

Effect of endorphin massage on breast milk production in postpartum mothers at Pratama Hadijah Maternity Clinic

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ARTICLE INFO

Article history:

Received Jun 25, 2025

Revised Jul 2, 2025

Accepted Jul 10, 2025

Keywords:

Breast Milk Production

Endorphin Massage

Postpartum Mothers

ABSTRACT

Endorphins play a role in creating a sense of comfort and pleasure, which can help reduce anxiety in mothers. Back massage is done to stimulate the oxytocin reflex through somatic sensory stimulation of the afferent system. The purpose of this study was to determine the effect of endorphin massage on breast milk production in post partum mothers at Pratama Hadijah Maternity Clinic in 2025. This study used a quasi-experimental design with a quantitative approach. The research was conducted from February to April 2025 at Pratama Hadijah Maternity Clinic. The study population included all postpartum mothers who visited Pratama Hadijah Maternity Clinic from February to April 2025. The sample used was 54 people, obtained through purposive sampling technique, and the data were analyzed using the Mann Whitney test. The results showed that as many as 36 respondents (66,7%) experienced smooth milk production after being given endorphin massage, while 18 other respondents (33,3%) showed less smooth milk production. There is a significant relationship between endorphin massage and breast milk production in post partum mothers, with a Z value of - 3.178 with a p value of 0.001 <0.05. It was concluded that mothers who received endorphin massage showed smoother breast milk production than those who did not receive the treatment. It is recommended to the clinic to apply endorphin massage therapy which is proven to have an effect on breast milk production.

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INTRODUCTION

Breast milk, naturally produced during pregnancy, is the primary and most suitable source of nutrition for infants, supporting their growth and development. Compared to formula or animal milk, its composition aligns best with an infant's biological needs (Mariani & Hasanah, 2022). Beyond nutrition, it strengthens the baby's immune system and guards against infections. Despite its benefits, the exclusive breastfeeding rate in Indonesia remains low. In Medan, only 47.7% of

infants under six months were exclusively breastfed still below the 50% target set by WHO (Organization, 2019)(Mawandri et al., 2025).

The importance of breastfeeding has been emphasized by the WHO since 2010, which recommends exclusive breastfeeding for the first six months of life, followed by breastfeeding until the age of two years or older, along with nutritious complementary foods. Recent UNICEF data (2023) shows that exclusively breastfed infants are 14 times more likely to survive the first six months of life than non-breastfed infants. In addition, breastfeeding within the first hour after birth has been shown to reduce the risk of neonatal mortality by 45%. Research by Sankar et al. (2015) also supports these findings, with exclusively breastfed infants having a lower risk of death than partially or not at all breastfed infants. In fact, children aged 6 to 23 months who were no longer receiving continued breastfeeding had twice the risk of death as children who were still breastfed (Organization, 2024)(Sankar et al., 2015).

National trends show an increase in exclusive breastfeeding coverage in the last three years. Based on data from the Indonesian Nutrition Status Survey (SSGI), the percentage of infants aged 0-5 months receiving exclusive breastfeeding was 65.8% in 2021, increasing to 66.7% in 2022, and reaching 68.1% in 2023. However, this data does not fully reflect conditions at the local level. In Medan City, for example, exclusive breastfeeding coverage is still lower than the national average. In addition, the coverage of early breastfeeding initiation (IMD), which is an important indicator of successful breastfeeding, is also still low. In 2023, only about 27% of mothers in Medan performed IMD within the first hour after delivery, even though IMD contributes greatly to improving breastfeeding success (Marriott et al., 2012)(Klaravina & Wulan, 2023)(Indonesian Ministry of Health, 2023; Medan City Health Office, 2023).

One of the main obstacles to successful breastfeeding is low milk production in the early postpartum period (Niar et al., 2021)(Safitri, 2018). This condition is often influenced by maternal anxiety about breast milk adequacy, fatigue after childbirth, lack of support from health workers, and lack of information regarding proper breastfeeding techniques. In addition, psychological factors such as postpartum stress also play a role in inhibiting the oxytocin reflex, which is indispensable in the process of milk production (Cox & Roos, 2008).

In this context, non-pharmacological interventions such as endorphin massage techniques can be an effective, safe, and easy-to-implement alternative solution for health workers and family members. Endorphin massage is a gentle and relaxing massage technique performed on the neck, back, and arms, aiming to stimulate the release of endorphins and oxytocin hormones. It was originally developed by Constance Palinsky as a natural approach to reduce pain and increase comfort during labor (Aini et al., 2022).

Research by Morhen et al. (2012) showed that giving a 15-minute massage along the spine, from the neck to the lower scapula, can increase oxytocin hormone levels and reduce adrenocorticotropin (ACTH) levels, which will physiologically increase endorphin production. Endorphins themselves function as natural analgesics, provide a relaxing effect, and stimulate the let-down reflex in breastfeeding (Morhen et al., 2012).

Findings from interviews with eight postpartum mothers at Pratama Hadijah Maternity Clinic, reinforced the fact that most mothers experienced decreased milk production. Complaints were related to stress, fatigue, incorrect breastfeeding position, and lack of understanding about breast care. Some mothers also experienced physical complaints such as breast pain or engorgement, which exacerbated barriers to breastfeeding. Based on these conditions, endorphin massage intervention is relevant to be developed as part of postnatal care, as it not only helps increase milk production, but also supports the mental and emotional health of postpartum mothers (UNICEF, 2013)(Morhen et al., 2012).

Based on the results of an initial survey conducted by researchers at Pratama Hadijah Maternity Clinic, there were 26 mothers who gave birth normally in November 2024, and as many as 23 mothers gave birth normally in December 2024. Most of the mothers experienced a decrease

in milk production since the third postnatal day. This complaint was related to stress and lack of understanding about breast care. Based on these conditions, the endorphin massage intervention is relevant to be developed as part of postpartum care, as it not only helps increase milk production, but also supports the mental and emotional health of postpartum mothers (UNICEF, 2013; Morhen et al., 2012).

RESEARCH METHOD

This study used quantitative research type Quasi Experimental Design, with the design used was Posttest Only Control Group Design. This study was conducted at Pratama Hadijah Maternity Clinic on February 3 to April 4, 2025. The population in this study were all post partum mothers at Pratama Hadijah Maternity Clinic in the February-April 2025 period as many as 59 people with the number of subjects who met the inclusion and exclusion criteria of 54 people. The inclusion criteria in this study were willing to be a respondent, a history of vaginal delivery, post partum without complications, and post partum on the first to third day. The exclusion criteria were having a history of pregnancy with complications and getting accelerated labor such as induction of labor and Sectio Cesarea (SC). The data was analyzed using computerization with the SPPSS version 20.0 program.

RESULTS AND DISCUSSIONS

Subject characteristics

Table 1. Frequency distribution of characteristics of maternity mothers at Pratama Hadijah Maternity Clinic 2025

No.	Variable	(f)	(%)
Age			
1	<20 yo	13	24,1
2	20-35 yo	29	53,7
3	>35 yo	12	22,2
Total		54	100
Parity			
1	Primipara	20	37
2	Multipara	31	57,4
3	Grandemultipara	3	5,6
Total		54	100
Education			
1	Junior High School/Bachelor	9	16,7
2	Senior High School/equivalent	30	55,5
3	University/Bachelor	15	27,8
Total		54	100

Table 1 shows that the characteristics of the group given endorphin massage based on age are mostly 20-35 years old, they are about 29 respondents (53,7%), based on parity most multipara about 31 respondents (57,4%) and based on education mostly graduated from senior high about 30 respondents (55,5%).

The mother's level of education greatly influences her understanding and behavior in the breastfeeding process. Mothers with higher education tend to have better knowledge about the benefits of breastmilk, proper breastfeeding techniques, and the importance of early initiation of breastfeeding and exclusive breastfeeding. This knowledge allows mothers to avoid myths or misinformation, so they are more confident and motivated to breastfeed. In addition, educated mothers usually have better access to health facilities and lactation-related information, which indirectly increases milk production through consistent and correct breastfeeding practices (Prawirohardjo, 2010)(Tiara, 2020)(Petalina, 2020).

Maternal age also plays an important role in milk production. Mothers of ideal reproductive age (around 20-35 years old) are generally in optimal physical and hormonal condition to produce breast milk. At this age, the endocrine system that regulates the production of prolactin and oxytocin hormones is usually functioning well, resulting in a smooth lactation process. In contrast, mothers who are too young (teenagers) or too old (over 35 years old) may experience physiological, psychological, or unpreparedness challenges in dealing with breastfeeding, which may impact the quantity and quality of breast milk produced (Hidayat, 2009)(WHO, 2021).

Parity or the number of previous births can affect a mother's physiological and psychological readiness to produce breast milk. Multiparous mothers (having given birth before) usually have previous breastfeeding experience which can increase their confidence and skills in breastfeeding their next baby. The body's adaptation process to lactation also tends to be faster in mothers who have breastfed before. In contrast, primiparous (first-time mothers) may experience anxiety, ignorance, or mistakes in breastfeeding techniques that can inhibit the let-down reflex and reduce milk production, especially if they do not receive adequate support or education from health workers (Leiwakabessy & Azriani, 2020)(Intami et al., 2022)(Idawati et al., 2021)(Riordan & Wambach, 2010).

Frequency distribution of breast milk production after endorphin massage

Table 2. Frequency distribution of breast milk production in postpartum mothers after endorphin massage at Pratama Hadijah Maternity Clinic 2025

No	Level of Breastmilk Production	(f) (%)
1	Smoothly	3666,7
2	Substandard	1833,3
Total		54100

Table 2 shows the frequency distribution of breast milk production after treatment. It was found that the subjects with smoothly breast milk production were 36 (66,7%) while the subjects with substandard breast milk production were 18 (33,3%).

Endorphin massage is a gentle massage technique that stimulates the release of endorphins in the mother's body. Endorphin acts as a natural analgesic and has a calming effect that can reduce postpartum stress and anxiety. With increased relaxation and positive emotional mood through this massage, the let-down reflex becomes smoother, resulting in increased milk production and output. Several studies have shown that mothers who regularly receive endorphin massage have better sleep quality, stronger emotional bonds with their babies, and more optimal breastfeeding (Sari et al., 2023)(Roesli, 2013).

Effect of endorphin massage on breast milk production in postpartum mothers

Table 3. Effect of endorphin massage on breast milk production in postpartum mothers at Pratama Hadijah Maternity Clinic 2025

No.	Group	Smoothly		Substandard		Asymp. Sig. (2-tailed)	Z score
		(n)	(%)	(n)	(%)		
1	Treatment	20	74	7	26	0,001	-3.178
2	Control	10	37	17	63		

Table 3 shows the analysis of the effect of endorphin massage on breast milk production in postpartum mothers. Out of 54 subjects, in the treatment group, 20 subjects (74%) experienced smooth breast milk production and 7 subjects (26%) experienced substandard breast milk production, while in the control group, 10 subjects (37%) experienced smooth breast milk production and 17 subjects (63%) experienced substandard breast milk production.

Based on the results of statistical calculations using the Mann-Whitney Rank Test, the Z value of -3.178 was obtained with a p value $0,001 < 0,05$. Thus it can be concluded that there is an effect of endorphin massage on breast milk production in post partum mothers.

This study analyzed the effect of endorphin massage on breast milk production in postpartum mothers by involving 54 subjects divided into two groups. In the treatment group that received regular endorphin massage intervention, 20 subjects (74%) experienced smooth breast milk production, while 7 subjects (26%) experienced poor breast milk production. In contrast, in the control group that did not receive the massage, only 10 subjects (37%) experienced smooth breast milk and 17 subjects (63%) experienced sub-standard breast milk.

This difference shows that the administration of endorphin massage has a significant impact on increasing breast milk fluency. This can be explained physiologically because endorphin massage stimulates an increase in endorphin and oxytocin hormones, which play a role in reducing stress and facilitating the let-down reflex. Mothers who feel more relaxed and calm after the massage are also more confident in the breastfeeding process, which helps strengthen the bond between mother and baby and supports milk production.

With these data results, it can be concluded that endorphin massage is effective as a non-pharmacological intervention in increasing breast milk production in postpartum mothers. The implementation of this therapy can be part of promotive and preventive efforts in midwifery services to support the success of exclusive breastfeeding optimally.

CONCLUSION

Respondent Characteristics

This study involved 54 respondents consisting of two groups, namely the treatment group (given endorphin massage) and the control group (not given treatment). Respondents' characteristics were analyzed based on age, parity, and education level. Based on age, the majority of respondents were aged 20-35 years as many as 29 people (53.7%), including the optimal reproductive age for lactation. At this age, a woman's hormonal condition tends to be stable, supporting the production of prolactin and oxytocin hormones that are important in the breastfeeding process (Hidayat, 2017).

Based on parity, most of the respondents were multiparous, 31 people (57.4%). Multiparous mothers have previous breastfeeding experience which increases their physical and mental readiness and ability to overcome lactation problems (Riordan & Wambach, 2015). This experience also fosters confidence, reduces anxiety, and increases breastfeeding success.

In terms of education, the majority of respondents were high school graduates, as many as 30 people (55.5%), which indicates that most have an intermediate level of health literacy sufficient to understand the importance of breastfeeding and the benefits of endorphin massage in increasing milk production (MOH RI, 2018).

Analysis of the Effect of Endorphin Massage on Milk Production

The effect of endorphin massage on the smooth production of breast milk was analyzed through comparison between the treatment and control groups. From a total of 54 respondents, each group consisted of 27 people.

In the treatment group, 20 respondents (74%) experienced smooth breast milk production, and 7 respondents (26%) experienced sub-standard breast milk production. Meanwhile, in the control group, only 10 respondents (37%) experienced smooth breast milk production, and 17 respondents (63%) experienced poor breast milk production.

The results of this study show that endorphin massage is effective in supporting the smooth production of breast milk in postpartum mothers. The mechanism of action of this massage involves stimulation of the dorsal nerve in the back area which sends signals to the brain to stimulate the release of the hormone oxytocin. Oxytocin plays a role in the contraction of

myoepithelial cells around the breast alveoli which encourages milk ejection (Roesli, 2009; Riordan & Wambach, 2015).

In addition to oxytocin, endorphin massage also increases levels of serotonin and dopamine hormones, which function to reduce anxiety, create feelings of relaxation and comfort, and improve the mother's emotional well-being, thus supporting the smoothness of the let-down reflex (Sisk et al., 2010; Nurhanifah, 2013). Although the majority of mothers in the treatment group experienced smooth milk production, there was still a small proportion (26%) who experienced obstacles. These obstacles were thought to be related to the mother's suboptimal health condition during the intervention, such as fatigue, pain, or psychological tension, which caused the massage not to be done optimally.

These conditions have the potential to reduce nerve stimulation and the release of the hormone oxytocin. This is in line with (Roesli, 2009) opinion, which states that the mother's emotional condition, such as a sense of calm, comfort, and happiness, greatly determines the success of the oxytocin reflex and overall milk production.

Interpretation of Research Results

The results of this study indicate that endorphin massage has a significant effect on the smoothness of breast milk production in postpartum mothers. Based on the results of the analysis, out of a total of 54 subjects, in the treatment group who received regular endorphin massage intervention, as many as 20 subjects (74%) experienced smooth breast milk production, while 7 subjects (26%) experienced less smooth breast milk production. Meanwhile, in the control group, only 10 subjects (37%) experienced smooth breast milk production, and 17 subjects (63%) experienced poor breast milk production.

This difference in proportion indicates a considerable increase in the fluency of breast milk production in the group given endorphin massage. To test whether the difference was statistically significant, the Mann-Whitney Rank Test was used. The test results showed that the Z value = -3.178 and p-value = 0.001. Because the p-value < 0.05, it can be concluded that there is a significant effect between endorphin massage on breast milk production in post partum mothers.

Physiologically, endorphin massage works by stimulating the dorsal nerve in the back, which then sends a signal to the brain to release the hormone oxytocin. This hormone plays a role in regulating the contraction of myoepithelial cells in the breast alveoli, thus facilitating the let-down reflex (milk ejection) (Dewi et al., 2017)(Roesli, 2009; Riordan & Wambach, 2015). In addition, massage also stimulates the release of endorphin, serotonin, and dopamine that contribute to relaxation and decreased maternal stress, which indirectly supports increased milk production (James et al., 2005)(Wijayanti et al., 2023).

However, there were still 26% of mothers in the treatment group who experienced sub-standard breast milk production. This may be due to suboptimal physical or psychological conditions during the intervention, such as fatigue, health problems, or high stress, which may inhibit oxytocin release. This condition is in accordance with Roesli's (2009) opinion, which states that breast milk production will be more optimal if the mother is in a calm, comfortable, and happy state, because the hormone oxytocin is very sensitive to the mother's emotional condition.

Thus, endorphin massage can be recommended as one of the non-pharmacological interventions in midwifery practice to support breast milk production, especially in an effort to increase the coverage of exclusive breastfeeding. Endorphin massage is worth recommending as a standard protocol in postnatal care because it is proven to be effective in increasing breast milk production through stimulation of oxytocin and endorphin hormones, with statistically significant effectiveness; to ensure its sustainability in limited primary care facilities, this therapy can be integrated in midwifery service SOPs, trained through practical modules to health workers and cadres, and supported by family involvement as a companion to ongoing self-intervention.

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