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Effectiveness Of Cabbage Leaves Compresses (*Brassica Oleracea*) In Reducing Breast Engorgement Among Postpartum Mothers

Utary Dwi Listiarini[1], Indah Dewi Sari[2], Mey Elisa Safitri[3], Ani Deswita Chaniago[4]
Institut Kesehatan Helvetia, Medan
Email: utarydwilistarini@helvetia.ac.id

ABSTRACT

The postpartum period refers to the period from childbirth to approximately six weeks after delivery. Breast engorgement in breastfeeding mothers may occur due to increased blood flow and milk production in the breasts. The reported prevalence of breast engorgement varies across studies, ranging from 20% to 77%. This study aimed to determine the difference in the level of breast engorgement among postpartum mothers before and after the administration of cabbage leaf (*Brassica oleracea*) compresses. This study employed a pre-experimental design using a *one-group pretest–posttest* approach. The population consisted of 15 postpartum mothers experiencing breast engorgement, of whom 10 participants were selected using a *purposive sampling* technique. The data were analyzed using the Wilcoxon signed-rank test. The results showed a *p*-value (2-tailed) of 0.011, which was less than 0.05, indicating a statistically significant difference in breast engorgement before and after the administration of cabbage leaf (*Brassica oleracea*) compresses. In conclusion, the administration of cabbage leaf (*Brassica oleracea*) compresses was associated with a reduction in breast engorgement among postpartum mothers. Therefore, cabbage leaf compresses may be considered a potential non-pharmacological approach for managing breast engorgement. Healthcare professionals are recommended to provide appropriate information and education regarding this intervention as part of postpartum care.

Keywords: Compress, Cabbage Leaves, Breast Engorgement

INTRODUCTION

The postpartum period, also known as the puerperium, refers to the period beginning immediately after childbirth and extending for approximately six weeks. In general, the postpartum period lasts around 40–42 days following either vaginal delivery or cesarean section. During this period, the maternal body undergoes various physiological changes as it gradually returns to its pre-pregnancy state. These changes involve several body systems, particularly the reproductive and endocrine systems. In the reproductive system, the uterus, cervix, and vagina progressively return to their pre-pregnancy conditions. Meanwhile, changes in the endocrine system involve fluctuations in hormonal levels, particularly prolactin, which plays an important role in breast development and stimulates breast milk production (1).

Physiological changes in the breasts during the postpartum period are closely associated with alterations in prolactin levels. Prolactin, which is secreted by the anterior pituitary gland, increases during pregnancy; however, the production of breast milk is inhibited by placental hormones. Following the delivery of the placenta, estrogen and progesterone levels decline, allowing prolactin to stimulate the initiation of lactation. At the same time, blood flow to the breasts increases, resulting in temporary vascular congestion and breast swelling. As breast milk is produced, it is stored in the alveoli and needs to be effectively removed through infant suckling to facilitate continued milk production and prevent milk accumulation in the breast (2).

Hormonal changes during pregnancy, particularly increases in progesterone and estrogen levels, stimulate the growth and development of the mammary ducts and glands, resulting in an increase in breast size. During the second trimester, the breasts begin to produce milk, and some pregnant women may notice the secretion of colostrum from the nipples. Following childbirth, progesterone and estrogen levels decrease, leading to the release of prolactin. This hormonal change signals the maternal body to increase breast milk production. If breast milk is not regularly removed through breastfeeding, milk accumulation may occur, potentially resulting in breast engorgement or milk stasis (3).

According to the World Health Organization (WHO), the prevalence of breast engorgement among postpartum mothers is reported to be 87.05%, corresponding to 8,242 cases out of 12,765 postpartum mothers. Globally, the average rate of exclusive breastfeeding is approximately 38%, which remains below the WHO target of 50%. Meanwhile, data from the ASEAN region indicate that the number of reported cases of breast engorgement among postpartum mothers reached 76,543. Furthermore, based on data from the 2024 Indonesian Demographic and Health Survey (SDKI), approximately 55% of postpartum mothers were reported to have experienced breast engorgement, corresponding to 77.23 cases (4).

The incidence of breast engorgement worldwide has been reported to be approximately 1 in 8,000 cases. However, the prevalence of breast engorgement reported in various studies varies considerably, ranging from 20% to 77%. A study conducted at Niloufer Hospital for Women and Children in India reported that, among 250,151 postpartum mothers, approximately 11% experienced breast engorgement (5).

Breast engorgement in breastfeeding mothers is characterized by breast firmness and pain resulting from increased blood flow and milk supply to the breasts. This condition commonly occurs during the first few days after childbirth, particularly around 3–5 days postpartum, when

colostrum gradually transitions into mature breast milk. Several factors may contribute to breast engorgement during breastfeeding, including infrequent direct breastfeeding, irregular breast milk pumping, prolonged intervals between breastfeeding sessions, the introduction of infant formula that reduces the frequency of direct breastfeeding, and improper breastfeeding positioning or attachment.

Breast milk stasis may cause congestion within the lymphatic and vascular systems, resulting in increased intraductal pressure that affects different segments of the breast. Consequently, pressure throughout the breast increases, causing the breasts to feel full, tense, firm, and painful, even in the absence of fever (6).

Breast engorgement refers to the accumulation of breast milk resulting from narrowing of the lactiferous ducts or incomplete emptying of the mammary glands. It commonly occurs between the second and sixth days postpartum. Most affected mothers experience breast swelling accompanied by redness, firmness, tenderness, and a sensation of warmth in the breasts (7).

Data from the Indonesian Demographic and Health Survey (SDKI) indicate that the number of postpartum mothers experiencing breast engorgement was 35,985, representing 15.60% of the total reported cases. In 2024, the number increased to 77,231 cases, equivalent to 37.12%. Meanwhile, according to research conducted by the Indonesian Agency for Health Research and Development, the incidence of breast engorgement in Indonesia was reported to be highest among working mothers, accounting for approximately 6% of postpartum mothers (8) Based on these considerations, the management of pain associated with breast engorgement can be categorized into pharmacological and non-pharmacological approaches.

Pharmacological management may include medications such as dexamethasone and ibuprofen, whereas non-pharmacological management may involve the application of cabbage leaves compresses. Cabbage leaves contain methionine, an amino acid that has been suggested to possess antimicrobial properties, as well as other compounds, including mustard oil, vitamin C, and magnesium. These components may potentially contribute to the effects of cabbage leaf compresses in relieving breast engorgement and its associated discomfort. However, the extent to which these components contribute to symptom relief requires further investigation (9).

A previous study conducted by Ervi Damayanti et al. (2018) reported that the Mann–Whitney test demonstrated a statistically significant effect of cold cabbage leaf compresses on reducing the severity of breast engorgement and breast pain intensity, as well as increasing breast milk production, with a *p*-value of 0.000 ($\alpha < 0.05$) for each outcome. The study also indicated that breast milk expression was significantly associated with reductions in breast engorgement and

pain intensity, as well as an increase in breast milk production ($p < 0.05$). These findings suggest that cold cabbage leaf compresses may have potential benefits in alleviating breast engorgement and its associated symptoms among postpartum mothers. (10).

A study conducted by Juita Sari Hasibuan Baharudin Efendi (2021) reported a significant effect of cold cabbage leaf compresses on reducing breast pain intensity. The analysis yielded a significance value of 0.000, which was below the predetermined significance level of 0.05. In addition, the calculated *t*-value was 6.768, which exceeded the critical *t*-value of 2.1009 ($t(0.025, df = 18)$). These findings suggest that cold cabbage leaf compresses may be beneficial in reducing breast pain intensity among postpartum mothers (11).

An initial survey conducted by the researchers at Pratama Karya Bunda Primary Clinic identified 90 postpartum mothers. Of these, 70 had experienced normal postpartum conditions, 5 had been diagnosed with mastitis, and 15 had experienced breast engorgement.

Interviews with seven postpartum mothers revealed that four reported experiencing breast engorgement. Among these mothers, two reported using warm water compresses to relieve breast swelling, while one reported taking medication prescribed by a midwife to alleviate pain and swelling. Another mother reported that she had never tried cabbage leaf compresses to manage breast engorgement because she believed that cabbage leaves were merely vegetables and could not be used as a therapeutic treatment for reducing breast swelling.

Based on this background, the researchers were interested in conducting a study entitled "*Effectiveness of Cabbage Leaf Compresses (Brassica oleracea) in Postpartum Mothers Experiencing Breast Engorgement at Pratama Karya Bunda Primary Clinic in 2026***."**

METHODS

This study employed a pre-experimental design using a one-group pretest–posttest design to evaluate the effect of cabbage leaf (*Brassica oleracea*) compresses on breast engorgement among postpartum mothers. Measurements were conducted at two time points: before the intervention (pretest/O) and after the administration of cabbage leaf compresses (posttest/O_1). Changes in the level of breast engorgement were assessed through observation before and after the intervention. The study population consisted of postpartum mothers experiencing breast engorgement. Based on preliminary data, the average number of postpartum mothers experiencing breast engorgement during the previous two months, July and August, was 15 mothers. The study sample consisted of postpartum mothers who experienced breast

engorgement. A total of 10 respondents were included in the study. Participants were selected using a purposive sampling technique based on the predetermined inclusion criteria (12).

Data were analyzed using univariate and bivariate analyses. For normally distributed data, the paired-samples *t*-test was used, whereas the Wilcoxon signed-rank test was applied to data that were not normally distributed. (12).

RESULTS

Table 1. Characteristics of Postpartum Mothers

No	Characteristics of Respondents	Total	
		f	%
	Age		
1	<20 y.o	1	10,0
2	20-35 y.o	6	60,0
3	>35 y.o	3	30,0
	Education		
1	Primary	1	10,0
2	Junior High School	5	50,0
3	Senior High School	4	40,0
	Jobs		
1	Working	3	30,0
2	Jobless	7	70,0
	Total	**10**	**100**

Based on the table above, among the 10 respondents (100%), 1 respondent (10.0%) was aged <20 years, 6 respondents (60.0%) were aged 20–35 years, and 3 respondents (30.0%) were aged >35 years. Regarding educational level, 1 respondent (10.0%) had completed elementary school, 6 respondents (60.0%) had completed junior high school, and 4 respondents (40.0%) had completed senior high school. In terms of employment status, 3 respondents (30.0%) were employed, whereas 7 respondents (70.0%) were unemployed

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Table 2. Frequency Distribution of Breast Engorgement Before and After Cabbage Leaf Compress Application Among Postpartum Mothers

No.	Variables	Jumlah	
		f	%
	Breast Engorgement Before the Intervention		
1	Firm breasts without pain	6	60,0
2	Firm breasts with the onset of pain	2	20,0
3	Firm and painful breasts	2	20,0
	Breast Engorgement After the Intervention		
1	Soft breasts with no palpable firmness	8	80,0
2	Firm breasts without pain	2	20,0
	Total	**10**	**100**

Based on the table above, among the 10 respondents (100%), before the intervention, 6 respondents (60.0%) had firm breasts without pain, 2 respondents (20.0%) had firm breasts with the onset of pain, and 2 respondents (20.0%) had firm and painful breasts. After the intervention, 8 respondents (80.0%) had soft breasts with no palpable firmness, while 2 respondents (20.0%) had firm breasts without pain.

Table 3. Shapiro–Wilk Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Pre_Test	,362	10	,001	,717	10	,001
Post_Test	,482	10	,000	,509	10	,000

Based on the table above, the results of the Shapiro–Wilk normality test showed that the pretest data had a *p*-value of 0.001, which was less than 0.05, indicating that the data were not normally distributed. Similarly, the posttest data had a *p*-value of 0.000, which was also less than 0.05, indicating that the posttest data were not normally distributed. Therefore, the data were considered non-normally distributed, and the Wilcoxon signed-rank test was used for the subsequent analysis.

Table 4. Mean Change in Breast Engorgement After Cabbage Leaf (*Brassica oleracea*) Compress Application.

Ranks

			N	Mean Rank	Sum of Ranks
Post_Test - Pre_Test		Negative Ranks	8[a]	4,50	36,00
		Positive Ranks	0[b]	,00	,00
		Ties	2[c]		
		Total	10		

Based on the table above, the breast engorgement indicators before and after the administration of cabbage leaf compresses showed that 8 respondents experienced a decrease, with a mean rank of 4.50**.** No respondents experienced an increase, while 2 respondents showed no change in their breast engorgement status.

Tabel 5. Effect of Cabbage Leaf Compresses on Breast Engorgement Among Postpartum Mothers

Test Statistics[b]	
	Post_Test - Pre_Test
Z	-2.558[a]
Asymp. Sig. (2-tailed)	,011

Based on the table above, the **Wilcoxon signed-rank test** was used because the data were not normally distributed. The decision rule was based on the *Sig. (2-tailed)* value, with a *p*-value < 0.05 indicating that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. The analysis yielded a *Sig. (2-tailed)* value of 0.011. Since the *p*-value was < 0.05, H_0 was rejected and H_a was accepted, indicating a statistically significant difference in breast engorgement before and after the administration of cabbage leaf (*Brassica oleracea*) compresses among postpartum mothers at Pratama Karya Bunda Primary Clinic.

DISCUSSION

Effectiveness of Cabbage Leaf (*Brassica oleracea*) Compresses in Reducing Breast Engorgement Among Postpartum Mothers at Pratama Karya Bunda Primary Clinic in 2026.

The findings of this study are consistent with those reported by Ervi Damayanti (2018), who found that cold cabbage leaf compresses may have beneficial effects in reducing breast engorgement severity and breast pain intensity, as well as increasing breast milk production. The Wilcoxon signed-rank test results for the three variables—breast engorgement severity, pain intensity, and breast milk production—showed a *p*-value of 0.000 for the reduction in breast engorgement severity, a *p*-value of 0.000 for the reduction in pain intensity, and a *p*-value of 0.000 for the increase in breast milk production in the cold cabbage leaf compress group. In the control group, the *p*-values for all three variables were also < 0.05. These findings indicate statistically significant differences in the three variables between the pre-intervention and post-intervention measurements in both groups (10).

The findings of this study showed that, before the intervention, most respondents experienced moderate breast engorgement, corresponding to scores of 3–4. A score of 3 indicated the presence of breast engorgement at an early stage, characterized by breasts that were firm to the touch but not yet accompanied by significant pain. A score of 4 indicated more pronounced breast engorgement compared with a score of 3, characterized by firm breasts and the onset of pain reported by the respondents, even without pressure being applied to the breast area. The pain reported by the respondents was generally mild, ranging from scores of 2–4. Based on these findings, the administration of cold cabbage leaf compresses was associated with a reduction in breast engorgement scores and may have contributed to alleviating breast engorgement among postpartum mothers (10).

The findings of this study are also consistent with those reported by Miftakhur Rohmah et al. in their study entitled "The Effectiveness of Cabbage Leaf (*Brassica oleracea*) Compresses on Breast Engorgement Severity Among Postpartum Mothers at PMB Endang, Kediri." The study reported that the breast engorgement score among postpartum mothers was 4 before the application of cabbage leaf (*Brassica oleracea*) compresses and decreased to 1 after the intervention. These findings suggest that cabbage leaf compresses may be a potential non-pharmacological approach for reducing the severity of breast engorgement and may help prevent worsening of breast engorgement among postpartum mothers (14).

The findings of this study are consistent with those reported by Putri Rizka Ananda (2020), who observed changes following the application of cabbage leaf compresses to reduce breast pain and engorgement in a postpartum mother (Mrs. A). The intervention consisted of cold cabbage leaf compresses administered for three consecutive days, twice daily, with each application lasting 30 minutes. Following the intervention, a reduction in breast pain and swelling was observed, as indicated by decreased breast swelling and the absence of facial expressions of pain. The reported pain score decreased from 5 before the intervention to 2 after the application of cabbage leaf compresses. These findings suggest that cold cabbage leaf compresses may potentially help alleviate breast pain and engorgement among postpartum mothers (17).

The findings of this study are not consistent with the theory proposed by Desa (2008), which suggests that cabbage leaf compresses should not be used in postpartum mothers who are allergic to sulfur-containing compounds or who have wounds around the breast area. According to this theory, warm compresses may be a preferable alternative for reducing breast engorgement while

minimizing the potential risk of skin irritation or allergic reactions. According to the researchers, breast engorgement may occur when breast milk is not adequately or promptly removed, potentially leading to congestion of the venous and lymphatic systems and obstruction of milk flow through the mammary ducts. This may result in increased pressure within the breast and contribute to breast engorgement. Several factors may be associated with this condition, including excessive milk production, scheduled breastfeeding, inadequate infant suckling, improper breastfeeding positioning, and flat or inverted nipples. Breast engorgement may also be associated with delayed initiation of breastfeeding, poor latch, or insufficient frequency of breast milk removal.

The researchers administered cabbage leaf compresses as an intervention, which appeared to be effective in reducing breast engorgement among the participants. However, despite the potential benefits of breast compresses, frequent breastfeeding remains an important measure to facilitate regular milk removal and may help reduce the risk of milk duct obstruction.

CONCLUSION

Based on the findings of this study on the effectiveness of cabbage leaf (*Brassica oleracea*) compresses among postpartum mothers experiencing breast engorgement, it can be concluded that, before the intervention, 6 respondents had firm breasts without pain, 2 respondents had firm breasts with the onset of pain, and 2 respondents had firm and painful breasts. Following the application of cabbage leaf compresses, a reduction in breast engorgement was observed among the respondents. The statistical analysis also demonstrated a significant difference in breast engorgement before and after the intervention ($p = 0.011$). These findings suggest that cabbage leaf compresses may be a potential non-pharmacological approach for reducing breast engorgement among postpartum mothers at Pratama Karya Bunda Primary Clinic in 2026.

RECOMMENDATION

This study may serve as a reference for increasing the knowledge and awareness of postpartum mothers and healthcare professionals involved in postpartum care regarding the potential use of cabbage leaf compresses for managing breast engorgement. The findings may also support the application of relevant theoretical knowledge in postpartum care within the community.

This study may provide information for breastfeeding mothers regarding the potential benefits of cabbage leaves in alleviating breast engorgement. Appropriate management of breast engorgement may help reduce discomfort and potentially minimize the risk of complications. Further research is recommended to investigate the effects of cabbage leaf (*Brassica oleracea*) compresses among postpartum mothers using a larger sample size, a control group, and additional variables that were not examined in the present study. Future studies may also consider employing more rigorous research designs to provide stronger evidence regarding the effectiveness of this intervention.

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