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The effectiveness of aloe vera compresses in preventing breast swelling and pain in post-partum

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Abstract

Background: Breast engorgement occurs due to increased milk production combined with irregular breastfeeding. This can be treated pharmacologically and non-pharmacologically by applying aloe vera compresses.

Purpose: To analyse the effectiveness of aloe vera compresses on breast swelling and pain in postpartum mothers.

Method: This study uses a quasi-experimental design, specifically a one-group pretest-posttest design. This study involved all patients in Desember 2025 was 104 mothers. The sample size was calculated using the finite population correction formula, resulting in a sample of 50 mothers. The instruments used to obtain research data were the Wong Baker Pain Rating Scale, Six Point Engorgement Scale (SPES), and aloe vera compress SOP. The data were analysed using the Wilcoxon test.

Results: The results of the study explained that before the intervention, 32 (64%) respondents showed moderate breast engorgement and 33 (66%) respondents showed mild breast engorgement. Before the intervention, 38 (76%) respondents experienced moderate pain. After receiving the intervention, 37 (74%) respondents experienced mild pain.

Conclusion: The results of the study indicate that aloe vera compresses are effective in reducing swelling ($p=0.000$) and breast pain ($p=0.000$) in postpartum mothers at Kartini General Hospital in Jepara.

Suggestion: Future researchers are also advised to conduct studies by including a control group as a comparison group so that the differences between groups can be clearly distinguished.

Keywords: Aloe Vera Compress; Breast Pain; Breast Swelling.

INTRODUCTION

Breastfeeding is a natural process whereby every woman who has just given birth provides her baby with nutrition in the form of breast milk (ASI) directly through her breasts. Breast milk (ASI) has a significant impact on the development, growth, and health of babies (Choirunissa, Natalia, & Widowati, 2022). Breast milk is the most suitable source of nutrition and has the most complete nutritional composition, which is beneficial for the growth and development of babies. The success of breastfeeding is not without its challenges, one of which is breast-related issues. A common issue associated with this is breast engorgement (Kulsum, Soetrisno, Ediyono, Mulyani, & Sukarmin, 2024).

Nationally, the coverage of infants receiving exclusive breastfeeding in 2019 was 67.74%. The highest percentage of exclusive breastfeeding coverage was in West Nusa Tenggara Province (86.26%), while the lowest percentage was in West Papua Province (41.12%) (Ministry of Health of the Republic of Indonesia, 2023). The prevalence of breastfeeding problems included insufficient milk supply (56.4%), breast engorgement (36.12%), and 7.5% reported mastitis. Based on data from the Central Java Provincial Health Office in 2019, it was found that 58% of postpartum mothers experienced breastfeeding difficulties, with 23% experiencing breast engorgement, 13% experiencing inverted

nipples, 9% experiencing nipple pain, 7% experiencing mastitis, and 6% experiencing breast abscesses (Central Statistics Agency of Central Java Province, 2020).

The success of breastfeeding a baby is inseparable from various problems, one of which is problems with the mother's breasts. One common problem associated with breastfeeding is breast engorgement and breast pain. The most common difficulties encountered by breastfeeding mothers in the first week after delivery are painful breast engorgement, sore nipples, and babies who are unable to latch on effectively, resulting in the breasts not being emptied properly (Ariescha, Manalu, Siagian, Yanti, & Tarigan, 2020).

Breast engorgement is the narrowing of the lactiferous ducts that have not been completely emptied. Swelling ranging from 20% to 85% can occur on the first day up to the 14th day after delivery (Apriyani, Rahma, & Lestari, 2021). If left untreated, this breast swelling can lead to new problems such as mastitis and even breast abscesses (Elifrida, 2021).

Efforts to reduce breast swelling can be addressed with pharmacological and non-pharmacological techniques. Pharmacologically, analgesic therapy such as paracetamol and ibuprofen administration can be performed. Non-pharmacologically, it can be done through acupuncture, hot compresses combined with massages, cold cabbage leaf compresses, and aloe vera compresses (Lestari & Khayati, 2025). Using non-pharmacological methods such as aloe vera compresses can reduce pain. This control method is cheaper, simpler, effective, and does not cause negative effects (Sitepu, Natalia, & Hutabarat, 2024). Aloe vera is part of traditional medicine. traditional ingredients are ingredients in the form of plant materials, animal materials, mineral materials, galenic preparations, or mixtures of these materials that have been used for treatment for generations and can be applied in accordance with the norms that apply in society (Nurviana, Leandra, & Nuraeni, 2025).

The results of the study indicate that aloe vera compresses can reduce breast swelling and pain. Other research shows that the average pain scale for breast swelling before intervention was 2.58, while the average pain scale after intervention was 1.63. The average difference in pain between before and after the intervention was 0.95, where the pain scale before

the intervention was a minimum of 2 and a maximum of 3, and after the intervention, the pain scale decreased to a minimum of 1 and a maximum of 2, with a sig = $0.000 < (0.05)$. It can be concluded that there was a decrease in the breast swelling pain scale before and after the application of aloe vera compresses. Breast swelling occurred after three days (Silaban, Carmila, Telaumbanua, & Harahap, 2022). Other researchers also revealed that reported that 13 people had normal (protruding) nipples, 11 people (68.75%) began to experience swelling after more than 3 days, did not perform breast care during pregnancy in 12 individuals (75%), and had a history of breast swelling in 11 individuals (68.75%) (Septiani & Sumiyati, 2022).

RESEARCH METHOD

This study used a quasi-experimental design with a one-group pretest-posttest. The study was conducted at Kartini Regional Hospital, Jepara Regency, involving all postpartum patients. The number of patients was 104 postpartum mothers between November and December 2025.

Inclusion criteria for this study were postpartum mothers on the first to seventh day, postpartum mothers who had delivered by CS or spontaneous delivery, mothers who had visited the hospital one week after giving birth at Kartini Regional Hospital, and mothers who were willing to participate and exclusion criteria included maternal and infant emergencies such as low birth weight with unstable condition, asphyxia, maternal heavy bleeding causing paleness, or unwilling respondents. Breast engorgement pain was measured using the Wong-Baker Pain Rating Scale to observe pain levels before and after the intervention using aloe vera compresses. Scores ranged from 0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, 7-9 = severe pain, and 10 = very severe pain.

The tool used for data collection in this study is a standard instrument by conducting a direct assessment of breast swelling incidents using the six-point engorgement scale (SPES). The six-point engorgement scale (SPES) questionnaire is a measurement that uses 6 questions. Before conducting the bivariate test, a data normality test was first conducted, using Shapiro Wilk because the sample was less than 50. If the p-value of the Shapiro Wilk test result is <0.05 then the data is not normally distributed and if the p-value of the Shapiro Wilk test result is >0.05 then the data is normally distributed.

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RESEARCH RESULT

Table 1. Characteristic of Respondents (N = 50)

Variable	Results
Age (Mean$\pm$SD) (Range) (Years)	(29.81 $\pm$ 5.32) (19-45)
<20	2/4.0
20-35	35/70.0
>35	13/26.0
Education (n/%)	
Elementary School/Equivalent	0/0
Junior High School/Equivalent	20/40.0
High School/Equivalent	26/52.0
Diploma III/Higher Education	4/8.0
Work (n/%)	
Housewife/Not working	23/46.0
Work	27/54.0
Parity (n/%)	
Primipara	20/40.0
Multipara	28/56.0
Grandemultipara	2/4.0

Table 1 above shows that the majority of respondents were aged between 20 and 35 years old, with a percentage of 35 (70%), while 2 (4%) respondents were under 20 years old. The majority of respondents had completed secondary education, amounting to 26 (52%). The majority of respondents in this study were unemployed, amounting to 23 (46%). There were 28 multiparous respondents (56%).

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Table 2. An overview of breast swelling and pain (pre-post) was provided during intervention (n = 50)

Variable	Pre-test N=50	Post-test N=50	Wilcoxon P value
Breast Swelling (n/%)			
Mild	0/0	33/66.0	0,000
Moderate	32/64.0	16/32.0	
Severe	18/36.0	1/2.0	
Breast Pain (n/%)			
No pain	0/0	5/10.0	0,000
Mild	8/16.0	37/74.0	
Moderate	38/76.0	7/14.0	
Heavy	4/8.0	1/2.0	

Tabel 2. above shows that of the 50 respondents studied before the intervention, 32 (64%) respondents showed moderate breast swelling and 18 (36%) showed severe swelling. After receiving the aloe vera compress intervention, There were 33 (66%) respondents with mild breast swelling and 16 (32%) with moderate swelling. Regarding the pain variable, 38 (76%) respondents experienced moderate pain in the swollen breasts and 4 (8%) experienced severe pain. After receiving the aloe vera compress intervention. There were 37 (74%) respondents who experienced mild pain and 1 respondent who experienced severe pain. The Wilcoxon test for both variables was 0.000, less than 0.05, indicating a significant reduction in breast swelling and breast pain before and after the aloe vera compress intervention.

DISCUSSION

The results of the study showed a significant reduction in breast swelling before and after applying aloe vera compresses. This reduction is attributed to the amino acids, minerals, and polysaccharides in aloe vera, which help reduce swelling and inflammation and provide a cooling effect that helps relieve pain. Based on this, aloe vera compresses can contribute to the smooth flow of breast milk in postpartum mothers and accelerate the healing process.

This is in line with previous research stating that there was a decrease in the scale of swelling in the pre-post aloe vera compress group, from an average scale of 3.87 to an average scale of 3.00 (Syaifullah, Rakhmawati, & Safitri, 2023). In line with this, another

study reported a decrease in the pre-post swelling scale from 2 to 1 with a p-value of 0.000 (Apriyani, & Rahma, Aryanti, & Lestari, 2021). Additionally, another study also stated that the intensity of pain experienced by respondents after breast compresses decreased from before, where the number of respondents experiencing moderate pain intensity decreased significantly (Siregar, Sriwahyuni, & Damanik, 2023).

Aloe vera compress therapy can help reduce breast swelling, thereby facilitating milk production in mothers 2-3 days postpartum (Nurakilah, 2022). Aloe vera compresses applied to breasts that are swollen due to blocked milk ducts can reduce swelling by stimulating the immune system to block prostaglandin biosynthesis.

The study results showed that there was a significant decrease in breast pain before and after the application of an aloe vera compress. Supported by the other research it was found that the average value before using the aloe vera compress was 0.50, and after using the aloe vera compress was 1.15. The correlation test yielded a value of 0.015. Since the significance value is less than the probability of 0.05, it can be concluded that there is an effect in the reduction of breast swelling pain between before and after using the aloe vera compress (Nasution, Azizah, Lumbantoruan, Marpaung, Tumangger, & Ulinda, 2022).

Aloe vera has anti-inflammatory properties, functioning to damage, destroy, reduce, or localize (sequester) both harmful agents and damaged tissues. Signs of inflammation include swelling/edema, redness, heat, and pain. Antipyretics

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are substances that can reduce body temperature or drugs used to lower fever. Aloe vera acts as an anti-inflammatory agent as well as an herbal remedy for burns, capable of preventing edema by inhibiting cyclooxygenase enzymes or blocking the synthesis of prostaglandin E2 (PGE2) from arachidonic acid. PGE2 is a prostaglandin released by macrophages that modulates various inflammatory responses and increases pain sensitivity. Aloe vera extract inhibits the migration of neutrophils. As for some antibacterial compounds, aloe vera extract inhibits the growth of *Streptococcus* and *Shigella* bacteria (Monica, Fatmasari, Suwondo, & Rumah, 2022).

Aloe vera also contains amino acids and enzymes, each functioning to aid the development of new cells at an extraordinary rate and to eliminate dead cells from the epidermis. Aloe vera contains nutrient compounds that can be utilized for the treatment and healing (therapy) of various diseases. One reference mentions that aloe vera contains growth hormone (human growth hormone) and anti-aging compounds. The positive effects include enhancing the immune system in reducing inflammation; aloe vera has an inhibitory system that blocks pain as well as a stimulation system that promotes wound healing (Furnawanthi, 2020).

Aloe vera demonstrates the activity of aloe vera in modulating antibodies and cellular immunity. Topical steroids are commonly used to block acute and chronic inflammation. They reduce edema by decreasing capillary permeability, vasodilation, and stabilizing lysosomal membranes. Aloe vera stimulates fibroblast growth to enhance wound healing and inhibit the spread of infection (Suryanti, Mauluddina, & Emilda, 2024).

Based on research results, the intensity of pain varies for each individual, influenced by the individual's description of pain, perception, and experience of pain. Each person provides different perceptions and reactions to the pain experienced by each individual. This is because pain is a subjective feeling that only the individual can truly know the level of pain they are experiencing.

CONCLUSION

The results of the study showed that before being given an aloe vera compress, the average breast swelling score was 4.3, which then decreased to 2.1. The Wilcoxon test was 0.000 (<0.05). For pain levels,

the average pain scale was 4.5, which then decreased to 2.5. The Wilcoxon test was 0.000 (<0.05), meaning that the aloe vera compress is effective in reducing breast swelling and pain in postpartum mothers at RSUD Kartini Jepara.

SUGGESTION

Future researchers are also advised to conduct studies by including a control group as a comparison group so that the differences between groups can be clearly distinguished. In addition, a larger and more heterogeneous sample based on the type of delivery, whether spontaneous or cesarean section, could be used.

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