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A case study of oxytocin massage intervention for breastfeeding problems Ineffective in post-cesarean section patients

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Abstract

Background: Breast milk is the best food for babies because it contains complete nutrition, enzymes, hormones, and antibodies that play a role in improving the immune system and supporting optimal growth of babies. Exclusive breastfeeding for the first 6 months of life is an important effort in reducing infant morbidity and mortality. However, in practice, many mothers still experience obstacles in breastfeeding, especially in the early postpartum period.

Purpose: to determine the effectiveness of oxytocin massage in increasing breast milk production in postpartum patients with cesarean section.

Method: Data collection methods were carried out through interviews, observations, and interventions, with assessment indicators using pretest and posttest evaluations, namely measuring the respondent's condition before and after the intervention was given. This study was conducted on June 9, 2025, in the Sakina Ward of PKU Muhammadiyah Hospital, Yogyakarta.

Results: The results of the case study showed that after two 10-15 minute oxytocin massage interventions, breast milk production increased, and mothers felt more relaxed and comfortable

Conclusion: This study is expected to be one of the interventions that midwives and nurses can implement for postpartum mothers to help increase breast milk production and support the success of exclusive breastfeeding.

Keywords: Caesarean section; Ineffective breastfeeding; Oxytocin massage.

INTRODUCTION

Breast milk is the best food for babies because it contains complete nutrition, enzymes, hormones, and antibodies that play a role in boosting the immune system and supporting optimal growth. Exclusive breastfeeding for the first six months of life is a crucial effort to reduce infant morbidity and mortality. However, in practice, many mothers still experience obstacles in breastfeeding, especially in the early postpartum period (Lestari, Safitri, & Maimunah, 2024).

According to a 2022 WHO report, global exclusive breastfeeding coverage for infants aged 0-6 months is 48%, an increase compared to the previous decade and is targeted to reach 70% by 2030. In Indonesia, the exclusive breastfeeding rate in 2021 was 66.99%,

increasing to 69.2% in 2022 and 69.7% in 2023, but still below the national target of 80% (Ministry of Health of the Republic of Indonesia, 2024). The WHO and UNICEF affirm that breast milk is the best food for infants aged 0-6 months and recommend continuing breastfeeding until two years of age or beyond (World Health Organization, 2023).

One of the main challenges in breastfeeding is inadequate milk production and release. This problem often occurs in postpartum mothers due to insufficient stimulation of the hormones prolactin and oxytocin, psychological factors such as stress, a lack of knowledge about proper breastfeeding techniques, and breast problems (Maulana & Febriana, 2023).

A case study of oxytocin massage intervention for breastfeeding problems
Ineffective in post-cesarean section patients

Oxytocin plays a crucial role in the milk-let-down reflex. If this hormone does not function optimally, milk will not flow smoothly even if production is sufficient (Wahyuningsih & Kusumadewi, 2025). One non-pharmacological intervention that can be performed to increase oxytocin is oxytocin massage. Oxytocin massage is a massage along both sides of the cervical spine, back, or along the vertebrae to the fifth to sixth ribs using olive oil. The aim is to stimulate the milk ejection reflex (Suarni, Asikin, & Azis, 2023).

Previous research showed that after applying oxytocin massage to patients I and II for two days, in the morning and evening, for 10-15 minutes, breast milk production in both patients increased (Kurniawaty, Solama, Delina, & Sari, 2023). Consistent with other research, oxytocin massage has been shown to affect breast milk production, as there was a significant difference between breast milk production before and after oxytocin massage (Noviyana, Lina, Diana, S., Dwi, Eni, Fransisca, & Welmi, 2022).

RESEARCH METHOD

This study employed a descriptive case study design using a nursing process approach for postpartum cesarean section patients. The nursing

care approach encompasses assessment, nursing diagnosis, planning, implementation, and evaluation for postpartum cesarean section clients. This case study was conducted on January 9, 2025, in the Sakina Ward of PKU Muhammadiyah Hospital, Yogyakarta.

Data collection was conducted through interviews, observation, and documentation. The selection of respondents for this case study was based on inclusion and exclusion criteria. The inclusion criteria were postpartum mothers with cesarean section deliveries between day 1 and day 3, in stable general condition, without serious postoperative complications, with good awareness, willing to participate, and experiencing difficulties or delays in breast milk production. Exclusion criteria were postpartum mothers with severe complications such as bleeding or infection and unstable condition. The subjects in this case study were postpartum mothers.

The effectiveness of oxytocin massage was assessed using a pretest and posttest method, measuring the respondent's condition before and after the intervention to determine changes and improvements in outcomes. Oxytocin massage was performed twice, each lasting 10–15 minutes.

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RESEARCH RESULTS**Table 1. Pre-Test and Post-Test Results Before After Intervention**

Variable	Yes	No
Breast Milk Production Indicators Prtest before intervention Day 1		
Breast Milk Comes Out During Pumping Or Expressing		✓
Breasts Feel Full/Tense	✓	
Spontaneous Milk Droplets Occur		✓
The Volume Of Expressed Milk Increases		✓
The Mother Feels More Relaxed While Expressing Breast Milk		✓
The Frequency Of Pumping Increases		✓
Breast Milk Production Indicators Pre-Test Before Intervention Day 2		
Breast Milk Comes Out During Pumping Or Expressing	✓	
Breasts Feel Full/Tense	✓	
Spontaneous Milk Droplets Occur		✓
The Volume Of Expressed Milk Increases	✓	
The Mother Feels More Relaxed While Expressing Breast Milk	✓	
The Frequency Of Pumping Increases	✓	
Breast Milk Production Indicators Post-Test Before Intervention Day 1		
Breast Milk Comes Out During Pumping Or Expressing	✓	
Breasts Feel Full/Tense	✓	
Spontaneous Milk Droplets Occur		✓
The Volume Of Expressed Milk Increases	✓	
The Mother Feels More Relaxed While Expressing Breast Milk	✓	
The Frequency Of Pumping Increases	✓	
Breast Milk Production Indicators Post-Test Before Intervention Day 2		
Breast Milk Comes Out During Pumping Or Expressing	✓	
Breasts Feel Full/Tense	✓	
Spontaneous Milk Droplets Occur	✓	
The Volume Of Expressed Milk Increases	✓	
The Mother Feels More Relaxed While Expressing Breast Milk	✓	
The Frequency Of Pumping Increases	✓	

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Based on the results of the posttest assessment after the oxytocin massage intervention on post (SC) patients, an increase in breast milk production and expenditure was obtained compared to before the intervention, namely breast milk had come out when expressed/pumped, the breasts felt full/tense, there were spontaneous drops of breast milk, the volume of expressed breast milk increased, the mother did not feel relaxed and the frequency of pumping increased. Breast milk came out as much as 5 ml. This increase indicates that oxytocin massage helps stimulate the oxytocin hormone so that the reflex of breast milk release becomes more optimal and based on the results of the pretest assessment on the second day before the oxytocin massage intervention was carried out again on post (SC) patients, there was a slight increase compared to the first day, but breast milk production was still not optimal. The mother said that breast milk had started to come out but was still small and not completely smooth. With breast milk production of 7 ml. The mother also still felt pain in the surgical wound area, although the intensity began to decrease, so that activity and pumping were not optimal. Based on the results of the post-test assessment on the second day after the oxytocin massage intervention on the patient (CS), an increase in milk production and release was obtained which was better than the previous results. The mother said that milk came out smoothly during pumping, and the breasts felt fuller before emptying and more comfortable after the milk was expressed. Milk release amounted to 10 ml, indicating that regular oxytocin massage helps improve the oxytocin reflex so that milk production and release are more optimal in post-CS patients, even though the baby is still undergoing care in the NICU.

DISCUSSION

The results of the pretest observation showed that some indicators of breast milk production had not been met, such as breast milk had not come out when expressed/pumped, the breasts did not feel full/tense, there were no spontaneous drops of breast milk, the volume of expressed breast milk did not increase, the mother did not feel relaxed and the frequency of pumping had not increased. This condition indicates

that the oxytocin reflex is not functioning optimally, so oxytocin massage intervention is needed to help increase maternal relaxation and stimulate milk production (Kristanti, Andriani, & Trisanti, 2025). In addition to increasing milk production, this intervention also helps provide relaxation for post-cesarean delivery mothers, thus improving lactation (Astari, 2020).

Slow milk production in the first day after delivery can be caused by insufficient stimulation of the hormone oxytocin, which plays a crucial role in the let-down reflex, or milk release. The lactation process itself is influenced by two main factors: milk production, which is influenced by the hormone prolactin, and milk release, which is influenced by the hormone oxytocin (Yuda, 2024). Furthermore, the mother's psychological state, nutritional intake, and lack of education about breastfeeding can also affect milk production (Pitriani & Megasari, 2025).

In post-cesarean section mothers, several additional factors contribute to milk production, such as post-operative pain, the effects of anesthesia, and psychological factors such as anxiety and stress, which can inhibit the release of the hormone oxytocin, resulting in a suboptimal let-down reflex. Furthermore, delayed initiation of breastfeeding, lack of early mobilization, and inappropriate breastfeeding positions can also delay milk production (Fasiha & Syahrani, 2022). This is supported by previous research showing that pain, psychological factors, and limited mobility are associated with low milk production in post-cesarean section mothers (Lubis, Rahmadani, & Sitorus, 2023).

Oxytocin massage can help stimulate milk production in postpartum mothers. Oxytocin massage stimulates the hormone oxytocin, thereby increasing the flow of breast milk and providing comfort to breastfeeding mothers (Astari, 2020). Therefore, oxytocin massage can be an effective way to address breast milk production issues (Kurniawaty et al., 2023).

Breast milk production is influenced by various factors, both physical and psychological. A calm, comfortable, and stress-free psychological state can help increase the activity of the hormones prolactin and oxytocin, which play a crucial role in breast milk

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production and release (Anggraini & Nurrohmah, 2023). Furthermore, adequate nutritional intake, regular breastfeeding frequency, breast care, and support from family and healthcare professionals also contribute to breast milk production. Post-caesarean section mothers, postoperative pain and fatigue can hinder breastfeeding, necessitating interventions such as oxytocin massage to stimulate breast milk release. With proper stimulation, breast milk production can increase and the breastfeeding process becomes more optimal (Kristanti et al., 2025).

Oxytocin massage is a non-pharmacological intervention used to stimulate breast milk production. This massage is performed twice, each lasting 10-15 minutes, by stimulating the spine, particularly the thoracic vertebrae and scapulae, to stimulate the release of the hormone oxytocin (Dewi, 2022). This technique involves massaging the spine down to the fifth and sixth ribs, aiming to stimulate the let-down reflex, or milk ejection, for 10-15 minutes twice. This increases the flow of breast milk (Kartini & Kusumadewi, 2023). Oxytocin massage has the advantages of being simple, easy to perform and learn, requiring no special tools or preparation, and offering numerous benefits, including: a feeling of relaxation accompanied by reduced postpartum fatigue, reduced stress and anxiety, and reduced muscle tension, which in turn stimulates the release of the hormone oxytocin, which in turn accelerates the flow of breast milk (Kristanti et al., 2025).

Oxytocin massage has been shown to be effective in increasing breast milk production in postpartum mothers. This is evidenced by other studies showing that applying oxytocin massage for 3 consecutive days with a duration of 10–15 minutes can increase breast milk production in all respondents (Wardhani & Indah, 2024). Previous research also showed an increase in breast milk production, from an average of 8.57 cc before intervention to 10.27 cc after oxytocin massage (Maulana & Febriana, 2023). Furthermore, there is also research proving that average breast milk production increased from 47.03 cc/ml before intervention to 142.50 cc/ml after intervention with a p-value of 0.000 (<0.05). These results indicate that oxytocin massage is effective in helping to facilitate the release and increase breast milk production in postpartum mothers (Nelina & Maria (2024)). It also provides a relaxing effect,

increases maternal self-confidence, and strengthens the mother-infant bond (Mega & Yuliaswati, 2023).

From the description above, oxytocin massage has been proven effective in stimulating breast milk production and release and providing a relaxing effect that can reduce stress in postpartum mothers. This intervention will be more optimal if carried out in a calm environment and supported by the family. Therefore, a combination of physical interventions such as oxytocin massage with psychosocial support and breastfeeding education is essential to address the problem of ineffective breastfeeding and increase the success of exclusive breastfeeding (Yuda, 2024).

CONCLUSION

The results of the case study showed that after two 10-15 minute oxytocin massage interventions, pre- and post-intervention observations, there was an increase in breast milk production, and mothers felt more relaxed and comfortable. Based on these results, it is hoped that mothers experiencing irregular breast milk production will regularly undergo oxytocin massage to facilitate breast milk production. This study is also expected to be one of the interventions that can be implemented by midwives and nurses in postpartum mothers to help increase breast milk production and thus support the success of exclusive breastfeeding. Future research is expected to be conducted with a larger sample size and with different variables.

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