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Cold cabbage leaves compress (*Brassica oleracea var. Capitata)* effectively reduces breast swelling in postpartum mothers

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ABSTRACT

Introduction: Breast engorgement problems can occur in postpartum mothers and interfere with breastfeeding for infants. The incidence of breast swelling was 43.4% from 145 postpartum mothers and swelling was 253 times (48%) higher in primiparas. The aim of this study is to analyze the effectiveness of cold cabbage leaf compress (*Brassica oleracea var. Capitata*) on breast swelling for primiparous normal postpartum mothers in PMB Sriwati, Palu City, Central Sulawesi.
Methods: This type of research is quantitative. The research design is quasi-experimental with a non-equivalent control group pre-post test and a cross-sectional approach. The study was conducted at PMB Sriwati on September 15 to October 30, 2020 with a sample of 20 primiparous postpartum mothers who gave birth normally in each control and intervention group. Samples were taken by non-probability sampling technique. Data analysis used Wilcoxon test and Mann Whitney test.
Results: The difference in swelling in the control group (Supervised breast care) was 0.25 while in the intervention group (*Brassica oleracea var. Capitata*) it was -0.90 with a p value of 0.000.
Conclusion: The use of cold cabbage leaf compress (*Brassica oleracea var. Capitata*) is more effective to treat breast swelling in primiparous normal postpartum mothers than Supervised breast care. It is recommended that professional organizations can socialize Evidence Base Practice, especially the development of independent midwifery management regarding breast swelling in postpartum mothers.

Keywords: Cold Cabbage Leaf Compress, Supervised Breast Care, Breast Swelling, Primipara Postpartum Mother.
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INTRODUCTION

Mother's milk is the main food for infants aged 0-6 months. Breastfeeding and the correct breastfeeding process are a means to build a quality generation.[1] Breastfeeding is an important factor for the growth and development of children's health.[2] Babies who do not get exclusive breastfeeding will tend to often get infectious diseases such as diarrhea, respiratory diseases, and can increase the risk of stunting.[3]

Failure in the breastfeeding process is often caused by the emergence of several problems for the mother and the baby.[4–6] Failure to breastfeed is often considered a problem for the child only.[7] Postpartum mothers can struggle to successfully breastfeed. Breast engorgement, often known as milk dams, are breastfeeding issues that can occur in the early postpartum period (puerperal or lactation).[8,9]

The incidence of breast swelling was 43.4% from 145 postpartum mothers and swelling was 253 times (48%) higher in primiparas.[10] The degree of swelling is between 20% to 85% and usually occurs in the first days postpartum. As many as 10% of women experience severe pain up to 14 days postpartum and a quarter to half of these women take analgesics to relieve breast pain.[11] According to a preliminary study done on February 2, 2020 at the Sriwati Independent Midwife Practice (PMB) in Palu City, Central Sulawesi, 9 out of 20 postpartum mothers experienced breast swelling and were hesitant to breastfeed their children because their breasts felt sore.[11]

When a mother delays or refuses to nurse her child when the breast feels full, she develops breast engorgement. Additionally, it may be brought on by stagnant lymphatic and venous flow, increased vascularity, and congestion, and build up and stasis of breast milk. Signs and symptoms include tightening, glossy, redness, warmth in the breasts, soreness, and hardening of the skin, which may also be accompanied by fever.[12]

Breast care during the puerperium can help expedite the release of breast milk. Breast care can also be done to prevent and treat breastfeeding problems such as breast engorgement. One that can be applied is to compress using cabbage leaves (*Brassica oleracea var. Capitata)*.[13] Methionine, an amino acid found in cabbage, is an antibiotic. It also contains other compounds, such as sinigrin (allyl isothiocyanate), mustard oil, magnesium, and sulfur oxalate heterosis, that can help widen capillary blood vessels, improve blood flow, and allow the body to reabsorb blocked breast fluid. Additionally, after 30 minutes of adhering, cabbage leaves emit a

cool gel that can absorb heat, and they wilt or ripen.[14,15]

Several studies have been conducted for compress therapy using cabbage leaves. Research has been conducted both inside and outside Indonesia and has proven that cabbage leaf compresses for the management of breast engorgement in postpartum women have proven to be effective. Cabbage leaf compresses on swollen breasts can be done if the breast skin is not injured and the mother is not allergic to sulpha, the compress becomes effective and the results are visible within 1-2 hours.[16,17]

The general purpose of this study was to determine the effectiveness of the management of cold cabbage leaf compress (*Brassica oleracea var. Capitata*) and Supervised breast care on breast swelling for primiparous normal postpartum mothers in PMB Sri Wati, Palu City, Central Sulawesi.

METHODS

Study Design

This type of research is a quantitative study with a quasi-experimental design with a non-equivalent control group pre-post test. The research was conducted at PMB Sriwati (Tembang Street Number 3, West Palu), from September 15 to October 31, 2020. The independent variables were cold cabbage leaf compress (*Brassica oleracea var. Capitata)* and Supervised breast care, while the dependent variable was breast swelling for normal postpartum mothers.

Data Collection Procedures

The population in this study were primiparous mothers who gave birth normally at PMB Sriwati with the number of samples calculated based on the Lemeshow formula as many as 40 people who were divided into 2 groups, namely the intervention group of 20 people and the control group of 20 people. Non-probability sampling technique with consecutive sampling. The sample must meet the inclusion criteria, namely primiparous postpartum mothers on the first day with a history of normal delivery, no blisters on the breasts, not allergic to cabbage leaves, postpartum mothers who want to breastfeed their babies and do not experience labor complications. While the exclusion criteria were the mother gave birth normally by induction, there was infection in the breast and breast abscess.

The experimental group received therapy in the form of giving or sticking whole cabbage leaves that were cooled in the freezer for about 20 minutes then attaching them to both breasts that had swelling or those that had not yet experienced swelling by putting them in a bra for 30 minutes. Then do breast care. Compress is done in the morning and evening (twice a day) for 3 days. While the control group was given health education and supervised mothers who had just given birth to perform breast care in accordance with the steps of breast care for 3 consecutive days carried out for 15 minutes in the morning and evening (twice a day). Evaluation of breast engorgement was carried out pre and post after therapy in both groups by direct observation by inspection and palpation using a checklist containing the Six-Point Engorgement Scale (SPES). There are 6 values on the breast engorgement scale, namely, a score of 1 = tender, no change in breasts; score 2 = slightly firm on the breast; score 3 = hard, but not sore breasts; score 4 = hard and breasts start to sting; score 5 = hard and sore; score 6 = very hard and very painful. Furthermore, the 6 SPES scales are interpreted with categories as the presence of breast swelling and the absence of breast swelling. The research instrument can be downloaded at the following link https://bit.ly/3zkjAiD.

Data Analysis

Before analyzing the data, the researcher conducted a data normality test using the Kolmogrov-Smirnov (K-S) test. Analysis of the data used in both the experimental and control groups was the Wilcoxon test to compare swelling before and after treatment and for differences using the Mann Whitney test.

RESULTS

This study discusses the effectiveness of cold compresses of cabbage leaves (*Brassica oleracea var. Capitata)* compared to supervised breast care to reduce swelling in the breasts of postpartum mothers.

Based on table 1, the average age in the control group is 25.8 (2.75) years, and the intervention group is 24.7 (2.08) years. Based on education, 100% of the control group had high school education/equivalent, while the majority of the intervention group had 95% high school education. Based on occupation, 80% of the control group worked, while the intervention group was mostly 85% working. The results of statistical tests found that there was no difference in age, education, and occupation (p value<0.05) in the control and intervention groups so that the characteristics of the respondents were homogeneous.

Based on table 2, it was found that the breast swelling before treatment showed that most of the breast conditions in the control group was a score of 2 (85%), and in the intervention group it was mostly at

Table 1. Characteristics of research subjects

Characteristics	Group		p
	Control (n=20)	Intervention (n=20)	
Age (Years)			
x (SD)	25.8 (2.75)	24.7 (2.08)	0.145*
median	26.0	24.5	
Min	20	21	
Max	31	29	
Education			
Elementary School/Equivalent	0	0	1,000**
Middle School/Equivalent	0	0	
High School/Equivalent	20 (100%)	19 (95%)	
PT/Equivalent	0	1 (5%)	
Work			
Doesn't work	4 (20 0.0 %)	3 (15.0 %)	1000**
Working	16 (80.0 %)	17 (85.0 %)	

Test Description: *) Independent T test, **) Fisher exact Test

Table 2. Breast swelling before treatment in intervention and control groups

Score	Overview of Breast Condition	Group		p
		Control (n=20)	Intervention (n=20)	
1	Soft/smooth, no change in breast	0	0	0.695*
2	Slightly hard on breasts	17 (85.0%)	15 (75.0%)	
3	Hard / firm, but the breasts are not sore, the breasts are not soft	3 (15.0%)	5 (25.0%)	
4	Hard / firm and the breasts start to sting / pain	0	0	
5	Hard and sore	0	0	
6	Very hard and very painful	0	0	
	Total	20	20	

Test Description: *) Fisher exact test

Table 3. Breast swelling after treatment in the intervention and control groups

Score	Overview of Breast Condition	Group		p
		Control (n=20)	Intervention (n=20)	
1	Soft/smooth, no change in breast	0	13 (65.0%)	0.000*
2	Slightly hard on breasts	12 (60%)	7 (35.0%)	
3	Hard / firm, but the breasts are not sore, the breasts are not soft	8 (40%)	0	
4	Hard / firm and the breasts start to sting / pain	0	0	
5	Hard and sore	0	0	
6	Very hard and very painful	0	0	
	Total	20	20	

Test Description: *) Pearson Chi Square Test

Table 4. The effectiveness of cabbage leaf compress (*Brassica oleracea var. Capitata*) and supervised breast care against breast swelling

Information	Group		p
	Control (n=20	Intervention (n=20)	
Delta			
x (SD)	0.25 (0.55)	-0.90	0.000*
median	0.00	-1.0	
Range	-1 to 1	-2 to 0	

Test description: *) Mann whitney

a score of 2 (75%). The results of statistical tests showed no difference in breast swelling in the control group and the intervention group (p value 0.695).

Based on table 3 the data obtained after the study in both groups, that most of the breast conditions in the control group was a score of 2 (60%), and in the intervention group was mostly at a score of 1 (65.0 %). The results of statistical tests showed that there were differences in breast swelling in the control group and the intervention group (p value = 0.000) after treatment.

Based on table 4 the difference in swelling in the control group was 0.25 after being given supervised breast care while in the intervention group the difference in swelling was -0.90 after being given a cabbage leaf compress (*Brassica oleracea var. Capitata*). Statistical test results obtained p value of 0.000 which means that the management of cold cabbage leaf compress (*Brassica oleracea var. Capitata*) is effective compared to *Supervised breast care* in reducing breast swelling for primiparous normal postpartum mothers at PMB Sri Wati.

The results shown in table 4 show that in the intervention group, the use of cold compresses of cabbage leaves (*Brassica oleracea var. Capitata)* will reduce swelling by 0.90 while in the control group with supervised breast care it increases swelling by 0.25 in primiparous postpartum mothers. This result is supported by a statistical test which shows a p value of 0.000 so that the use of cold compresses of cabbage leaves is more effective in reducing swelling than supervised breast care in postpartum mothers.

The effectiveness of cabbage leaf compresses in reducing swelling when compared to supervised breast care is also shown in table 2 and table 3, where before the cold compress treatment the cabbage leaves were mostly swollen on a scale of 2 as many as 15 respondents (75%) and after 3 days of treatment most of the swelling down on a scale of 1 as many as 13 respondents (65%). While in the control group before giving supervised breast care, most of the swelling was on a scale of 2 as many as 17 respondents (85%) and after 3 days the swelling scale remained at number 2 as many as 12 respondents (60%) and there was an increase in the swelling scale of almost half of the respondents at number 3 as many as 8 respondents (40%).

Supervised means monitoring. Provide health education and supervise mothers who have just given birth to perform breast care for 3 consecutive days and see the effect of breast care on breast swelling.[18] Supervised breast care was carried out in the control group 2 times a day for 3 consecutive days. In this study, supervised breast care treatment increased swelling by 0.25. According to the researcher's assumption that supervised breast care treatment has an impact on increasing

milk production, while the baby's need for breast milk is not much, it causes swollen breasts. This caused the swelling scale to increase on the third day in the control group.

This assumption is in line with research conducted by Wulan and Gurusinga that breast care has a positive impact, namely increasing breast milk production in postpartum mothers from the average volume of breast milk before the study was 4.50 to 6.44 after breast Care. Massage movements and alternating compresses using cold and warm water can stimulate the pituitary gland to secrete the hormone progesterone and estrogen, thereby stimulating the release of the hormone oxytocin. This results in increased milk production.[19,20]

The effect of breast care is that the volume of breast milk increases while the baby 's need for breast milk is still limited which causes the breasts to swell on the third day postpartum. According to the need for breast milk of a full-term baby for the first two weeks is 30-60 ml every 2-3 hours.[21] In addition to this, in the first 2 weeks, babies will normally often sleep with a sleep duration of 16.5 hours per day.[22] Therefore, breast engorgement often occurs in the first 2 weeks because breast milk production and milk production are not balanced.

In the intervention group, treatment was given in the form of giving or sticking whole cabbage leaves which were cooled in the freezer for about 20 minutes and then placed on both breasts that had swelling or those that had not yet experienced swelling by putting them in a bra for 30 minutes. Then do breast care. Compress is done in the morning and evening (twice a day) for 3 days. Cabbage is often found in the community and can be processed as a vegetable and a mixture of fried foods. Cabbage leaves cold when the study was used to prevent breast engorgement or reduce breast engorgement. Cold cabbage leaves before being affixed to the mother's breast, the mother must be tested whether the mother is allergic to cabbage leaves or not. During the study, none of the mothers were allergic to cabbage leaves.

According to the researcher's assumption, cold cabbage leaf compresses combined with massage for 3 days every morning and evening in the intervention group had an impact on reducing the swelling scale by 0.90. Because the high glutamine content in cabbage is useful for treating inflammation, one of which is inflammation of the breast and the content of cold gel in cabbage that can absorb heat, which means that the client feels more comfortable and the cabbage leaves become wilted or ripe after 30 minutes of sticking.

Interventions to reduce the signs and symptoms of breast engorgement are urgently required, according to Sausa et al. Alternative treatments for breast engorgement include acupuncture, traditional breast care (hot compresses and massage), cabbage leaves, hot and cold compresses alternated, cold compresses, and ultrasound therapy.[23] The symptoms of breast engorgement must be treated right away with interventions. The reabsorption process, which is connected to early weaning, will start if there is no effective intervention, which will interrupt milk production. Breast swelling can progress to mastitis, an acute infection of the mammary glands, which can cause symptoms like inflammation, fever, chills, maternal pain, exhaustion, and breast abscesses to lead to septicemia.[11]

According to Desa in Apriani et al, cabbage can be used for swelling therapy because it contains the amino acid methionine, which serves as an antibiotic, as well as other ingredients like sinigrin (allyl isothiocyanate), mustard oil, magnesium, and oxylate sulfur heterosides. These ingredients can help widen capillary blood vessels by increasing the flow of blood to and from the area, which can enable the body to reabsorb the fluid that is blocked in the breast. Additionally, cabbage leaves also exude a cool gel that can absorb heat, which makes the client feel more at ease and causes the cabbage leaves to wilt or ripen after 30 minutes of adhering.[24]

This study is in line with the results of research conducted by Davis which showed that cabbage leaf compresses were effective in reducing discomfort in the breasts when they were full and swollen. Swelling can occur at any time such as in the condition of over-supply milk when the baby sleeps longer at night in the morning the mother will experience breast swelling. In this condition, compressing cabbage leaves on the breast will be very helpful in reducing breast swelling in postpartum mothers.[19] Another study aims to compare the effects of breast care with cabbage leaf compresses (group 1), ordinary breast care (group 2) and general nursing actions (group 3) on the breasts of postpartum mothers. primiparous. There was a significant difference in breast hardness between the three groups. Group 1 showed significantly lower breast hardness compared to groups 2 and 3.[25]

The results of this study are supported by the results of Zuhana with the results that there is a statistically significant difference $p < 0.05$ in the effectiveness of cold cabbage leaves with breast care in reducing breast swelling using the Mann Whitney test where the breast swelling scale after being given cold cabbage leaves and treatment breasts were lower than before, there was no respondent whose breast engorgement scale remained or increased more.[26] According to researchers, the compress given will affect the breast swelling that feels painful and painful because of the cold effect so that the mother feels comfortable and the sulfur content in cabbage can relieve the pain felt by the mother, little by little, the swelling in the breast is reduced.

The management of breast engorgement uses non-pharmacological techniques so that it cannot reach all circles. In this study, non-pharmacological management can be socialized, especially professional organizations through seminars, or workshops so that they can be used as a source of Evidence Based Practice in obstetrics, especially the development of techniques in independent midwifery management to treat breast engorgement.

Non-pharmacological management in reducing the scale of breast swelling in postpartum mothers by conducting health screening from pregnancy to the postpartum period, more active or programmed home care. Non-pharmacological management because it does not use drugs, the community can use the yard to plant family medicinal plants (TOGA), one of which is planting cabbage, besides being able to be used as daily food, cabbage leaves can also be used

as an alternative non-pharmacological therapy to help reduce painful.

CONCLUSION

The difference in swelling in the control group was 0.25 (0.55), while the difference in swelling in the intervention group was -0.90. Statistical test results obtained p value 0.000 which means that the management of cold cabbage leaf compress (*Brassica oleracea var. Capitata)* is effective compared to supervised breast care for breast swelling for primiparous normal postpartum mothers at PMB Sri Wati. The suggestion in this research is that it can be socialized, especially professional organizations through seminars, or workshops so that it can be used as a source of Evidence Based Practice in obstetrics, especially the development of techniques in independent midwifery management to deal with breast engorgement. Further studies are needed to evaluate more deeply various factors that affect the effectiveness of cold cabbage leaf compress (*Brassica oleracea var. Capitata)* on breast swelling for primiparous normal postpartum mothers in PMB Sriwati, Palu City, Central Sulawesi.

DISCLOSURES

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Author Contribution

All authors similarly contribute to the think about from the investigate concepts, information acquisitions, information investigation, factual investigations, changing the paper, until detailing the consider comes about through publication.

Ethical Consideration

Ethical approval was obtained from The Research Ethics Committee of Universitas Nahdlatul Ulama Surabaya (No.49/EC-KEP-UNUSA/I/I2021).

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