

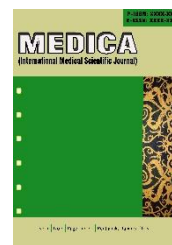
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The Effect of Family Administered Oxytocin Massage on Milk Flow in Breastfeeding Mothers for 0-6 Months

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Abstract

Exclusive breastfeeding for infants aged 0–6 months is essential for optimal growth and development. One approach to support effective breastfeeding is the oxytocin massage technique, which provides psychological benefits such as relaxation, stress reduction, and increased maternal confidence and stimulates prolactin release, a hormone involved in breast milk production. This study aimed to analyze the effect of oxytocin massage performed by family members, supported by an instructional booklet, on breast milk production among breastfeeding mothers with infants aged 0–6 months in the working area of the Sungai Durian Community Health Center. This quantitative study used a pre-experimental one-group pretest–posttest design. A total of 37 respondents participated. Breast milk flow was assessed before and after the oxytocin massage intervention. Data were analyzed using the Wilcoxon test. The findings showed a significant improvement in breast milk flow following the intervention. Before the oxytocin massage, the mean breast milk flow score was 3.62 (range: 3–5), indicating poor milk flow. After the intervention, the mean score increased to 6.62 (range: 6–8), indicating good milk flow. The Wilcoxon test yielded a p-value of 0.000 (<0.05), demonstrating a statistically significant increase. In conclusion, oxytocin massage performed by family members using an instructional booklet significantly increases breast milk flow in mothers breastfeeding infants aged 0–6 months.

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1. INTRODUCTION

Breast milk is the most appropriate source of nutrition for infants aged 0–24 months, especially during the first six months of life when all nutritional needs are met solely through breastfeeding (Amilia et al., 2022; Mirawati et al., 2022; Anwar et al., 2023; Putri, Larasari, & Septiana, 2024). Infants' digestive systems at this stage are only capable of processing nutrients contained in breast milk, making exclusive breastfeeding essential for optimal growth. Exclusive breastfeeding means providing only breast milk without any additional liquids or solid foods to infants aged 0–6 months (Kurniawati et al., 2020). Despite the known benefits, many countries—including Indonesia—continue to struggle with maintaining adequate exclusive breastfeeding rates.

Global data from the World Health Organisation (WHO) indicate that approximately 190 million babies are born each year, and 2.4 million die within the first 28 days due to nutritional factors (WHO, 2022). To reduce infant mortality, WHO recommends six months of exclusive breastfeeding. However, the global exclusive breastfeeding rate in 2019 was only 41–44% (Silaen, Novayelinda, & Zukhra, 2022). In Indonesia, exclusive breastfeeding coverage has fluctuated: 37.3% in 2018 (Riskesdas), 52% in the 2017 IDHS (Badan Penelitian dan Pengembangan Kesehatan, 2019).

One of the primary reasons mothers stop exclusive breastfeeding is the perception of inadequate breast milk production. Low stimulation of prolactin and oxytocin can reduce milk flow and production in the early postpartum period. Oxytocin massage, which involves massaging the back or spine up to the fifth or sixth ribs, helps stimulate these hormones, promoting calmness, reducing stress, and increasing maternal confidence (Fasiha & Sahrani, 2022). Studies by Lubis et al. (2021) and Dewi et al. (2023) show that oxytocin massage improves milk production and sufficiency, and that frequent breastfeeding remains crucial for sustaining hormone release. Family support, particularly from husbands, also plays a vital role in influencing maternal emotional stability and breastfeeding success (Katmawanti et al., 2023).

However, a gap remains in the existing literature. Most previous studies examined oxytocin massage performed by trained health workers, whereas breastfeeding success at home is strongly influenced by family involvement. There is also limited evidence on the use of educational media, such as booklets, to guide family members in correctly performing oxytocin massage. Furthermore, research specifically addressing interventions in low-coverage regions—such as the Sungai Durian Community Health Center, where exclusive breastfeeding continues to decline—is still scarce. These gaps highlight the need for community- and family-based approaches that empower families with practical skills to support breastfeeding mothers.

Based on this context, the present study introduces a novel approach by examining the effect of oxytocin massage performed by family members using booklets as guidance in an area with persistently low breastfeeding coverage. This innovation not only strengthens family participation but also provides an accessible educational tool to ensure proper and consistent massage techniques. Therefore, the objective of this study is to determine the effect of oxytocin massage performed by family members with the aid of booklets on the smooth flow of breast milk among breastfeeding mothers aged 0–6 months in the working area of the Sungai Durian Community Health Center.

2. METHOD

This study employed a pre-experimental design using a one-group pretest–posttest approach. A pre-experimental design is an experimental method that involves only one study group without a control group. The population in this study consisted of all

breastfeeding mothers with infants aged 0–6 months in the working area of the Sungai Durian Community Health Center. A total of 37 respondents were included as the study sample.

Data collection began after obtaining permission from the Head of the Sungai Durian Community Health Center, accompanied by an official introduction letter from the Chair of the Midwifery Program, Pontianak Polytechnic. Researchers then gathered data on all eligible breastfeeding mothers within the health center’s working area. Subsequently, home visits were conducted to deliver the intervention. The intervention lasted for five days. On the first day, the researcher assessed the initial smoothness of breast milk flow (pretest), followed by a demonstration of the oxytocin massage technique to family members using the provided booklet. From the second to the fourth day, family members performed oxytocin massage twice daily (morning and evening), with the process documented using observation sheets submitted to the researchers. On the fifth day, the researchers revisited each participant to assess the smoothness of breast milk flow after the intervention (posttest) using a structured questionnaire.

Several instruments were used in this study. The smoothness of breast milk flow was measured using a questionnaire consisting of 10 items developed based on established references. For the oxytocin massage intervention, the instruments included an Oxytocin Massage Standard Operating Procedure (SOP) sheet as a guide, an observation sheet to record the massage process, and a sphygmomanometer to monitor maternal blood pressure.

The collected data were analyzed using univariate and bivariate techniques. Univariate analysis was conducted to describe the characteristics of the respondents and the distribution of research variables. The results are presented in frequency distribution tables according to data type, including age, education, occupation, and oxytocin massage implementation. Bivariate analysis was performed to determine the effect of the oxytocin massage intervention on the smooth flow of breast milk. The Shapiro–Wilk test was first used to assess data normality, and the results indicated that the data were not normally distributed. Therefore, the Wilcoxon signed-rank test was applied. The test produced a p-value of 0.000 (<0.05), indicating a significant effect of oxytocin massage performed by family members using booklets on breast milk flow among breastfeeding mothers aged 0–6 months in the working area of the Sungai Durian Community Health Center.

This study received ethical approval from the Ethics Committee of the Pontianak Health Polytechnic, Ministry of Health, with ethics number 135/KEPK-PK.PKP/III/2024.

3. RESULTS AND DISCUSSION

Table 1. Respondent Characteristics Based on Education and Occupation.

Characteristics	n	%
Reproductive Age		
< 20 years	14	37.8
20-35 years old	23	62.2
Over 35 years old	0	0
Education		
Primary education	30	81.1
Secondary education	7	18.9
Occupation		
Housewife	30	81.1
Private	7	18.9
Total	37	100.0

Table 1 shows that the majority of respondents (62.2%) were aged 20–35 years. In terms of educational background, almost all respondents (81.1%) had an elementary-level education. Meanwhile, regarding occupation, nearly all respondents (81.1%) were housewives.

Table 2. Descriptive Age and Age of Family-Administered Oxytocin Massage on Breast Milk Flow in Breastfeeding Mothers Aged 0-6 Months Using Booklets in the Working Area of the Sungai Durian Community Health Center.

Descriptive	n	Minimum	Maximum	Mean	Median
Mother's age (years)	37	18	28	21.38	20.00
Infant age (months)	37	0	3	1.27	1.00

Based on Table 2, of the 37 respondents, the minimum age of the mothers was 18 years and the maximum age was 28 years, while the minimum age of the babies was 0 months and the maximum age was 3 months.

Table 3. The Effect of Oxytocin Massage by Family Members on Breast Milk Flow in Breastfeeding Mothers Aged 0-6 Months Using Booklets in the Working Area of the Sungai Durian Community Health Center.

Breast Milk Flow	n	Min	Max	Mean	Median	p-value
Before	37	3	5	3.62	3.00	0.00
After	37	6	8	6.62	6.00	

*Wilcoxon Test

Based on Table 3, from 37 respondents before oxytocin massage, the minimum score was 3 and the maximum was 5, with an average milk flow of 3.62 and a median of 3.00. Meanwhile, from 37 respondents after oxytocin massage, the minimum score was 6 and the maximum was 8, with an average milk flow of 6.62 and a median of 6.00. In this study, it was found that the data was not normally distributed. -average breast milk flow of 6.62 and a median of 6.00. In this study, it was found that the data was not normally distributed. The results of the Wilcoxon test in the above study produced a p-value of 0.000<0.05, which means that there is an effect of oxytocin massage by family members on breast milk flow in breastfeeding mothers aged 0-6 months using booklets in the working area of the Sungai Durian Community Health Center.

DISCUSSION

The findings of this study show that before receiving oxytocin massage, most breastfeeding mothers were within the non-risk reproductive age range of 20–35 years (62.2%), which is considered an optimal age for reproductive health. However, despite being in a mature phase both physically and psychologically, breastfeeding mothers may still experience challenges related to milk flow. This is consistent with the statement by Naziroh et al. (2019), who explains that maternal maturity does not guarantee the absence of breastfeeding difficulties. Moreover, most respondents (81.1%) had a basic level of education. Educational background influences the ability to understand and adopt health information, where higher education levels are associated with better comprehension and health behavior (Naziroh et al., 2019). Therefore, mothers with lower educational backgrounds may require more intensive support and clear guidance to establish and maintain successful breastfeeding practices.

After oxytocin massage was administered by family members using a booklet, there was a notable improvement in breast milk flow among respondents. The findings align with previous studies (Kholisotin, Munir, and Astutik 2019), which demonstrated significant

differences between mothers who received oxytocin massage and those who did not, with a p-value of 0.000 indicating a strong statistical effect. Physiologically, insufficient milk flow may arise from inadequate stimulation of prolactin and oxytocin, the key hormones responsible for milk production and ejection. Other factors such as ineffective infant suckling or anatomical variations (e.g., small nipples) may further hinder milk production and release. Oxytocin massage helps stimulate the let-down reflex, providing relaxation and comfort that enhance hormonal release, particularly oxytocin, thereby accelerating milk flow (Naziroh et al., 2019).

Oxytocin massage works by massaging along the spine toward the fifth and sixth ribs, stimulating the prolactin and oxytocin hormones after breastfeeding. The technique promotes maternal relaxation, which naturally triggers milk ejection. This mechanism is supported by Lubis et al. (2021), who explain that back massage induces relaxation by sending signals from the muscles to the hypothalamus, leading to the release of dopamine, serotonin, oxytocin, and endorphins. These hormonal responses reduce emotional tension and enhance milk flow. Additionally, oxytocin massage offers multiple benefits, such as improving uterine involution, reducing postpartum bleeding, increasing comfort, and enhancing the psychological bond between mother and family members (Italia & Yanti, 2019; Dewi, Wulandari, & Basuki, 2022; Marantika, Choirunissa, & Kundaryanti, 2023). Statistical analysis in this study shows significant improvement, with breast milk flow increasing from an average score of 3.62 before massage to 6.62 after massage.

The results of the Wilcoxon test further confirm the effect of oxytocin massage by family members on the smoothness of breast milk flow, with a p-value of $0.000 < 0.05$. Family involvement plays a crucial role in supporting exclusive breastfeeding by creating a conducive psychological environment for the mother (Katmawanti et al. 2023). Hormonal stimulation through massage helps overcome barriers in milk production caused by delayed oxytocin release, which may occur when mothers experience stress or physical discomfort (Purnamasari 2020). Similar findings have been reported in recent studies (Abidah 2021; Lubis and Anggraeni 2021), demonstrating the effectiveness of oxytocin massage in increasing breast milk flow. Furthermore, oxytocin massage is an accessible, non-pharmacological empowerment strategy that families can easily perform using simple techniques explained through the booklet.

Breast milk is an essential source of nutrition that supports infant growth, immune protection, and development. It contains critical components such as immunoglobulin A (IgA), lactoferrin, lysozyme, macrophages, and cytokines that strengthen the infant's immune system (Lubis and Anggraeni 2021). According to researchers, inadequate milk production may also be influenced by stress, emotional instability, and lack of confidence. Oxytocin massage therefore provides substantial benefits by promoting maternal relaxation and enhancing both oxytocin and prolactin release. Family support—especially from husbands—also plays an important role, not only in performing the massage but also in assisting with household responsibilities and providing emotional encouragement, which contributes to improved breastfeeding outcomes (Asih 2017; Nurainun & Susilowati 2021).

This study has several limitations. First, the research used a pre-experimental one-group pretest–posttest design without a control group, making it difficult to compare outcomes with mothers who did not receive oxytocin massage. Second, the sample size was relatively small and limited to one health center area, which may reduce the generalizability of the findings. Third, the assessment of breast milk flow relied on questionnaire-based measurements, which may be subject to respondent bias. Lastly,

variations in how family members performed the massage, despite using a booklet, may have influenced the consistency of the intervention.

4. CONCLUSION

It can be concluded that oxytocin massage administered by family members with guidance from a booklet is effective in improving breast milk flow among breastfeeding mothers aged 0–6 months in the working area of the Sungai Durian Community Health Center. Prior to the intervention, most mothers experienced inadequate milk flow, whereas after receiving oxytocin massage, their milk flow improved noticeably. Statistical analysis further confirmed a significant positive effect of the intervention. Overall, oxytocin massage serves as a beneficial and practical method to support the breastfeeding process when carried out with proper guidance and family involvement.

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