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The effect of breast care on breast milk engorgement and uterine involution among postpartum mothers

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***Abstract*:**
Breast milk engorgement is a condition characterized by breast swelling caused by increased venous and lymphatic flow, resulting in milk stasis and pain accompanied by elevated maternal body temperature. Meanwhile, uterine involution refers to the process of the uterus returning to its pre-pregnancy state. One of the key factors that facilitate uterine involution is breast care, particularly through oxytocin massage, which stimulates uterine contractions by rubbing the scapular and spinal regions. This contraction of uterine smooth muscles promotes uterine involution after childbirth. The purpose of this study was to determine the effect of breast care on breast milk engorgement and the uterine involution process among postpartum mothers at TPMB Tri Widiyawati S.Keb, Lawang District, Malang Regency. This quantitative research employed a pre-experimental design using a non-randomized control group pretest–posttest approach with a static t-test technique. The study involved 30 postpartum mothers selected through accidental sampling based on inclusion criteria. Data collection used observation and standard operational procedure (SOP) sheets. Data were analyzed using univariate and bivariate analyses with a t-test (α = 0.05). The results showed a significant effect of breast care on reducing breast milk engorgement and accelerating uterine involution (p = 0.000 < 0.05). The conclusion of this study is that breast care with breast milk dams and the uterine involution process in postpartum mothers are affected.

***Keywords*:**
breast engorgement; breast care; uterine involution

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INTRODUCTION

The postpartum period is a crucial phase for mothers, beginning after childbirth and lasting approximately six weeks. During this time, significant physiological and psychological adjustments occur, including uterine involution and adaptation to lactation. Inadequate postpartum care may lead to complications such as hemorrhage, infection, mastitis, or breast milk engorgement, all of which can disrupt maternal recovery and infant development. According to the Indonesian Ministry of Health (2019), the highest maternal mortality occurs during the postpartum period (40.12%), emphasizing the need for optimal monitoring and intervention.

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Breast milk engorgement is one of the most common breastfeeding problems, characterized by swollen, hard, and painful breasts, often accompanied by fever. WHO (2018) reported that approximately 87.06% of breastfeeding mothers experience engorgement. Beyond causing maternal discomfort, this condition can lead to mastitis or breast abscesses and hinder exclusive breastfeeding. Preventive and therapeutic efforts are therefore essential to ensure optimal lactation and maternal recovery.

Breast care is an effective non-pharmacological technique for preventing and managing milk engorgement while stimulating oxytocin release. The oxytocin hormone plays a crucial role in enhancing uterine contractions, thereby facilitating the acceleration of uterine involution. Previous studies have demonstrated that interventions such as breast care and oxytocin massage not only improve milk flow but also promote postpartum uterine recovery.

Uterine involution refers to the physiological process of the uterus returning to its pre-pregnancy size and condition, which is essential in preventing postpartum hemorrhage. Breast care techniques that stimulate oxytocin production are therefore vital in supporting both lactation and uterine health. The purpose of this study was to determine the effect of breast care on breast milk engorgement and the uterine involution process among postpartum mothers at TPMB Tri Widiyawati S.Keb, Lawang District, Malang Regency.

METHODS

This study employed a quantitative pre-experimental design with a non-randomized control group pretest–posttest approach. The research was conducted at TPMB Tri Widiyawati, S.Keb, Lawang District, Malang Regency, in 2024. The population consisted of all postpartum mothers visiting the midwifery practice, totaling 30 respondents selected through convenience sampling.

Inclusion criteria included mothers in the postpartum period (days 1–5), willingness to participate, and a stable general condition. The independent variable was breast care, while the dependent variables were breast milk engorgement level and fundal height, which served as an indicator of uterine involution. Data were collected using observation and SOP sheets. The intervention consisted of standardized breast care procedures performed from the first day postpartum, with evaluations on the third and fifth days.

Data were analyzed descriptively (univariate) to describe respondent characteristics and inferentially (bivariate) using a t-test ($\alpha = 0.05$) to determine the effect of breast care on milk engorgement and uterine involution. Ethical approval was obtained from the Ethics Committee of Poltekkes Kemenkes Malang.

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RESULTS

The results demonstrated that breast care effectively reduced breast milk engorgement scores among respondents. This finding aligns with Putri and Aristina (2023), who reported that mothers performing regular breast care experienced significantly less engorgement. Breast care facilitates milk drainage, maintains breast tissue elasticity, and optimizes the let-down reflex.

In addition to reducing engorgement, breast care also accelerated uterine involution. Massage of the breast and scapular regions stimulates the release of oxytocin, promoting uterine smooth muscle contraction. Setiani and Sumarni (2016) emphasized that oxytocin increases calcium influx into myometrial cells, enhancing contraction strength and promoting uterine involution. Consistent decreases in fundal height, observed up to the fifth postpartum day in this study, support this physiological mechanism.

Respondent Characteristics

The study involved 30 postpartum mothers aged 20–35 years, most of whom were multiparous and in good general condition.

Table 1. Characteristics of Respondents

Respondent Characteristics	Percentage (%)
Age	
Age 20–25 years	33.3
Age 26–30 years	40.0
Age 31–35 years	26.7
Parity	
Primiparous	46.7
Multiparous	53.3

Breast Milk Engorgement Scores Before and After Breast Care

Table 2. Breast Milk Engorgement Levels Before and After Breast Care

Observation Time	Mean Engorgement Score (SPES)
Day 1 (pretest)	4.5
Day 3	2.8
Day 5	1.5

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Prior to intervention, most respondents experienced moderate to severe engorgement. A significant decline in engorgement scores was observed following breast care, particularly by the fifth day postpartum.

Uterine Fundal Height (TFU) Before and After Breast Care

Table 3. Uterine Fundal Height (TFU) Before and After Breast Care

Observation Time	Mean TFU (cm)
Day 1 (pretest)	12.0
Day 3	9.5
Day 5	7.0

The mean engorgement score decreased significantly from 4.5 on day 1 to 2.8 on day 3 and 1.5 on day 5 postpartum, demonstrating the effectiveness of breast care in alleviating breast swelling and promoting milk drainage. A t-test yielded a p-value of 0.000 (< 0.05), indicating a statistically significant effect of breast care on reducing breast engorgement and accelerating uterine involution among postpartum mothers.

DISCUSSION

The findings confirm that regular breast care significantly reduces breast milk engorgement and accelerates uterine involution in postpartum mothers, as indicated by decreased engorgement scores and a decrease in fundal height by day 5 postpartum.

Most respondents were aged 20–35 years, a range associated with low obstetric risk and optimal maternal physiological response. This finding is consistent with Ratnaningtyas and Indrawati (2023), who stated that pregnancies below age 20 or above 35 are considered high risk. Parity also influenced motivation in performing breast care; primiparous mothers tended to be more enthusiastic compared to multiparous mothers, possibly due to higher motivation to learn and apply postpartum care practices.

Breast engorgement commonly occurs between postpartum days 3–5 due to increased milk production and suboptimal breast emptying. This condition can lead to pain, discomfort, and an increased risk of mastitis. The present study supports Putri and Aristina (2023), who found that regular breast care can prevent engorgement and facilitate breastfeeding.

Breast care stimulates the release of oxytocin, which enhances uterine contractions and accelerates uterine involution. Observations in this study revealed that 90% of respondents

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experienced normal uterine involution after breast care, while only 10% had delayed involution. Statistical analysis confirmed a significant association ($p < 0.05$).

Field observations indicated that midwives often provide only verbal instructions without demonstrating proper breast care techniques, leaving mothers unaware of the correct procedures to prevent engorgement. Therefore, direct demonstration and hands-on guidance are essential in postpartum education.

These findings highlight that simple, low-cost interventions like breast care can have clinically significant effects on maternal health and can be readily integrated into routine midwifery practice. Given the high prevalence of engorgement and its potential complications, postpartum breast care should be emphasized as a standard component of maternal care.

CONCLUSION

This pre-experimental study involving 30 postpartum mothers demonstrated that breast care performed from the first postpartum day significantly reduces breast milk engorgement and accelerates uterine involution. The intervention—which includes proper breast emptying, massage, and alternating warm–cold compresses—is effective in reducing engorgement symptoms and supporting physiological recovery.

Given its simplicity and effectiveness, breast care should be incorporated into postpartum care standards and routinely practiced by midwives through demonstration and training for mothers and family members.

However, this study has limitations, including a small sample size, single-site sampling, and observational measurements, which may limit generalizability. Future studies with larger, multicenter randomized controlled trials and standardized physiological measurements are recommended to strengthen the evidence base.

Healthcare facilities are encouraged to develop structured breast care modules as part of postpartum care packages and to provide continuous training for healthcare providers. Postpartum mothers are advised to perform breast care daily starting from day one and to consult healthcare professionals when experiencing engorgement or breastfeeding difficulties.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest. Despite the positive findings, this study's pre-experimental design and small sample size limit the generalizability of results. Future randomized controlled trials with larger samples are recommended to validate the effectiveness of breast care in improving maternal postpartum outcomes.

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