Jurnal Bidan Cerdas
e-ISSN: 2654-9352 dan p-ISSN: 2715-9965
Volume 7 Issue 2, 2025, page 165-173
DOI: 10.33860/jbc.v7i2.3384
Website: https://ojs.polkespalupress.id/index.php/JBC
Publisher: Poltekkes Kemenkes Palu

Preventing Postpartum Breast Engorgement: Cabbage Leaf Compresses vs. Marmet Technique

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ARTICLE INFO

Article History:

Received: 2024-01-26
Accepted: 2025-03-01
Published: 2025-07-01

Keywords:

Cabbage leaves;
Marmet technique
breast;
engorgement;
puerperal mothers;

ABSTRAK

Background: one of the common problems associated with breastfeeding and exclusive breastfeeding is breast engorgement until the incidence rate reaches 20%-70% in nursing mothers. Engorgement of the breasts can be prevented non-pharmacologically, namely by compressing cold cabbage leaves and the marmet technique. The study aimed to compare the effectiveness of cold cabbage leaf compresses and the Marmet technique in preventing postpartum breast engorgement in normal puerperal mothers. **Methods:** Types of pre-experimental research with One-shot case study design namely cabbage compress (duration 30 minutes) and marmet technique given 1 time. The total sample of 30 respondents, was divided by 15 respondents in each group and sampling by non-probability sampling type of consecutive sampling. The measuring instrument uses an observation sheet containing a six-point engorgement scale (SPES). Data was analyzed using the Wilcoxon and Mann-Whitney test (p<0,05). **Results:** analysis of the effect of cold cabbage leaf compress management and marmet technique on the prevention of breast engorgement for normal puerperal mothers was obtained in cold cabbage leaf compresses p-value of 0.014 and in the marmet technique obtained p-value 0.317. The results of the analysis of the effectiveness of the two techniques were obtained with a p-value of 0.007 or <0.05. **Conclusion:** Cold cabbage leaf compresses were significantly more effective in reducing breast engorgement compared to the Marmet technique in the Independent Practice of Midwives (PBM) Setia of Palu City. It is recommended to use both techniques in helping to prevent breast engorgement for normal puerperal mothers.

INTRODUCTION

Exclusive breastfeeding (ASI eksklusif) is defined as giving only breast milk to the baby, starting from 30 minutes after birth until the age of 6 months, without any additional fluids or other foods. According to Barir, Murti, and Pamungkasari (2019), as well as the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), the Global Strategy for Infant and Young Child Feeding recommends exclusive breastfeeding from birth, early initiation of breastfeeding, and continued breastfeeding up to 24 months of age (WHO, 2021). One of the common problems associated with breastfeeding and exclusive breastfeeding is breast engorgement. The incidence of breast engorgement worldwide is 1:8000. According to some research results report that breast engorgement occurs as much as 20% to 70% in nursing

mothers (Rohmah, Wulandari, & Sihotang, 2019; Zuhana, 2017).

According to data from the Health Office in 2019, Kamonji Health Center is one of the Puskesmas in Palu City with a large working area and with the highest birth rate in 2019, reaching 1123 deliveries. Based on data from the 2019 Kamonji Health Center, most deliveries are in the Midwife Independent Practice (PMB) of the Kamonji Health Center work area. PMB is the place for the implementation of a series of midwifery service activities carried out by midwives individually in the Regulation of the Minister of Health of the Republic of Indonesia No. 28 of 2017. Based on a preliminary survey conducted by researchers in the Kamonji Health Center area, which is located at Independent Practice of Midwives (PMB) Setia in Palu City in December 2020 – January 2021, 12 mothers were found to experience breast engorgement.

Efforts to treat breast engorgement can be done pharmacologically and non-pharmacologically. Pharmacological treatment of breast engorgement can be given symptomatic therapy. While to reduce breast engorgement non-pharmacologically can be done with acupuncture, traditional breast care (hot compresses combined with massage), cabbage leaves, cold compresses alternately, cold compresses, and ultrasound therapy (Rosita, 2020).

Cabbage can be used for engorgement therapy. Cabbage *(Brassica oleracea var. Capitata)* is known to contain *the amino acid methionine* which functions as an antibiotic and other ingredients such as *sinigrin (Allylisothiocyanate),* mustard oil, *magnesium, Oxylate sulfur heterosides*, this can help widen capillaries to increase blood flow in and out of the area, thus allowing the body to reabsorb the fluid contained in the breast. Milking using hands and fingers has an advantage because the pressure can be adjusted. The Marmet technique developed massage and stimulation methods to help key reflexes the release of breast milk (Lestari, Nurul and Admini, 2018; Farshidfar et al., 2020; Merlin, Lailiyana and Harahap, 2020).

Until now, there has been no research that specifically compares the effectiveness of cabbage leaf compresses with the Marmet technique in preventing breast engorgement in postpartum mothers. This knowledge gap creates the need for more focused research, especially on the postpartum population in midwifery independent practice services such as in the Setia Midwife Independent Practice, Palu. This research is expected to make an important contribution to the choice of effective and easy-to-implement non-pharmacological interventions to support the success of exclusive breastfeeding.

METHODS

This study is a *pre-experimental* with a *oneshot case study* design, meaning that bring good treatment, cabbage leaf compress and marmet massage is done once and after the treatment is complete, the scale of engorgement in the breast is measured. This research has been carried out on April 2 – 30, 2021 at the Independent Practice of Loyal Midwives in Palu City.

The population in this study was all normal postpartum mothers in April at the Independent Practice of Loyal Midwives in Palu City. The sample was divided into two groups with a sample number of 15 for each group so that the total number of samples was 30 samples, with *a non-probability* sampling technique of *consecutive sampling type.* The sample requirements are normal postpartum mothers with live babies and breastfeeding process, postpartum mothers on the first day (24 hours postpartum) to the third day, primiparous and multiparous mothers, and mothers who do not have a history of cabbage leaf allergy (for cold cabbage leaf compress intervention).

The independent variable is cold cabbage leaf compress (*Brassica Oleracea Var.*

Capitata) and marmet technique while the dependent variable is breast engorgement in puerperal mothers. The intervention group of cold cabbage leaves was given or attached whole cabbage leaves cooled in the freezer for about 20 minutes then attached to the mother's breast by inserting it into the bra for 30 minutes. Meanwhile, the marmet technique is done by removing breast milk combined with massage on the breast using hands and fingers. The intervention was carried out in one day with a duration of 30 minutes. Breast engorgement was evaluated pre and post-therapy in both groups by direct observation by inspection and palpation using a checklist containing the *Six-Point Engorgement Scale (SPES*). Assessment indicators in the form of signs of engorgement, namely soft, no change; slightly frim; Slightly firm but not painful; Firm and beginning to feel sore; Firm and painful; Very firm and painful (Indrani D and Sowmya MV, 2019). Data were analyzed using the Wilcoxon and Mann-Whitney tests.

RESULTS

This study assessed the demographic characteristics of participants in both intervention groups, namely those using cabbage leaf compresses and the Marmet technique. The characteristics analyzed included pregnancy status, education level, age, and occupation. The distribution of these characteristics is presented in Table 1.

Table 1. Demographic Characteristics of Participants

Characteristics	Group			
	Compress cabbage leaves		Marmet technique	
	n	%	n	%
Pregnancy Status				
Primiparous women	5	33.3	5	33.3
Multiparous women	10	66.7	10	66.7
Education				
Elementary School	1	6.6	5	33.3
Junior High School	5	33.3	1	6.6
Senior High School	9	60.0	9	60.0
Age				
20-25	10	66.8	9	60.0
25-30	5	33.3	4	26.7
30-35	0	0.0	2	13.3
Work				
Merchant	1	6.6	1	6.6
Homemaker	14	93.3	14	93.3

Based on the description in Table 1, it shows that the characteristics of respondents based on parity in the two intervention groups are mostly multiparous women, namely 10 respondents (66.7%), based on education in both intervention groups, 9 respondents (60%) of Senior High School, based on age in both groups, mostly aged 20-25, namely in the cold cabbage leaf compress group 10 respondents (66.6%). In the marmet technique group, namely 9 respondents (60%), based on the work of the two groups almost all homemaker were 14 respondents (93.3%).

Table 2. Breast engorgement pre and post-cabbage leaf compresses

Breast Engorgement	Action			
	Pretest		Posttest	
	n	%	n	%
Soft, no changes	9	60.0	15	100.0
Slightly firm	6	40.0	0	0.0

Based on table 2 above that breast engorgement before cabbage leaf compresses is mostly soft, there is soft, no changes (60%). After treatment the whole becomes soft and there is no change (100%).

Table 3. Breast engorgement pre and post marmet technique

Breast Engorgement	Action			
	Pretest		Posttest	
	n	%	n	%
Soft, no changes	9	60.0	9	60.0
Slightly firm	6	40.0	5	33.3
Slightly firm but not painful	0	0.0	1	6.6

Table 3 above shows that before the marmet technique most breasts were soft and there was no change (60%). After treatment, the condition of the breasts remained mostly soft and there was no change (60%), but there was a slightly firm but not painful on the breasts (6.6%).

Table 4. Wilcoxon test analysis

Action		n	Average	p
Compress cabbage leaves	Pretest	15	1.40 ± 0.507	0.014
	Posttest		1.00 ± 0.000	
Technical Marmet	Pretest		1.40 ± 0.507	0.317
	Posttest	15	1.47 ± 0.640	

Based on table 4, it was found that the results of statistical tests in the cold cabbage leaf compress group p-value 0.014 or <0.05 which means that cold cabbage leaf compress has an effect on preventing breast engorgement for postpartum mothers, and in the marmet technique group obtained a p-value of 0.317 or >0.05 which means the marmet technique has no effect on preventing breast engorgement for normal postpartum mothers.

Table 5. Mann whitney test analysis

Action	n	Average	p
Compress cabbage leaves	15	1.00±0.000	0.007
Technical Marmet	15	1.47±0.640	

Based on Table 5, the results of the Mann-Witney test of cold cabbage leaf compress intervention and marmet technique obtained *a* p-value of 0.007. In addition, the average engorgement value between cabbage leaf compresses is smaller than that of the marmet technique, which means that the management of cold cabbage leaf compress is effective compared to the marmet technique in preventing breast engorgement for normal puerperal mothers in PMB Setia, Palu.

DISCUSSION

The effect of cold cabbage leaf compresses on the prevention of breast engorgement of puerperal mothers

Based on table 4, it is known that applying cabbage leaf compresses is effective for the prevention of engorgement in the breasts of postpartum mothers at PMB Setia Palu City. This is also supported by data in table 2 which shows a decrease in breast engorgement scale after treatment.

According to researchers, cold cabbage leaf compresses used to treat breast engorgement are very economical, natural, and can be found in any area. In addition, how to use cabbage is very practical and does not interfere with maternal comfort such as massaging breasts. Cold cabbage leaf compresses become effective and see results in a fast time because they contain the amino acid glutamine which is believed to treat all types of inflammation and engorgement, one of which is breast engorgement so that postpartum mothers can breastfeed exclusively and can increase maternal confidence during the breastfeeding process. This gives an idea that cold cabbage leaf compresses can help prevent breast engorgement because cabbage has antibiotic and anti-inflammatory properties so that by doing cold cabbage leaf compresses can prevent breast engorgement for normal postpartum mothers.

Based on the opinion of Andrews J. It is not yet clear how cabbage leaves can minimize the occurrence of engorgement in the breast, but there is a high concentration of sulfur in cabbage leaves that is known to reduce engorgement/inflammation in all tissues. Cabbage is known to contain rapine, mustard oil, magnesium, oxalate, sulfrheteroside and sinigrin (allylisothiocyanate). This content causes cube leaves to have antibiotic and anti-irritant properties. Previous research has proven that cabbage leaf compresses can reduce the level of breast engorgement, pain, breast temperature and increase the PH of breast milk (Hassan et al., 2020;Hassan et al., 2020; Zaglou, Naser and Hassan, 2020).

Cabbage leaves are effective for preventing engorgement of the breast because the contents in cabbage are able to dilate capillaries, thereby increasing blood flow to and from the breast area, allowing the body to reabsorb the blocked fluid in the breast. The cabbage releases a cold gel that helps comfort the mother during feeding and will cook approximately 30 minutes after pasting (Aprilina et al., 2021; Captions et al., 2021).

This is in line with the results of Erika's research in 2020 concluded that the application of cabbage leaves can reduce moderate to severe engorgement. Cabbage leaf (*Brassica capitata*) used for engorgement therapy It has been suggested that it contains the chemical sinigrin *(allylisothiocyanate)* which is absorbed through the mother's skin, which may reduce engorgement and increase breast milk flow (Rosita, 2020).

The effect of the marmet technique on the prevention of breast engorgement of puerperal mothers

In table 4, it is known that the marmet technique is not effective in preventing breast engorgement of postpartum mothers in PMB Setia Kota Palu. This result is supported by the data illustrated in table 3 which shows that after the administration of the marmet technique a small part of the engorgement scale is higher.

According to researchers in the study, postpartum mothers still feel less interested in the marmet technique because they feel it is still taboo and lack of education about the marmet technique to postpartum mothers so that mothers prefer

to prevent breast engorgement with the breast pumping method which according to mothers is more practical, fast and can still do household chores. In addition, maternal comfort factors that indirectly affect milk production include putting blisters, engorgement and pain. The discomfort factor that the mother feels often causes the mother to stop breastfeeding so that the breasts become swollen.

In addition, according to researchers, the marmet technique only to release breast milk is not to prevent breast engorgement. According to Ningrum, the marmet technique helps mothers to express milk through massage using hands. Mothers need breast massage skills and enough practice in order to maximally apply these techniques to empty the breasts and stimulate milk production (Ningrum, Titisari, Kundarti, & Setyarini, 2017).

This research is in line with the results of Merlin's research which concluded that the marmet technique will be able to prevent engorgement if combined with warm compresses. This is related to the production of breast milk stimulated with fewer marmet techniques when compared to the combination of marmet techniques and warm compresses. More milk production indicates maximum emptying of milk in the mother's breast. (Merlin et al., 2020)

Based on literature studies conducted by uswatun khasanah found that there is no difference in the combination of marmet and breast care techniques on breast milk production. While breast treatment and endorphin massage are effective in increasing milk production. So it is more advisable to breast care with endorphin massage to facilitate milk production and can prevent dams or engorgement in the breast (Khasanah, 2020) .

The effectiveness of cabbage leaf compresses and marmet technique against breast engorgement in puerperal mothers.

Based on table 5, it is found that cabbage leaf compresses are more effective for preventing engorgement of the breasts of postpartum mothers in PMB Setia Palu City than the marmet technique. According to researchers, based on this study, a engorgement score was obtained in postpartum mothers before the intervention of cold cabbage leaf compress and marmet technique was at a *score* of 1-2. Breast engorgement that occurs in puerperal mothers can be prevented alone or naturally by breastfeeding the baby as often as possible so that milk does not accumulate causing engorgement, mothers can also prevent by doing cold cabbage leaf compress techniques or marmet techniques. Both techniques can prevent breast engorgement because cabbage leaves are economical, natural, and do not interfere with maternal comfort such as massaging breasts. While the marmet technique can help mothers remove milk by massaging and milking the breasts so that after the marmet technique the reflex of milk discharge becomes optimal and prevents breast engorgement, but most mothers still feel uncomfortable when massaging their own breasts and mothers feel taboo and lack of knowledge about marmet techniques. So that in the study, cold cabbage leaf compresses were more effective because when cold cabbage leaf compresses were done, the mother felt comfortable and interested in doing it.

Cabbage is a form of non-pharmacological therapy that can be used to reduce breast engorgement. Cabbage contains lots of vitamin C, Protein, Riboflavin, Niacin, Folate, vitamin K, Potassium, Magnesium, Pantothenic Acid, Iron and fiber. The benefits of cabbage are as anticancer, good for the digestive system, and good for maintaining endurance. Studies conducted at Stanford University of Medicine show that the high glutamine content in cabbage is beneficial for treating inflammation, one of which is breast inflammation (Farshidfar et al., 2020).

This research is in line with the results of research conducted by Khofiyah and Sharma which showed that cabbage leaf compresses are effective in reducing discomfort in the breasts when full and swollen. Engorgement can occur at any time in conditions of excess milk production when the baby sleeps longer at night. In the morning, the mother will experience breast engorgement. In this condition, compressing with cabbage leaves on the breast will be very helpful in reducing the mother's breast engorgement postpartum (Khofiyah, 2020;Sharma, 2018;Angelique, Chhugani and Thokcom, 2017; Kaur and Saini, 2017)

A literature study conducted by Ji Ah Song and Myung Haer Hur found that cabbage leaf treatment used on postpartum mothers with breast engorgement can reduce pain and hardness in the breasts thereby increasing the duration of breastfeeding. So it is recommended for the management of breast engorgement in postpartum mothers independently (Song and How, 2019).

The problem of breast engorgement in nursing mothers is often encountered in the community. Postpartum mothers consider that pain felt in the breast area is considered ordinary pain and does not need to worry. Unsustainable breastfeeding causes engorgement of the breasts so that residual milk accumulates in the ductal area which can occur on the third day after delivery. The use of a tight bra, dirty nipples can result in blockage of the duct lactiveerus. Blockage of the active duct can occur in one or more channels caused by the use of too tight BH, pressure of the mother's fingers during breastfeeding resulting in engorgement (Suprayitno, Pratiwi and Yasin, 2018).

Compress cabbage leaves is a way to compress swollen breasts by compressing fresh cabbage leaves, then put the cabbage leaves in a bra for approximately 30 minutes or until wilted. This treatment is carried out twice a day for 3 days. Before treatment, cabbage leaves are taken one sheet and made a hole in the middle then washed thoroughly and cabbage leaves are ready to be used for compresses (Aprilina et al., 2021).

Breast care using cabbage leaf compound is an action to treat breasts, especially during the puerperium (breastfeeding period) to reduce pain due to breast engorgement, if breast treatment with cabbage leaf compresses is done well, pain due to breast engorgement will be reduced. Application of a cold compress on swollen breasts with cabbage leaves is approximately twenty minutes to induce breast milk discharge and minimize breast engorgement (Rahayu and Wulandari, 2020;Zaglou, Naser and Hassan, 2020)

Cabbage leaf compresses most effectively reduce the degree of postpartum maternal breast engorgement. It is recommended to postpartum mothers with breast engorgement can apply cabbage leaf compresses as one technique to reduce the degree of breast engorgement. For health workers, especially midwives, it is expected to teach cabbage leaf compress techniques to postpartum mothers as one of the non-pharmacological therapies to reduce the degree of breast engorgement of postpartum mothers (Rofi'ah, Rahayu and Nikmawati, 2020).

Breast engorgement is one of the most common problems causing discomfort in postpartum mothers, especially primiparous. This condition will result in painful effects of increased milk volume, lymphatics, and blood vessels that are suddenly blocked, and interstitial edema during the first 2 weeks after delivery. This condition often leads to the failure of the mother to exclusively breastfeed her baby. Giving cold cabbage leaf compresses can be done to prevent engorgement of the puerperal mother's breasts (Salgaonkar, 2019). However, it is undeniable that there are several challenges or limitations in using cold cabbage leaf compresses for breast

engorgement, one of which is that not all individuals are suitable for natural ingredients such as cabbage leaves. Some mothers may experience allergic reactions or skin irritation due to the sulfur content or other chemicals in cabbage leaves.

CONCLUSION

Cold cabbage leaf compresses are more effective than the marmet technique for preventing breast engorgement for normal postpartum mothers at the Independent Practice of Loyal Midwives in Palu City. Suggestions for Community health center, PMB, and other health facilities are expected to develop services by providing interventions on the effectiveness of cold cabbage leaf compresses for normal postpartum mothers to help prevent breast engorgement for normal postpartum mothers. Suggestions for future research can be to examine more optimally the frequency of cold cabbage leaves or compare different types of cabbage.

Author's Contribution Statement: **Hadriani**: Conceptualization, Methodology, Data Curation, Formal Analysis. **Niluh Nita Silfia:** Investigation, Visualization, Original Draft Preparation. **Hastuti Usman**: Supervision, Project Administration, Resources. **Yuli Admasari**: Validation, Writing – Review & Editing, Corresponding Author. **Masita Rahmadani**: Software, Data Entry, Writing – Original Draft.

Conflicts of Interest: The authors declare that there are no conflicts of interest related to this study.

Source of Funding: His research was self-funded by the authors. No external financial support was received for the design, implementation, analysis, or publication of this study

Acknowledgments: Recognize contributions from individuals or institutions that supported the research but do not qualify for authorship.

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