <0.05), thus rejecting Ho and accepting Ha. This indicates that oxytocin massage effectively affects breast milk sufficiency in breastfeeding mothers with infants aged 0-6 months. Table 4 below shows the results of the Wilcoxon test on breastfeeding mothers with infants aged 0-6 months before and after reflexology massage intervention.

Table 4

Results of Wilcoxon Test Analysis on breastfeeding mothers of babies aged 0-6 months before and after being given reflexology massage intervention

	Mean	Men- Maks	Δ Mean	Z	Std Deviasi	Nilai p
Before intervention	5.55	4 – 7	2,85	-4,058	0,686	0,000
After intervention	7,85	7 – 8			0,366	

\*Uji Wilcoxon: negatif rank=0; positive rank=20; ties=0

Based on the table above, it can be seen that there was an increase in the value of breast milk sufficiency before being given reflexology massage intervention, namely 5.55 (median 5), to 7.85 after being given reflexology massage (median 7). The P value is 0.000 (p value <0.05), thus Ho is rejected and Ha is accepted. This means that there is an effect of the effectiveness of reflexology massage on breast milk sufficiency in breastfeeding mothers of babies 0-6 months.

## DISCUSSION

### The Effect of Oxytocin Massage on Breast Milk Adequacy in Mothers Breastfeeding Babies Aged 0-6 Months

The Wilcoxon test results for the effectiveness of oxytocin massage on breast milk sufficiency showed a p-value of 0.000, or <0.05, indicating a significant difference between breast milk sufficiency in mothers breastfeeding infants 0-6 months before and after oxytocin massage. Oxytocin massage is a back massage performed on a breastfeeding mother to help her body produce more oxytocin, a hormone essential for smooth breast milk production. It also promotes comfort for the mother, which helps the baby relax while breastfeeding (Syarif, 2022). The results of this study indicate that oxytocin massage is effective in increasing breast milk supply in breastfeeding mothers. Successful breastfeeding is influenced by two main aspects: milk production and release. Milk production is influenced by the hormone prolactin, while release is influenced by the hormone oxytocin, which triggers the let-down reflex. Oxytocin is released when the nipple is stimulated, through the baby's sucking or through spinal massage. Spinal massage can stimulate oxytocin release, providing a relaxing and comforting effect, and strengthening the emotional bond between mother and baby. This positive psychological state greatly supports oxytocin release, thereby facilitating milk release and ensuring the baby receives adequate nutrition (Septi Marantika et al.,

2023). Massage along the spine to the fifth and sixth ribs can stimulate the release of the hormone oxytocin, which plays a role in the breast milk let-down reflex. With the increase in the hormone oxytocin, contractions of myoepithelial cells in the breast increase, so that breast milk comes out more easily and the baby gets enough breast milk (Panggabean, 2020). Based on the results of the pre-test on the adequacy of breast milk, the average score of babies who received enough breast milk was 4.80 with the lowest score being 3. Meanwhile, after being given intervention (post-test), the average score for the adequacy of breast milk was 7.65 with the lowest score being 6 and the highest being 8. The adequacy of breast milk in babies can be measured through several indicators, such as the frequency of breastfeeding, the baby's calmness after breastfeeding, weight gain, and signs of adequate fluids such as urine color and the number of urinations (Telaumbanua M, 2022).

### **The effect of reflexology massage on breast milk sufficiency**

The results of the Wilcoxon test show that the significant value is 0.000 ( $p$  value  $<0.005$ ) which means there is a significant difference in data related to the effectiveness of reflexology massage on the level of breast milk sufficiency in breastfeeding mothers of babies aged 0-6 months with a value of -4.058b. So  $H_a$  is accepted and  $H_o$  is rejected, it can be concluded statistically that there is effectiveness of reflexology massage on the level of breast milk sufficiency in breastfeeding mothers of babies aged 0-6 months.

Reflexology massage, which involves applying pressure to the toes after childbirth, stimulates the pituitary gland and releases oxytocin, endorphins, and enkephalins, promoting postpartum and breastfeeding comfort. The mother's comfort and relaxation can stimulate nerve cells in the hypothalamus and trigger the release of the hormone prolactin from the anterior pituitary. This hormone stimulates the alveolar cells to produce milk. Simultaneously with the secretion of prolactin from the anterior pituitary, stimulation of the posterior pituitary continues, releasing the hormone oxytocin. Oxytocin travels through nerve fibers to the posterior pituitary and is released into the bloodstream when the nerves are stimulated. Through the bloodstream, this hormone is transported to the alveoli and affects the myoepithelial cells (A. S. Wulandari et al., 2019). Oxytocin release increases breast milk production after birth. This research is supported by (Mirzaie Parisa et al., 2018) where research was conducted regarding the effect of reflexology massage on breast milk volume in mothers who have premature babies, changes in breast milk volume were found every day after reflexology massage was carried out.

Research result (Mirzaie Parisa et al., 2018) showed that in the intervention group (reflexology massage on the breast, pituitary, and solar plexus points), there was a greater increase in breast milk volume after massage on the seventh day compared to the control group (reflexology massage on the shoulder, eye, and nerve points), these findings indicate that foot reflexology massage has a positive effect in increasing breast milk volume in mothers who have premature babies, and because of its simplicity, high acceptance and less reported side effects, foot reflexology massage can be used by breastfeeding mothers. This research is also in line with research conducted by (Mirzaie Parisa et al., 2018) The study, which examined the effect of foot reflexology massage on breast milk production in mothers with premature babies, found a significant difference in the mean milk volume after reflexology massage between the intervention and control groups ( $p=0.02$ ). The difference in mean milk volume on the third day after the intervention compared to before the intervention was not significant ( $p=0.187$ ). The researchers believe that performing reflexology massage on postpartum mothers can increase breast milk supply. In addition to addressing breast milk insufficiency, it can also provide a sense of calm and comfort, and improve breast milk quality.

### **CONCLUSION**

There is an effect of oxytocin massage and reflexology massage, both of which can increase breast milk sufficiency.

## REFERENCES

- Anggraeni, L., & Randayani Lubis, D. (2021). Manfaat Pijat Oksitosin Terhadap Peningkatan Berat Badan Bayi 0-6 Bulan Yang Menyusui Secara Eksklusif.
- Hidayah, A., & Dian Anggraini, R. (2023). Pengaruh Pijat Oksitosin terhadap Produksi Asi pada Ibu Nifas di BPM Noranita Kurniawati. *Journal of Education Research*, 4(1), 234–239. <https://doi.org/10.37985/jer.v4i1.154>
- Magdalena, M., Auliya, D., Usraleli, U., Melly, M., & Idayanti, I. (2020a). Pengaruh Pijat Oksitosin Terhadap Produksi ASI Ibu Menyusui di Wilayah Kerja Puskesmas Sidomulyo Rawat Jalan Pekanbaru. *Jurnal Ilmiah Universitas Batanghari Jambi*, 20(2), 344. <https://doi.org/10.33087/jiubj.v20i2.939>
- Magdalena, M., Auliya, D., Usraleli, U., Melly, M., & Idayanti, I. (2020b). Pengaruh pijat oksitosin terhadap produksi asi ibu menyusui di wilayah kerja puskesmas sidomulyo rawat jalan pekanbaru. *Jurnal Ilmiah Universitas Batanghari Jambi*, 20(2), 344–348.
- Mirzaie Parisa, Charandabi Sakineh Mohammad-Alizadeh, Goljarian Sakineh, Mirghafourvand Mojgan, & Hoseinie Mohammad Bager. (2018). The effect of foot reflexology massage on breast milk volume of mothers with premature infants: A randomized controlled trial. *European Journal of Integrative Medicine*.
- Pertiwia A, M. A., B. M. (2022). pengetahuan ibu ttg ASI eksklusif.
- Rahayu, H. S. E., & Wijayanti, K. (2022). Penerapan Rolling Massage Punggung Untuk Mengatasi Masalah Menyusui Tidak Efektif. *Borobudur Nursing Review*, 2(2), 65–71.
- Rahmi, N., & Merleni. (2019). Analysis Of Factors Associated with Smooth Breastfeeding in Breastfeeding Mothers in the Lhoong Community Health Center in Aceh Besar District. In *Journal of Healthcare Technology and Medicine* (Vol. 5, Issue 2).
- Septi Marantika, Risza Choirunissa, & Rini Kundaryanti. (2023). pengaruh pijat oksitosin terhadap kelancaran prod ASI.
- Statistik, B. P. (2024). *Persentase Bayi Usia Kurang Dari 6 Bulan Yang Mendapatkan Asi Eksklusif Menurut Provinsi (Persen), 2021-2023*. Jakarta: Badan Pusat Statistik.
- Syahdayani Panggabean. (2020). Pengaruh Pijat Oksitosin Terhadap Kelancaran Asi Pada Ibu Postpartum Di Wilayah Kerja Puskesmas Lumut Kabupaten Tapanuli Tengah.
- Syarif, S. , & P. ani T. (2022). Pengaruh Pijat Oksitosin Terhadap Kelancaran ASI Pada Ibu Post Partum Di RSKD Ibu Dan Anak Pertiwi Kota Makassar. *Jurnal Gizi Dan Keluarga*.
- Telaumbanua Mutiara. (2022). Analysis Of Factors Associated with Smooth Breastfeeding in Breastfeeding Mothers in the Lhoong Community Health Center in Aceh Besar District. In *Journal of Healthcare Technology and Medicine* (Vol. 5, Issue 2).
- Wulandari, A. S., Hasanah, O., & Sabrian, F. (2019). Pengaruh Akupresur Terhadap Produksi Air Susu Ibu (ASI). In *Jurnal Ners Indonesia* (Vol. 10, Issue 1).
- Wulandari, D. A., & Mayangsari, D. (2019). Pengaruh Pijat Oksitosin Dan Pijat Endorphin Terhadap Kelancaran Produksi Asi. *Jurnal Kebidanan*, 128–134.