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The effect of aloe vera and cabbage leaf (*brassica oleracea*) compresses on breast engorgement in postpartum mothers

Neng Suaidah*, Aan Maemunah, Ida Saidah, Sukmini, Hafit Restu, Kurniasari, Agus Santi Br.Ginting, Meinasari Kurnia Dewi

Universitas Indonesia Maju

Corresponding Author: *Email: nengsuaidah21@gmail.com

Abstract

Background: Breast engorgement is a common problem among postpartum mothers, characterized by breast tension, pain, and swelling due to obstructed milk flow. This condition can interfere with breastfeeding and may lead to complications if not properly managed.

Purpose: This study aimed to determine the effect of aloe vera (*Aloe vera*) and cabbage leaf (*Brassica oleracea*) compresses on reducing the breast engorgement scale among postpartum mothers.

Method: This study used a case study design with a Study Case Literature Review (SCLR) approach. The sample consisted of 6 postpartum mothers on days 3-7 experiencing breast engorgement, divided into two groups: the aloe vera compress group (3 respondents) and the cold cabbage leaf compress group (3 respondents). The intervention was carried out for 4 days, twice daily for 30 minutes. Breast engorgement was measured using the Six Point Engorgement Scale (SPES) over three visits.

Results: The results showed that the aloe vera group experienced a decrease in the average breast engorgement scale from 5.00 to 1.33, with an average reduction of 3.66, while the cold cabbage leaf group showed a decrease from 5.00 to 1.00, with an average reduction of 4.00.

Conclusion: Both interventions were effective in reducing breast engorgement; however, cold cabbage leaf compresses demonstrated higher effectiveness than aloe vera.

Suggestion: It can be concluded that cold cabbage leaf and aloe vera compresses may be used as safe and simple non-pharmacological therapies for managing breast engorgement in postpartum mothers.

Keywords: Aloe vera; Breast engorgement; Cold Cabbage Leaf Compres; Postpartum Mothers.

INTRODUCTION

Breast engorgement is a condition of breast swelling caused by obstruction of lymphatic flow and breast milk secretion, characterized by breasts feeling full, painful, swollen, and flattened nipples, making it difficult for the baby to breastfeed (Dhamanik, Anggorowati, & Sudarmiati, 2020; Taqiyah, Sunarti, & Rais, 2019). This condition is one of the main causes of failure in exclusive breastfeeding among postpartum mothers (Indrani & Sowmya, 2019). ASEAN data showed that the incidence of breast engorgement among postpartum mothers increased

from 66.87% in 2020 to 71.1% in 2021, with Indonesia recording the highest number of cases at 37.12%. In Bandung Regency, a previous study reported that 73.1% of breastfeeding mothers experienced breast engorgement (Rutiani & Fitriana, 2016).

Factors associated with breast engorgement include excessive milk production, improper breastfeeding techniques and frequency, and inadequate breast care during the postpartum period (Sebayang & Ridwan, 2021). Breast swelling causes mothers to stop breastfeeding because the breasts

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feel painful and uncomfortable during breastfeeding, and mothers assume that breastfeeding should be stopped to prevent transmitting illness to the baby (Apriani & Widyastutik, 2018). If not properly managed, breast engorgement may lead to mastitis and breast abscesses and may increase the risk of dehydration in infants due to inadequate breast milk intake (Khatimah, Sumarni, Saleh, & Akhfar, 2023).

Management of breast engorgement can be performed through pharmacological and non-pharmacological approaches. Non-pharmacological therapy is considered safer, more economical, and has minimal side effects, making it an alternative method for managing breast engorgement in postpartum mothers (Dhamanik et al., 2020). Pemberian terapi non farmakologis secara promosi atau preventif bisa dipertimbangkan menjadi pilihan untuk The provision of non-pharmacological therapy as a promotive or preventive measure can be considered as an option to help patients independently manage breast engorgement problems during the postpartum period. Several complementary therapies used as strategies to reduce breast swelling include breast care, Oketani massage, cold cabbage leaf compresses, cabbage leaf utilization, and aloe vera compresses (Ginting, Windayanti, Saputri, Anggraeni, Sari, Rosta, & Kale, 2021).

One of the complementary therapies widely used is aloe vera and cabbage leaf (*Brassica oleracea*) compresses. Aloe vera has cooling and anti-inflammatory effects that are effective in reducing the intensity of breast swelling pain in breastfeeding mothers (Sari, Tjandrakirana, & Kuswanti, 2018; Silaban, Carmila, Telaumbanua, & Harahap, 2022). In addition, cabbage contains the amino acid glutamine, which is believed to treat various types of inflammation, including breast inflammation (Kumari, 2019). Cabbage is also rich in sulfur compounds, which are believed to reduce breast swelling and inflammation (Lim et al., 2015). Previous studies have shown that cold cabbage leaf compresses are effective in reducing pain and swelling caused by breast engorgement in postpartum mothers

(Damayanti, Ariani, & Agustin, 2020; Anjelisa, 2024).

RESEARCH METHOD

This study used a qualitative research design with a case study approach through the Study Case Literature Review (SCLR) method. The study was conducted at the Independent Midwife Practice "N" in Bandung Regency in December 2025 for four days. The study population consisted of all postpartum mothers on days 3 to 7 experiencing breast engorgement at the Independent Midwife Practice "N" Bandung Regency, totaling 6 respondents. The sampling technique used was total sampling, so the entire population was included as the research sample. The samples were divided into two groups, namely the aloe vera compress group consisting of 3 respondents and the cabbage leaf (*Brassica oleracea*) compress group consisting of 3 respondents. The inclusion criteria included normal postpartum mothers on days 3 to 7 experiencing breast engorgement with a swelling score of 3–5 and having no history of aloe vera allergy. The exclusion criteria included postpartum mothers with a swelling score of less than 3 and respondents who were unwilling to participate in the study.

Data collection used primary data through direct observation methods with observation sheets. Breast engorgement assessment was conducted through inspection and palpation using the Six-Point Engorgement Scale before and after the intervention. The intervention in the aloe vera group was performed by applying a 10 mg Aloe vera gel compress for 30 minutes, twice daily for four consecutive days. Meanwhile, the cabbage leaf group received cold cabbage leaf compresses for 30 minutes, twice daily for four consecutive days. Observations were conducted on the first day as a pre-test and on the second and fourth days as post-tests. Data analysis was performed using descriptive analysis by describing changes in breast engorgement conditions before and after the intervention in each group based on the observation results obtained during the study.

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Universitas Indonesia Maju

Corresponding Author: *Email: nengsuaidah21@gmail.com

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RESEARCH RESULTS

Table 1 Frequency Distribution of Breast Engorgement Scale in the Cold Cabbage Leaf Intervention Group among Postpartum Mothers (N=3)

Respondent	Breast Engorgement Scale		Difference
	Pre-test	Post-test	
Mrs. T	5	1	4
Mrs. A	5	1	4
Mrs. S	5	1	4
Mean Difference	5.00	1.00	4.00

Table 1 shows that before the intervention (pre-test) with cold cabbage leaf compresses, all respondents experienced severe breast engorgement with an initial mean score of 5.00. This condition was characterized by breasts that were tense, hard, and shiny in appearance. At the third visit (post-test), all respondents showed a decrease in breast engorgement scores to scale 1 with a mean score of 1.00. This condition indicates that the breasts had become softer, less tense, and less painful, resulting in smoother breast milk flow. Overall, the mean reduction in breast engorgement scores in the cold cabbage leaf compress group was 4.00 points. These findings indicate that cold cabbage leaf compresses are effective as a non-pharmacological therapy for reducing breast engorgement in postpartum mothers.

Table 2. Frequency Distribution of Breast Engorgement Scale in the Aloe Vera Intervention Group among Postpartum Mothers (N=3)

Respondent	Breast Engorgement Scale		Difference
	Pre-test	Post-test	
Mrs. A	5	1	4
Mrs. G	5	1	5
Mrs. L	5	2	3
Mean Difference	5.00	1.33	3.66

Table 2 shows that before the intervention (pre-test) with cold aloe vera compresses, all respondents experienced moderate to severe breast engorgement with an initial mean score of 5.00. This condition was characterized by breasts that were tense, hard, and shiny in appearance. At the third visit (post-test), the mean breast engorgement score decreased to 1.33. Most respondents were at scale 1, indicating that the breasts had become soft and no longer swollen, while one respondent remained at scale 2 with very mild breast engorgement. Overall, the mean reduction in breast engorgement scores in the cold aloe vera compress group was 3.66 points. These findings indicate that cold aloe vera compresses are effective as a non-pharmacological therapy for reducing breast engorgement in postpartum mothers.

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Table 3. Differences Between Aloe Vera and Cold Cabbage Leaf Interventions in Midwifery Care for Postpartum Mothers with Breast Engorgement (N=6)

Intervention	Mean Breast Engorgement Scale Score		Mean Difference
	Pre-test	Post-test	
Aloe vera	5.00	1.33	3.66
Cold Cabbage Leaves	5.00	1.00	4.00

The results presented in Table 3 show that both cold aloe vera compresses and cold cabbage leaf compresses were effective in reducing breast engorgement in postpartum mothers based on the Six-Point Engorgement Scale (SPES) measurement. At the first visit, both groups had the same mean breast engorgement scale score of 5.00, indicating that the initial conditions of the respondents were relatively comparable. After the interventions were administered, at the third visit as the final evaluation, the mean breast engorgement scale score in the aloe vera group decreased to 1.33, while the cold cabbage leaf group decreased to 1.00. These findings indicate that both interventions significantly improved breast engorgement conditions; however, the cold cabbage leaf group showed slightly more optimal results. The mean reduction in breast engorgement scale scores in the aloe vera group was 3.66 points, whereas in the cold cabbage leaf group it was 4.00 points. Therefore, cold cabbage leaf compresses demonstrated higher effectiveness than cold aloe vera compresses in reducing breast engorgement among postpartum mothers during the four-day intervention period.

DISCUSSION

The results of this study showed that the administration of cold cabbage leaf compresses in postpartum mothers experiencing breast engorgement had a positive and significant effect on reducing the breast engorgement scale. Based on measurements using the Six-Point Engorgement Scale (SPES), the mean breast engorgement scale decreased from 5.00 at the first visit to 1.00 at the third visit after daily intervention for four days. This mean reduction of 4.00 points indicates that the clinical condition of the breasts improved from being tense, hard, and painful to becoming softer, less tense, and more comfortable during breastfeeding.

These findings are consistent with several previous studies evaluating the effectiveness of cold cabbage leaf compresses in cases of breast engorgement. A study conducted among postpartum mothers showed that cold cabbage leaf compresses significantly reduced the breast engorgement scale and breast pain intensity while improving breast milk flow compared to other control methods, such as hand expression, with a significant p-value ($p < 0.05$) for reducing breast engorgement (Damayanti et al., 2020). Another study reported similar findings, demonstrating that cold cabbage leaf compresses had a significant effect on reducing breast swelling (p-value 0.000). Breast swelling decreased after regular use of cabbage leaf compresses for several days,

where most respondents shifted from high swelling scales to much lower scales (Utami & Meriyanti, 2020).

Physiologically, the mechanism of cold cabbage leaves in relieving breast engorgement is related to several biological properties of cabbage leaves. Cabbage leaves contain compounds such as sinigrin (allyl isothiocyanate), magnesium, sulfur, and antioxidants that have anti-inflammatory and anti-irritant effects on skin tissue. When cold cabbage leaves are applied to the breast, the cooling effect causes local vasoconstriction, which reduces blood flow to swollen tissues and helps relieve edema (swelling). Furthermore, cold temperatures reduce pain sensation by slowing nerve impulses in the breast area, making mothers feel more comfortable. Several studies have associated this effect with increased capillary activity that helps restore lymphatic flow and reduce pressure in obstructed lactiferous ducts (Apriyani & Zelharsandy, 2022).

The researchers assumed that the successful reduction in breast engorgement scale was not only influenced by cabbage leaf compresses but also by improvements in breastfeeding techniques, increased breastfeeding frequency, and maternal behavioral factors during the intervention period, such as consistency in applying compresses, correct breastfeeding positions, and the mother's motivation

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to empty the breasts optimally. These factors may contribute to a faster reduction in breast tension because more effective sucking stimulation helps milk flow and accelerates the physiological adaptation of the breasts after childbirth.

The results of this study also showed that cold aloe vera (Aloe vera) compresses were effective in reducing breast engorgement in postpartum mothers during the four-day intervention period. Measurements using the Six-Point Engorgement Scale (SPES) showed that the mean breast engorgement scale significantly decreased from 5.00 at the first visit to 1.33 at the third visit (final evaluation). The mean reduction of 3.66 points indicates that aloe vera intervention helped reduce breast tension, hardness, and discomfort while facilitating breast milk flow.

These findings are in line with several previous studies investigating the benefits of aloe vera for breast complaints in breastfeeding mothers. The topical use of aloe vera gel can reduce breast pain and swelling in breastfeeding mothers compared to control groups receiving only standard care. The reduction in pain intensity and swelling is associated with aloe vera's ability to inhibit inflammatory mediators and soothe tense breast tissue (Raihanah, Jasmawati, & Siregar, 2024). Another study also reported similar findings, where the mean swelling scale before intervention was 5.31 and decreased to 4.00 after intervention. The results showed a p-value of 0.002 ($p < 0.05$), indicating that aloe vera compresses had a significant effect on breast swelling in postpartum mothers (Puspitasari, Yuliana, & Nela, 2025).

Physiologically, the mechanism of aloe vera in relieving breast engorgement is related to the biological properties of its active compounds. Aloe vera gel is rich in polysaccharides, antioxidant enzymes, amino acids, and anthraquinones that possess anti-inflammatory, analgesic, and tissue-soothing effects. Anthraquinone compounds in aloe vera have been reported to suppress the synthesis of inflammatory mediators such as prostaglandins and other pro-inflammatory cytokines (Sánchez, González-Burgos, Iglesias, & Gómez-Serranillos, 2020).

The researchers assumed that cold aloe vera compresses were effective in reducing breast engorgement in postpartum mothers, as

demonstrated by the gradual and consistent decrease in breast engorgement scores at each monitoring visit based on the Six-Point Engorgement Scale (SPES). The effectiveness of this intervention is thought to be associated with its cooling effect, which helps reduce swelling and breast tension, as well as the anti-inflammatory and soothing properties of aloe vera's active compounds, thereby improving maternal comfort and supporting smoother breast milk flow.

Based on the findings described above, both cold cabbage leaf and cold aloe vera interventions were effective in reducing breast engorgement scales in postpartum mothers. During the four-day intervention period with three monitoring visits, measurements using the Six-Point Engorgement Scale (SPES) showed a consistent reduction in breast engorgement scales in both groups. However, the final results indicated that the cold cabbage leaf intervention group experienced a slightly greater reduction in scale compared to the cold aloe vera group. The mean breast engorgement scale in the cabbage leaf group decreased from 5.00 to 1.00, while in the aloe vera group it decreased from 5.00 to 1.33.

These findings indicate that both interventions provided significant clinical benefits, but cold cabbage leaves tended to be more optimal in managing breast engorgement within the same time period. These results are consistent with previous studies reporting that cold cabbage leaf compresses effectively reduced swelling, pain, and breast tension in postpartum mothers (Usman, Sumiaty, Silfia, Sakti, Liana, & Rinawati, 2022). Another study also stated that cold cabbage leaves provided faster engorgement reduction compared to standard breast care because of their ability to directly reduce tissue edema (Razmjouei, Moghaddam, Heydari, Mehdizadeh, Pouredalati, Tabarestani, & Moeindarbary, 2020).

Meanwhile, the results in the aloe vera group were also supported by several studies showing that Aloe vera has anti-inflammatory and analgesic effects that help relieve pain and swelling in breast tissue. Topical application of aloe vera can reduce inflammatory responses and improve comfort in breastfeeding mothers (Raihanah et al., 2024). However, other literature suggests that aloe vera effects are more dominant in tissue recovery and irritation reduction processes, causing the response in reducing acute edema to occur slightly slower compared to cold

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cabbage leaf compresses (Eshun & He, 2018).

The differences in effectiveness between the two interventions can be explained through the physiological mechanisms of each material. Cold cabbage leaves work through a local vasoconstrictive effect caused by cold temperatures, which helps reduce blood flow to swollen breast tissue, thereby reducing edema and pressure on lactiferous ducts. In addition, cabbage leaves contain active compounds such as glucosinolates, sulfur, and flavonoids that have anti-inflammatory and antioxidant properties, which help suppress local inflammatory mediators (Zakarija-Grkovic & Stewart, 2020). In contrast, cold aloe vera works more through reducing tissue inflammation and providing a soothing effect. The polysaccharides, anthraquinones, and antioxidant enzymes contained in aloe vera play a role in inhibiting prostaglandin synthesis and pro-inflammatory cytokines, thereby helping reduce pain and inflammation (Eshun & He, 2018).

The researchers assumed that the differences in effectiveness found in this study were influenced not only by the characteristics of the intervention materials but also by supporting factors. Respondents' adherence to performing interventions as recommended, proper breastfeeding frequency and techniques, and individual physiological conditions of postpartum mothers also contributed to the successful reduction of breast engorgement. Overall, the findings of this study indicate that both non-pharmacological interventions were effective in reducing breast engorgement scales. However, cold cabbage leaves demonstrated slightly higher effectiveness than cold aloe vera during the four-day intervention period. These findings strengthen the recommendation for the use of cold cabbage leaves as the primary option in midwifery care for managing breast engorgement, while aloe vera may still be used as a safe and beneficial alternative, especially for mothers seeking natural therapies with tissue-soothing effects.

CONCLUSION

Cold cabbage leaf and cold aloe vera compress interventions were proven effective in reducing breast engorgement levels in postpartum mothers. Both interventions showed a gradual decrease in breast engorgement scale during the four-day intervention period, where the mean scale in the cold cabbage leaf

group decreased from 5.00 to 1.00, while the mean scale in the cold aloe vera group decreased from 5.00 to 1.33. The findings indicated that cold cabbage leaf compresses had slightly higher effectiveness than cold aloe vera compresses in reducing breast swelling, tension, and pain in postpartum mothers. Therefore, both non-pharmacological therapies can be used as safe, practical, and beneficial alternatives in midwifery care for managing breast engorgement. However, cold cabbage leaf compresses are more recommended because they provide more optimal results in reducing breast engorgement.

SUGGESTION

Health workers, especially midwives, are recommended to apply cold cabbage leaf and cold aloe vera compresses as non-pharmacological therapies in the management of breast engorgement among postpartum mothers. In addition, postpartum mothers are expected to improve their knowledge regarding proper breastfeeding techniques, breastfeeding frequency, and breast care to prevent the occurrence of breast engorgement.

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