



## Case Report: Effectiveness Of Aloe Vera Compress And Breast Care In Reducing Breast Pain And Engorgement Among Postpartum Mothers

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**Article Info**

**Article history:**

Received: March 18, 2026

Revised: April 21, 2026

Accepted: April 25, 2026

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**Keywords:**

Aloe Vera Compress  
Breast Care  
Breast Engorgement  
Postpartum Mothers

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**Abstract**

**Background of study:** Breast pain and breast engorgement are common problems experienced by postpartum mothers, especially during the early days after childbirth. These conditions may interfere with breastfeeding and reduce maternal comfort.

**Aims and scope of paper:** This study aimed to analyze the effectiveness of aloe vera compress combined with breast care in reducing breast pain and breast engorgement in postpartum mothers.

**Methods:** This study used a case report design involving three postpartum mothers who experienced breast pain and breast engorgement. Participants received aloe vera compress therapy for 30 minutes followed by breast care procedures for 20 minutes, twice daily for three consecutive days. Pain was measured using the Numeric Rating Scale (NRS), while breast engorgement was assessed using the Six Point Engorgement Scale (SPES).

**Result:** The results showed a reduction of 2,66 points in pain scores (NRS) and a decrease of 3,32 points in breast engorgement scores (SPES) after the intervention.

**Conclusion:** The combination of aloe vera compress and breast care was effective in reducing breast pain and breast engorgement in postpartum mothers and may be considered a complementary non-pharmacological nursing intervention.

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**To cite this article:** Handayani, T. L., Oktaviani, D., & Lisnadiyanti. (2026). Case Report: Effectiveness Of Aloe Vera Compress And Breast Care In Reducing Breast Pain And Engorgement Among Postpartum Mothers. *Journal of Nursing Management Innovations*, 2(1), 11-20 <https://doi.org/10.58723/jnmi.v2i1.84>

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## INTRODUCTION

### Background of the study

The postpartum period is a critical phase in a woman's life characterized by substantial physiological and psychological adjustments following childbirth (Amsalu et al., 2022). One of the key physiological processes during this period is lactation, which plays a fundamental role in ensuring optimal nutrition for newborns and supporting the success of exclusive breastfeeding (Dong et al., 2020). However, many postpartum mothers experience breastfeeding-related complications during the early postpartum period, one of the most common being breast engorgement accompanied by breast pain.

Breast engorgement occurs when milk production exceeds infant demand and is associated with increased vascular and lymphatic congestion within the breast tissue (Zakarija-Grković & Stewart, 2020). Clinically, this condition is characterized by swollen, tense, warm, and painful breasts that may interfere with infant latching and effective milk transfer (Pevzner & Dahan, 2020). If not properly managed, breast engorgement may lead to more severe complications such as blocked milk ducts, mastitis, reduced milk supply, and early discontinuation of exclusive breastfeeding (Kent et al., 2021).

Breastfeeding problems during the early postpartum period remain a global public health concern. Studies report that approximately 20–40% of postpartum mothers experience breast engorgement during the first week after delivery (Academy of Breastfeeding Medicine, 2022). Breast discomfort and lactation difficulties are also among the leading factors contributing to suboptimal breastfeeding practices worldwide. In Indonesia, breastfeeding challenges including breast pain and engorgement continue to affect the success of exclusive breastfeeding programs, despite national policies promoting breastfeeding as a key strategy to improve maternal and child health outcomes (Agushybana et al., 2018; Sandhi et al., 2020).

The combination of aloe vera compress and breast care is physiologically considered more effective than either intervention alone due to their complementary mechanisms of action that target both inflammatory and functional aspects of breast engorgement (Napisah et al., 2021). Aloe vera exerts anti-inflammatory, analgesic, and anti-edematous effects through its bioactive compounds such as polysaccharides, flavonoids, and salicylic acid, which inhibit inflammatory mediators (e.g., prostaglandins and cytokines) and reduce tissue swelling and nociceptor stimulation (Maleki & Youseflu, 2022; Surjushe et al., 2008). Additionally, its cooling effect promotes local vasoconstriction, thereby decreasing vascular congestion and alleviating pain.

In contrast, breast care primarily addresses the mechanical and physiological processes of lactation by improving blood circulation, stimulating oxytocin release, and facilitating effective milk removal from the lactiferous ducts (Kent et al., 2021). Efficient milk drainage is critical in reducing intraductal pressure and preventing milk stasis, which are key contributors to breast engorgement (Kent et al., 2011).

When combined, these interventions produce a synergistic effect: aloe vera reduces inflammation and tissue edema, while breast care enhances milk flow and resolves ductal obstruction (Raihanah et al., 2023). This dual mechanism simultaneously targets the underlying pathophysiology of engorgement namely inflammatory congestion and impaired milk ejection leading to more rapid and clinically meaningful improvements compared to single-modality interventions (Zagloul et al., 2020). Therefore, the integration of these approaches aligns with a holistic and evidence-based nursing strategy that optimizes both symptom relief and breastfeeding function (Academy of Breastfeeding Medicine, 2022; Kent et al., 2021).

From a nursing perspective, effective management of breast engorgement is essential to improve maternal comfort and support successful breastfeeding. Non-pharmacological nursing interventions are increasingly recommended because they are safe, cost-effective, and easily implemented in clinical practice (Hassan et al., 2020).

## Literature Review

Various non-pharmacological interventions have been developed to manage breast engorgement and breast pain among postpartum mothers (Huda et al., 2021). One of the commonly recommended interventions is breast care, which includes breast massage, hygiene maintenance, and stimulation of milk flow. Breast care techniques aim to improve blood circulation, facilitate milk drainage, and prevent obstruction of the lactiferous ducts (Munsittikul et al., 2022). Several studies have demonstrated that regular breast care can significantly reduce breast engorgement and improve breastfeeding outcomes (Huda et al., 2021).

In addition to breast care, complementary therapies using natural products have increasingly been explored in maternal healthcare. One potential therapy is the application of aloe vera (*Aloe barbadensis* Miller) compresses (Prastyoningsih et al., 2023; Safaah et al., 2023). Aloe vera is widely recognized for its anti-inflammatory, analgesic, and cooling properties (Chelu et al., 2023). The gel extracted from aloe vera leaves contains bioactive compounds such as polysaccharides, flavonoids, lignin, and salicylic acid that can reduce inflammation, oedema, and pain in affected tissues (Abid et al., 2025).

Several studies have reported that aloe vera compresses can effectively reduce breast pain and swelling in breastfeeding mothers. Previous research found that postpartum mothers who received aloe vera compress therapy experienced significant reductions in breast pain and engorgement levels compared with baseline conditions (Silaban et al., 2021; Apriyani et al., 2023). These findings

indicate that aloe vera may serve as a promising complementary therapy in postpartum nursing care.

### Gap Analysis

Although previous studies have explored various interventions for breast engorgement management, most research has focused on single interventions, such as warm compresses, cabbage leaf therapy, breast massage, or aloe vera compresses individually. Evidence regarding the combined use of aloe vera compresses and breast care as an integrated nursing intervention remains limited.

Furthermore, many previous studies employed experimental or quasi-experimental designs but did not specifically highlight the application of these interventions within evidence-based nursing practice in clinical settings. There is limited documentation of how nurses implement combined complementary interventions as part of comprehensive postpartum care. Therefore, further investigation is needed to evaluate the effectiveness of integrating aloe vera compress therapy with breast care in managing breast engorgement among postpartum mothers.

### Rationale of the Study

Given the high prevalence of breast engorgement and its impact on breastfeeding success, effective and safe interventions are needed to support postpartum mothers. Non-pharmacological approaches are particularly valuable because they minimize potential risks to both mothers and infants while remaining accessible and affordable.

Aloe vera compress therapy may help reduce inflammation, pain, and tissue swelling through its natural bioactive compounds, while breast care techniques can facilitate milk drainage and improve breast circulation. Combining these interventions may provide synergistic effects by simultaneously addressing the physiological causes of breast engorgement and improving the functional aspects of breastfeeding.

In addition, aloe vera is widely available, inexpensive, and culturally acceptable in many communities, making it a practical intervention for postpartum care in both hospital and community settings. Therefore, investigating the effectiveness of a combined aloe vera compress and breast care intervention may contribute to the development of evidence-based nursing strategies for managing breast engorgement.

### Purpose of the Study

This study aimed to analyze the effectiveness of the combined nursing intervention of aloe vera compresses and breast care in reducing breast pain and breast engorgement among postpartum mothers.

## METHOD

**Research Design:** This study employed a case report design in accordance with the CARE guidelines to describe the application and outcomes of a nursing intervention in clinical practice.

**Participant:** Three postpartum mothers experiencing breast pain and breast engorgement during the early postpartum period.

**Population and sampling:** The population consisted of postpartum mothers with breast engorgement. Participants were selected using purposive sampling based on inclusion criteria, including postpartum mothers within the first week after delivery, experiencing breast pain and engorgement, and willing to participate in the intervention.

**Instrument:** Breast pain was measured using the Numeric Rating Scale (NRS), while breast engorgement was assessed using the Six Point Engorgement Scale (SPES). Both instruments are widely used in clinical settings and have demonstrated acceptable validity and reliability.

**Procedures:** The aloe vera compress technique used in this study was conducted by preparing 100 grams of fresh aloe vera. The aloe vera was thoroughly washed, and the outer rind was removed to obtain the gel. Prior to the application, the breast area was cleansed using a warm washcloth. The aloe vera gel was then applied as a compress to the breast for 30 minutes, followed by breast care procedures including gentle breast massage and milk flow stimulation for 20 minutes. The intervention was administered twice daily for three consecutive days. Pain and engorgement scores were recorded before and after the intervention period.

**Analysis plan:** Descriptive analysis was used to compare changes in pain and engorgement scores before and after the intervention.

## RESULTS AND DISCUSSION

### Results

#### Characteristics of Respondents

This case report involved three postpartum mothers who experienced breast pain and breast engorgement during the early postpartum period. All respondents were within the first week after delivery and reported discomfort characterized by breast swelling, firmness, and pain that interfered with breastfeeding activities. Prior to the intervention, all respondents demonstrated moderate to severe breast pain measured using the Numeric Rating Scale (NRS) and moderate breast engorgement based on the Six Point Engorgement Scale (SPES). None of the participants received pharmacological treatment during the intervention period. None of the participants had received pharmacological treatment for breast pain or engorgement during the intervention period.

#### Changes in Breast Pain Scores

Breast pain was assessed using the Numeric Rating Scale (NRS) before and after three consecutive days of intervention. At baseline, respondents reported pain scores ranging from moderate to high levels. Following the combined aloe vera compress and breast care intervention, all respondents demonstrated a noticeable reduction in pain intensity.

**Table 1.** Changes in Breast Pain Scores

No Respondent	NRS Before Intervention	NRS After Intervention	Decrease
R1	7	4	↓3
R2	6	3	↓3
R3	6	4	↓2
Mean	6,33	3,66	↓2,66

Table 1 presents the changes in breast pain intensity among postpartum mothers before and after receiving the combined intervention of aloe vera compress therapy and breast care. Pain levels were measured using the Numeric Rating Scale (NRS) for each respondent. Before the intervention, the NRS scores ranged from 6 to 7, indicating moderate to severe breast pain experienced by the participants. After three consecutive days of intervention, the pain scores decreased to 3–4, reflecting a transition from moderate–severe pain to mild breast pain.

Specifically, respondent R1 showed a reduction in pain score from 7 to 4, respondent R2 from 6 to 3, and respondent R3 from 6 to 4. The mean NRS score decreased from 6.33 (moderate pain) before the intervention to 3.66 (mild pain) after the intervention, with an average reduction of 2.66 points. This reduction indicates a clinically meaningful improvement in breast pain among postpartum mothers following the combined intervention. Participants also reported greater comfort during breastfeeding and reduced breast tenderness after the intervention period. Overall, the findings suggest that the application of aloe vera compresses combined with breast care was effective in alleviating breast pain associated with breast engorgement during the early postpartum period.

### Changes in Breast Engorgement Scores

Breast engorgement was evaluated using the Six Point Engorgement Scale (SPES). Prior to the intervention, respondents exhibited moderate levels of breast engorgement characterized by breast firmness and discomfort. After receiving the intervention twice daily for three days, all participants showed a significant reduction in engorgement severity.

**Table 2.** Changes in Breast Engorgement Scores

No Respondent	SPES Before Intervention	SPES After Intervention	Decrease
R1	5	3	↓ 3
R2	5	2	↓3
R3	4	2	↓2
Mean	5.66	2,33	↓3,32

Table 2 presents the changes in breast engorgement severity among postpartum mothers before and after receiving the combined intervention of aloe vera compress therapy and breast care. Breast engorgement was measured using the Six Point Engorgement Scale (SPES) for each respondent. Prior to the intervention, the SPES scores ranged from 4 to 5, indicating moderate to severe breast engorgement. After three days of intervention, the SPES scores decreased to 2–3, which reflects a transition from moderate engorgement to mild breast engorgement. Specifically, respondent R1 showed a reduction from 5 to 3, respondent R2 from 5 to 2, and respondent R3 from 4 to 2. The mean SPES score decreased from 5.66 (moderate engorgement) before the intervention to 2.33 (mild engorgement) after the intervention, indicating an average reduction of 3.32 points. This decrease suggests that the combined intervention was effective in reducing breast engorgement severity among postpartum mothers. In addition to the numerical improvement, respondents also reported that their breasts became softer, less tense, and more comfortable during breastfeeding following the intervention. Overall, the results presented in Table 2 demonstrate that the application of aloe vera compresses combined with breast care contributed to a substantial reduction in breast engorgement severity within a relatively short intervention period.

Overall, the results demonstrated that the combined application of aloe vera compresses and breast care led to consistent improvements in both breast pain and breast engorgement among all respondents. No adverse effects were reported during the intervention period, and all participants tolerated the procedure well. These findings indicate that the combined intervention was effective in reducing breast pain and engorgement in postpartum mothers within a short intervention period of three days.

### Discussion

Breast engorgement during the early postpartum period is primarily caused by increased milk production combined with vascular and lymphatic congestion in breast tissue. This physiological condition results in breast swelling, firmness, and pain, which may interfere with effective milk transfer during breastfeeding ([Safaah et al., 2023](#)). If not properly managed, breast engorgement may lead to complications such as blocked ducts, mastitis, and reduced milk supply ([Academy of Breastfeeding Medicine, 2022](#)).

The findings of this case report demonstrate that the combined application of aloe vera compresses and breast care was effective in reducing breast pain and breast engorgement in postpartum mothers. All participants experienced a reduction of 2.6 points in pain scores measured by the Numeric Rating Scale (NRS) and a comparable decrease of 3.3 points in breast engorgement scores assessed using the Six Point Engorgement Scale (SPES) after three consecutive days of intervention. These results indicate a consistent clinical improvement across all cases, supporting the effectiveness of this combined non-pharmacological nursing intervention. Breast engorgement commonly occurs during the early postpartum period due to increased milk production combined with venous and lymphatic congestion within breast tissue, which may lead to breast pain, swelling, and difficulty in breastfeeding ([Mogensen et al., 2020](#); [Sharma, 2018](#)). Therefore, interventions that

can simultaneously reduce inflammation and facilitate milk drainage are essential in improving maternal comfort and breastfeeding outcomes.

The reduction in breast pain observed in this study is consistent with findings from previous research reporting the effectiveness of aloe vera compress therapy in alleviating postpartum breast discomfort. (Alamolhoda et al., 2019) reported a significant decrease in breast pain among postpartum mothers following aloe vera compress therapy, attributing this effect to the plant's anti-inflammatory and analgesic properties. Similarly, Raihanah and Siregar (2022) found that aloe vera gel compresses significantly reduced both breast pain and engorgement among postpartum mothers, with a noticeable decrease in mean pain scores after the intervention. Aloe vera contains several bioactive compounds, including aloin, flavonoids, polysaccharides, and salicylic acid, which have been shown to inhibit inflammatory mediators and reduce tissue edema, thereby contributing to pain relief and decreased swelling (Maleki & Youseflu, 2022; Surjushe et al., 2008). In addition, the cooling effect produced by aloe vera gel may promote vasoconstriction and reduce local inflammation, further alleviating discomfort in breast tissue.

These findings reinforce the role of aloe vera as a safe and effective complementary non-pharmacological intervention for managing breast pain in postpartum mothers (Wizia & Susanti, 2021). Furthermore, when combined with breast care procedures such as breast massage and stimulation of milk flow, the intervention may provide additional benefits by improving milk drainage and preventing milk stasis within the breast ducts (Gao et al., 2022). Breast care has been shown to facilitate oxytocin release and enhance milk flow, thereby reducing breast tension and engorgement (Munsittikul et al., 2022). Consequently, the integration of aloe vera compress therapy with breast care may offer a synergistic approach that addresses both the inflammatory processes and functional breastfeeding mechanisms involved in postpartum breast engorgement (Safaah et al., 2023; Zakarija-Grković & Stewart, 2020).

The mechanism underlying pain reduction observed in this study may be explained by the presence of bioactive compounds in *Aloe vera*, including aloin, flavonoids, polysaccharides, and salicylic acid, which are known to possess anti-inflammatory and analgesic properties (Kaur & Bains, 2023; Pradhan, 2023). These compounds have been reported to inhibit inflammatory mediators such as prostaglandins and cytokines, thereby reducing tissue inflammation and local edema in affected areas (Maleki & Youseflu, 2022; Rauf et al., 2017). In addition, the cooling sensation produced by *Aloe vera* compresses may induce local vasoconstriction, which can decrease blood flow to inflamed tissue, reduce tissue congestion, and minimize stimulation of peripheral nociceptors responsible for pain perception (Srivastava et al., 2024). These physiological mechanisms likely contributed to the consistent reduction in Numeric Rating Scale (NRS) scores observed among all participants in this study.

In addition to pain reduction, this study also demonstrated a meaningful decrease in the severity of breast engorgement following the combined intervention. The reduction in Six Point Engorgement Scale (SPES) scores from moderate-severe levels to mild engorgement suggests improved milk drainage and decreased breast tissue tension. These findings are consistent with previous studies examining the effectiveness of breast care interventions in postpartum mothers (Thakur et al., 2018; Witt et al., 2016). Reported a significant decrease in breast engorgement scores among postpartum mothers who received regular breast care, highlighting the importance of breast massage and stimulation in improving milk flow and preventing duct obstruction. Similarly, Ladyvia et al. (2025) found that structured breast care procedures significantly improved breast softness and reduced engorgement by enhancing circulation and facilitating the release of oxytocin, which promotes milk ejection. Improved milk drainage following breast care interventions can help prevent milk stasis within the lactiferous ducts, thereby reducing pressure within breast tissue and alleviating engorgement symptoms (Kent et al., 2021).

The integration of breast care with *aloe vera* compress therapy in this case report appears to provide complementary and potentially synergistic benefits in managing breast pain and engorgement among postpartum mothers (Yustiza et al., 2023). While *aloe vera* primarily acts through its anti-inflammatory, analgesic, and cooling properties that help reduce tissue swelling and pain, breast care interventions such as gentle breast massage and stimulation of milk flow facilitate effective milk emptying and prevent milk stasis within the lactiferous ducts (Kent et al.,

2021; Maleki & Youseflu, 2022). Effective milk removal is an essential component in preventing and managing breast engorgement, as milk accumulation increases intraductal pressure and contributes to breast discomfort during the early postpartum period (Committee, 2009; Napisah et al., 2021). Therefore, the combined use of these two interventions may simultaneously address inflammatory processes and functional breastfeeding mechanisms. This combined approach also aligns with holistic nursing principles, which emphasize addressing both physiological symptoms and functional breastfeeding processes to improve maternal comfort and breastfeeding outcomes (Aloustani et al., 2025).

Compared with previous studies that evaluated *aloe vera* compress therapy or breast care independently, the findings of this case report suggest that the combination of both interventions may enhance clinical outcomes within a relatively short intervention period. Previous studies reported that *aloe vera* compress therapy significantly reduced breast pain among postpartum mothers due to its anti-inflammatory and analgesic effects (Maleki & Youseflu, 2022). Similarly, structured breast care interventions have been shown to reduce breast engorgement severity and improve milk flow by enhancing circulation and stimulating oxytocin release (Ladyvia et al., 2025). The consistent improvement observed across all respondents in this study suggests that combining these interventions may provide synergistic effects by addressing both inflammatory symptoms and milk drainage simultaneously. Although the present study did not employ a control group or comparative design, the uniform improvement across all participants strengthens the plausibility of the combined intervention's effectiveness in routine postpartum care.

From a nursing practice perspective, these findings highlight the important role of nurses in implementing evidence-based, non-pharmacological interventions to manage common postpartum problems. Non-pharmacological approaches are particularly valuable in maternal care because they are safe, cost-effective, and easily implemented without the risk of adverse drug effects for breastfeeding mothers and infants (Huda et al., 2022). *Aloe vera* is widely available, affordable, and culturally acceptable in many communities, including Indonesia, making it a practical complementary therapy in postpartum care settings with limited resources (Agustina & Fitrianti, 2020; Tateoka, 2022). When combined with standardized breast care procedures, this intervention can be easily integrated into routine postpartum nursing care to improve maternal comfort, promote effective milk flow, and support successful breastfeeding (Cai et al., 2025; Munsittikul et al., 2022; Pujiastuti & Winarni, 2025).

Despite the positive findings of this study, several limitations should be acknowledged. First, the case report design and small sample size limit the generalizability of the findings to a broader population. Second, the relatively short duration of observation does not allow for the assessment of long-term outcomes, such as sustained breastfeeding success or recurrence of breast engorgement. Similar methodological limitations have also been noted in previous studies investigating complementary therapies for breastfeeding problems. Therefore, future studies employing experimental or quasi-experimental designs with larger sample sizes and longer follow-up periods are recommended to further validate the effectiveness of this combined intervention and to strengthen the evidence base for its implementation in postpartum nursing practice.

## CONCLUSION

The study demonstrates that a combined *aloe vera* compress and breast care nursing intervention effectively reduces breast pain and breast engorgement in postpartum mothers. These results align with the study objectives and support the integration of this non-pharmacological intervention into postpartum nursing practice. Further research is recommended to expand the evidence base and standardize intervention protocols

## ACKNOWLEDGMENT

The authors would like to thank the Institute of Health Hermina for its institutional support and for providing the academic environment that enabled this research to be conducted. The authors also appreciate the cooperation of the healthcare professionals at Galaxy Hermina Hospital who supported the implementation of this study. We are especially grateful to the postpartum

mothers who participated in this research for their time, trust, and valuable contributions. Their participation was essential to the successful completion of this study.

### AUTHOR CONTRIBUTION STATEMENT

TLH contributed to the conceptualization of the study, research supervision, and critical revision of the manuscript for important intellectual content. DO was responsible for data collection, implementation of nursing interventions, data analysis, and preparation of the original manuscript draft. L contributed to methodological design, data interpretation, and manuscript editing. All authors have read and approved the final manuscript and agree to take responsibility for the integrity and accuracy of the work.

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