Original Research
Indonesian Midwifery and Health Sciences Journal

Volume 7 No. 4 October 2023
Received: 17 September 2023 Revised: 29 September 2023
Accepted: 6 October 2023 Published: 28 October 2023
Available online at: http://e-journal.unair.ac.id/index.php/IMHSJ

THE EFFECT OF *ALOE VERA* COMPRESSES ON BREAST ENGORGEMENT PAIN IN POSTPARTUM MOTHERS

Nurus Safaah[1], Erna Eka Wijayanti[1], Umu Qonitun[1]
[1]Institut Ilmu Kesehatan Nahdlatul Ulama Tuban, Indonesia

Correspondence address:
Tuban, Indonesia
Email: nurus.shona@gmail.com

Abstract

Background: Breast engorgement is an unpleasant physiological condition characterized by swelling and pain in the breasts. Treatment to reduce breast engorgement uses aloe vera which contains aloin and emodin which can function as analgesics. The purpose of this study was to determine the effect of aloe vera compresses on breast engorgement in postpartum mothers. **Methods:** This was a true-experimental design with a pre-post test design with a control group. The independent variable is Aloe vera compress while the dependent variable is Breast engorgement pain. The population in this study were all postpartum mothers at the Merakurak health center, The sample in this study was 32 postpartum mothers at the Merakurak Community Health Center who met the inclusion criteria, The sampling technique used consecutive sampling and data collection using observation sheets involving 32 postpartum mothers. The statistical tests were undertaken using the Wilcoxon and Mann-Whitney tests. **Results:** The results of the study showed that the majority of postpartum mothers were aged 20-35 years, in a total of 23 mothers (93.6%). Most of them (62.5%) had a high school educational background, and most of them (62.5%) had a history of multiparas. Based on the results of the study, there is an effect of giving *aloe vera* compresses on breast engorgement in postpartum mothers (p-value 0.000). **Conclusion:** *Aloe vera* compress therapy can be used by postpartum mothers to treat breast milk retention because aloe vera contains anthraquinone which contains aloin and emodin which can function as analgesics. Aloe vera compress can be done Recommended as a complementary therapy for breast engorgement pain.

keyword : *Aloe vera*, Breast milk, Engorgement Pain, Postpartum women

INTRODUCTION

Breast engorgement is a problem that is frequently faced by breastfeeding mothers. Swelling due to this problem requires intervention to prevent and avoid pain (Apriani, Wijayanti, and Widyastutik 2018) (Qonitun and Novitasari 2018). It leads to mastitis, breast abscess, premature weaning, and cracked nipples (Mangesi and Zakarija-Grkovic 2016). The prevalence of breastfeeding problems is very high with the incidence of breast engorgement. The success of a breastfeeding process begins with Early Breastfeeding Initiation (EBI) and achieving exclusive breastfeeding, both of which will affect the growth and development of the baby (John, Cordeiro, and Manjima 2015).

The exclusive breastfeeding program has not been fully implemented. UNICEF and WHO stated that EBI coverage rate in the world is 42% (UNICEF

e-ISSN 2656-7806 ©Authors.2023

DOI: 10.20473/imhsj.v7i4.2023.327-337

and WHO 2018). The proportion of postpartum women who do EBI in Indonesia is 58.2%, while those who do not do EBI are 41.8% (Kemenkes RI 2018). Data on exclusive breastfeeding globally, around 44% of infants aged 0-6 months worldwide received exclusive breastfeeding during the 2015-2020 period from the target of 50% (World Health Organization 2020). Exclusive breastfeeding in East Java in 2020 was 61.0%. Exclusive breastfeeding in East Java in 2020 was 61.0%. This coverage has decreased compared to 2019 by 68.2%. The decrease in exclusive breastfeeding occurred due to various breastfeeding problems including the incidence of breast engorgement. In Indonesia, there are 76,543 (71.10%) mothers who experience breast engorgement (Kemenkes RI 2018). The results of a preliminary study conducted in March 2022 showed that 92% of breastfeeding mothers had experienced breast milk dam pain, 86% felt sore, and 50% of breast milk interfered with the breastfeeding process.

Breast engorgement is an unpleasant physiological condition characterized by swelling and pain in the breasts that occur due to an increase in milk volume, and lymphatic and vascular congestion (Akanksha Thomas 2017). This is causes by delays in early breastfeeding, breast milk is not issued frequently and there are time limits when breastfeeding (Wahyuni E.D 2018). Breast engorgement cause breast pain. The pain felt by breastfeeding mothers with swelling is on average with a severe pain scale (6-8) and a moderate pain scale (3-5) (Manna 2016). Breast pain occurs due to increased venous and lymph flow due to the narrowing of the lactiferous ducts or by glands that are not completely emptied. Untreated breast engorgement can cause new problems, mastitis and even breast abscess (Indahsari and Chotimah 2017). Breast engorgement also causes mothers to stop the breastfeeding process because the breasts feel sore, and uncomfortable while breastfeeding, and they think that if the breasts have problems the breastfeeding process should be stopped to avoid transmitting the disease to their children (Apriani et al. 2018) (Umu Qonitun 2018). An impact on exclusive breastfeeding in infants, if the baby does not get breast milk, the baby's nutritional needs are not properly met and the baby will be prone to disease (Alhadar, Farida, Irawati 2017). Breast engorgement pain that is untreated can cause further complications. Therefore, effective management is essential to deal with pain in nursing mothers.

Management to handle breast engorgement can be undertaken through pharmacology and non-pharmacology. Pharmacologically therapy can be given to treat breast swelling to reduce pain, such as paracetamol and ibuprofen. While non-pharmacological efforts to reduce breast swelling and pain can be made by improving breastfeeding methods such as conventional breast care (warm compresses combined with massage) and aloe vera compresses. One of the plants that have medicinal properties is aloe vera (Sushen et al. 2017). Aloe vera can be used to treat breast pain due to menstruation or breast pain due to the process of stopping breastfeeding. Aloe vera contains *anthraquinone* which contains *aloin* and *emodin* which can function as analgesics (Surya, Gouri, and Yogeshchan, R, Gyanander, A, Jitender, B & Garg 2015). Aloe vera may be effective in reducing breast pain and breast hardness (Lim et al. 2015). Aloe vera gel can relieve nipple pain, as well as herbal medicine to increase breast milk volume (Alamolhoda, Mirabi, and Mojab 2020; Fungtammasan and Phupong 2022).

The analgesic activity of aloe vera is also associated with the presence of *carboxypeptidase* and bradykinesia enzymes which reduce pain. Pain reduction occurs through the stimulation of the immune system and the reduction of prostaglandins which are responsible for pain (Mwale and Masika 2010). The study aimed to determine the effect of *aloe vera* compresses on breast engorgement pain in postpartum.

METHOD

This study used a quantitative analytic design with a quasi-experimental method with a pre-post test with a control group design to compare the two groups of research subjects. The independent variable is Aloe vera compress while the dependent variable is Breast engorgement pain, This study analyzed the effect of aloe vera compresses on breast engorgement pain in postpartum. This research was conducted in the Merakurak public health centers in East Java, Indonesia. The population in this study were postpartum mothers from June to July 2022 with a total of 48 respondents. The samples were taken by using the consecutive sampling technique. Thus, the sample obtained was 32 postpartum mothers. The inclusion criteria in this study were postpartum mothers from day 1 to day 30, postpartum

mothers with breast engorgement, postpartum mothers with composmentis awareness, not currently taking analgesic drugs, and willing to be research respondents by signing an informed consent first. Instrument Pain measurement used the Numeric Rating Scale (NRS) with a pain scale of 1 to 10. In the early stages, the researchers selected postpartum mothers who would be used as respondents according to predetermined criteria. After that, the researchers introduced themselves, and gave explanations to respondents about the meaning, purpose, procedures, and benefits of breast care and aloe vera compresses for respondents and compression time. It was also implemented in the control group according to the policy for treating pain in breast engorgement by using breast care with warm water. Patients who were willing to become respondents were welcome to fill out and sign the informed consent. Furthermore, patients who were included in the intervention group before being given breast care and aloe vera compresses were measured on a pain scale with the NRS scale. In addition, the control group was also measured with the NRS scale before being given breast care. Respondents who entered the intervention group were given breast care using warm water first. Then, they were given aloe vera compresses by applying aloe vera gel to the breasts that were experiencing breast milk, then waiting ± 5-10 minutes. After that, the pain scale was measured using the NRS Scale. Respondents who entered the control group were treated using warm water, then a pain scale was measured using the NRS scale. After this research was considered complete according to the set time and the measurement data had been obtained, the pain scale measurement was carried out with the NRS in both the control group and the experimental group, *Data Analysis* Univariate analysis was used to describe the characteristics of each research variable. This analysis only provided the distribution and percentage of data for each variable. It was displayed in the percentage distribution table for the independent and the dependent variable. The frequency distribution presented included the variables of age, knowledge, education level, and parity. The Wilcoxon and Mann-Witney tests were used to analyze the relationship and differences in pain experienced by the control and treatment groups. The research ethics were obtained from the Health Research Ethics Institute, the Nahdatul Ulama

Institute of Health Sciences, Tuban, with certificate no. 216/LEPK.IIKNU/VII/2022.

RESULT AND DISCUSSION

Based on table 1, it can be seen that the majority of postpartum mothers aged 20-35 years were 23 (93.6%). Most of them have an education level at high school (62.5%), and multiparas (62.5%).

Table 1. Frequency distribution of the postpartum mothers' characteristics who experienced breast engorgement

Characteristics	Classification	Frequency	Percentage (%)
Age	<20 Years	1	3,2
	20-35 Years	30	93,6
	>35 Years	1	3,2
Education	Primary School	1	3,1
	Junior High School	10	31,3
	Senior High School	20	62,5
	Bachelor	1	3,1
Parity	Primipara	12	37,5
	Multipara	20	62,5

The development of the pre-test and post-test was presented in the following figure:

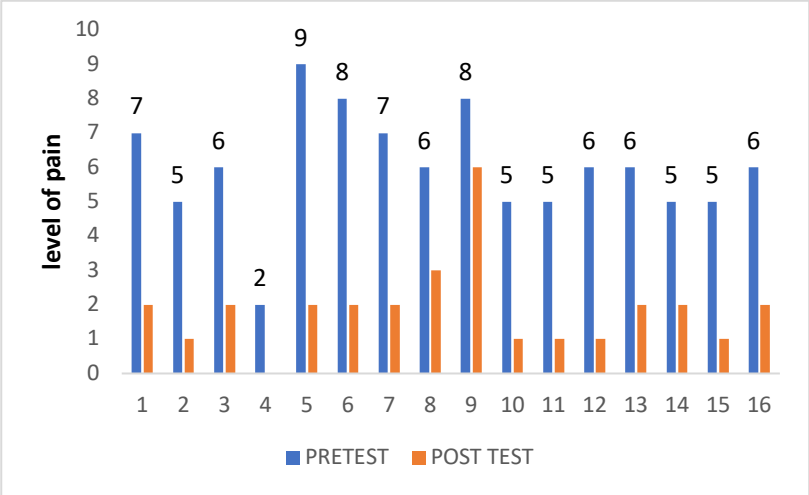

Figure 1. Graph of reducing pain levels due to breast engorgement in postpartum mothers in the experimental group

Based on figure 1 above, it can be concluded that there was a decrease in pain levels in post-partum mothers who experienced breast engorgement, after being treated with breast care and aloe vera compresses. The results of the study in

the experimental group found that the average level of breast engorgement pain experienced by postpartum mothers before treatment was 6.00 and after treatment was 1.88 with an average decrease in pain level of 4.12.

The pre-test to post-test values in the experimental and control group showed a decreasing value with a p-value of 0.000. It can be concluded that there was a difference in breast engorgement pain before and after treatment in the control group and the experimental group. Thus, there was an influence of aloe vera compresses on breast engorgement pain in postpartum mothers in the working area merakurak of public health center.

Table 3. Mean Rank Reducing Breast Engorgement pain in the experimental group and the control group

Ranks				
Group		n	Mean Rank	Sum of Ranks
Decrease Pain Level	Experimental Group (Breast care + Aloe vera)	16	23.19	371.00
	Control Group (Breast care)	16	9.81	157.00
Mann witney test	0.000			

Based on the table above, it can be seen that the mean rank for decreasing pain levels in the experimental group was 23.19 which was higher than the mean rank for reducing pain levels in the control group was 9.81. Table 3 also showed there is a difference in the decrease in the level of breast engorgement pain between the experimental group and the control group so it can be said that there is an effect of aloe vera compresses on breast engorgement in postpartum mothers (p-value= 0.000). Based on the results, most of the respondents who experienced breast engorgement were ages 20-35 years. This age is a safe reproductive period for pregnancy and childbirth (S.Prawiroharjo 2014). The results of this study are supported by previous research that postpartum mother age affects the incidence of breast swelling and mostly occurs at the age of 20-35 years (93.6%) due to lack of experience, understanding, and information about breast swelling (Ega, Rutiani, and Fitriana 2016). The age of < 20 years is considered physically immature, the reproductive organs have not functioned completely so if there is a pregnancy and childbirth will be more at risk of complications, while the age of > 35 years is considered dangerous because there has been a decline in reproductive health due

to degenerative processes, the mother's reproductive and physical apparatus has been much reduced and decreased (Mubasyiroh, Tejayanti, and Senewe 2016).

The highest number of respondents was multipara with 58.8%. The results of this study also found that as many as 35.3% of puerperal mothers with primipara parity experienced breast swelling. This is supported by research conducted in Indonesia, namely as many as 57.9% of postpartum mothers with primipara parity experience breast swelling, where primipara parity is more likely to experience breast swelling due to having never had previous experience of giving birth and breastfeeding babies (Ega et al. 2016). Furthermore, we argue age and parity are likely to experience breast swelling pain, this is caused the several precipitating factors such as the frequency of breastfeeding, problems with the nipples, the baby's suction that is not strong, or the wrong breastfeeding position. Its consequences to swelling pain increase and treatment of dam pain are crucial.

The study showed a decrease in maternal postpartum pain after being given aloe vera compresses with a decrease in pain of 4.12. This is in line with a previous study that aloe vera can be used to treat breast pain due to the process of stopping milk (Sushen et al. 2017). *Aloe vera* contains anthraquinone which contains aloin and emodin which can function as analgesics (Surya et al. 2015). Swelling of the breasts occurs due to increased venous and lymphatic flow and narrowing of the lactiferous ducts due to milk accumulating in the breasts. This can result in pain, and the pain that arises can also be caused by stretching of the mammary tissue due to swelling that occurs so that it suppresses pain receptors (Wahyuni E.D 2018). When pain occurs, there will be a release of pain neurotransmitters, one of which is prostaglandin (Potter, P.A & Perry 2010). Analgesic activity of aloe vera also associated with the presence of enzymes carboxypeptidase and bradykinase which can reduce pain. Pain reduction occurs through stimulation of the immune system the body and a decrease in prostaglandins responsible for pain.

Aloe vera compresses can reduce swelling pain by stimulating the immune system to block prostaglandin biosynthesis. Breast treatment is key to preventing breast milk dams. Breast care aims to improve blood milk circulation and prevent blockage of the milk production channel to facilitate breast milk production. Tactile stimulation during breast care can stimulate the hormones prolactin and oxytocin

which help the baby get breast milk (Gustirini 2021). Based on the facts and theories above, it can be concluded that aloe vera is effective in reducing pain due to breast engorgement in postpartum mothers. The level of breast engorgement experienced by postpartum mothers is because aloe vera has analgesic properties and a cold sensation which can relieve pain due to breast engorgement. Management giving aloe vera compresses and breast care can help reduce breast engorgement in postpartum mothers in the Public Health Center.

This research provides a major contribution as a basis for determining appropriate interventions to overcome pain in postpartum mothers due to breast engorgement. However, this study has limitations because this research does not examine the type of delivery by respondents which can affect the pain experienced by the mother, and did not explore more broadly whether there was a history of consumption of analgesic drugs, at the time of data collection, so that it could obscure the results.

CONCLUSION AND SUGGESTION

This study shows that there is an effect of non-pharmacological treatment using aloe vera compresses, to treat pain due to breast engorgement in postpartum mothers. This pain reduction will be more effective by combining it with breast care, routinely after the mother gives birth. An aloe vera compress can reduce complaints of swelling and pain in mothers with breast milk dams will be reduced, and mothers will more optimally give breast milk to the baby.

ACKNOWLEDGMENT

The authors are very grateful to the Merakurak of public health center for facilitating the research process.

REFERENCE

Akanksha Thomas, Angel. 2017. “A Quasi-Experimental Study to Assess the Effectiveness of Chilled Cabbage Leaves on Breast Engorgement among Postnatal Mothers Admitted in a Selected Hospital of Delhi.” *International Journal of Nursing & Midwifery Research* 4(1):8–13. doi:

10.24321/2455.9318.201702.

Alamolhoda, Seideh Hanieh, Parvaneh Mirabi, and Faraz Mojab. 2020. "Effects of Both Aloe Vera Gel and Breast Milk on the Improvement of Nipple Soreness in Lactating Women—A Randomized Controlled Trial." *Journal of Herbal Medicine* 21:100327.

Alhadar, Farida, Irawati, Umaternate. 2017. "Pengaruh Perawatan Payudara Pada Ibu Nifas." *Jurnal Riset Kesehatan* 6(1):7–12.

Apriani, Arista, Wijayanti, and Desy Widyastutik. 2018. "Efektivitas Penatalaksanaan Kompres Daun Kubis (Brassica Oleracea Var. Capitata) Dan Breast Care Terhadap Pembengkakan Payudara Bagi Ibu Nifas." *Jurnal Kebidanan* II(4):238–43.

Ega, Clara, Ayu Rutiani, and Lisna Anisa Fitriana. 2016. "Gambaran Bendungan Asi Pada Ibu Nifas." *Pendidikan Keperawatan Indonesia* 2(2):146–55.

Fungtammasan, Siraphat, and Vorapong Phupong. 2022. "The Effect of Moringa Oleifera Capsule in Increasing Breast Milk Volume in Early Postpartum Patients: A Double-Blind, Randomized Controlled Trial." *European Journal of Obstetrics & Gynecology and Reproductive Biology: X* 16:100171.

Gustirini, Ria. 2021. "Perawatan Payudara Untuk Mencegah Bendungan Asi Pada Ibu Post Partum." *Midwifery Care Journal* 2(1):9–14. doi: 10.31983/micajo.v2i1.6653.

Indahsari, Maretta Nur, and Chusnul Chotimah. 2017. "Hubungan Tingkat Pengetahuan Ibu Nifas Tentang Perawatan Payudara Dengan Kejadian Bendungan ASI Di RB Suko Asih Sukoharjo." *Indonesian Journal on Medical Science* 4(2):183–88.

John, Liji, Malita Preethi Cordeiro, and M. G. Manjima. 2015. "Knowledge Regarding Breast Problems among Antenatal Mothers in a Selected Hospital, Mangaluru with a View to Develop an Information Booklet." *International Journal of Recent Scientific Research* 6(9):6.

Kemenkes RI. 2018. "Laporan Hasil Riset Kesehatan Dasar (Riskesdas) Indonesia Tahun 2018." Pp. 182–83 in *Kementerian Kesehatan Republik Indonesia*.

Lim, A. Reum, Ji Ah Song, Myung Haeng Hur, Mi Kyoung Lee, and Myeong Soo Lee. 2015. "Cabbage Compression Early Breast Care on Breast Engorgement

in Primiparous Women after Cesarean Birth: A Controlled Clinical Trial." *International Journal of Clinical and Experimental Medicine* 8(11):21335–42.

Mangesi, Lindeka, and Irena Zakarija-Grkovic. 2016. "Treatments for Breast Engorgement during Lactation." *Cochrane Database of Systematic Reviews* (6).

Manna, Moumita. 2016. "Effectiveness of Hot Fomentation Versus Cold Compression on Breast Engorgement among Postnatal Mothers." *International Journal of Nursing Research and Practise* 3(1):12–18.

Mubasyiroh, Rofingatul, Teti Tejayanti, and Felly Philipus Senewe. 2016. "Hubungan Kematangan Reproduksi Dan Usia Saat Melahirkan Dengan Kejadian Bayi Berat Lahir Rendah (Bblr) Di Indonesia Tahun 2010." *Jurnal Kesehatan Reproduksi* 7(2):109–18. doi: 10.22435/kespro.v7i2.4854.109-118.

Mwale, M., and P. J. Masika. 2010. "Analgesic and Anti-Inflammatory Activities of Aloe Ferox Mill. Aqueous Extract." *African Journal of Pharmacy and Pharmacology* 4(6):291–97.

Potter, P.A & Perry, A. .. 2010. *Fundamental of Nursing*. Singapore : Elsivier Inc.

Qonitun, Umu, and Fitri Novitasari. 2018. "STUDI PERSALINAN KALA IV PADA IBU BERSALIN YANG MELAKUKAN INISIASI MENYUSU DINI (IMD) DI RUANG MINA RUMAH SAKIT MUHAMMADIYAH TUBAN." *Jurnal Kesehatan*. doi: 10.24252/kesehatan.v11i1.4572.

S.Prawiroharjo. 2014. *Ilmu Kebidanan*. Jakarta: PT. Bina Pustaka.

Surya, P., B. Gouri, and B. Yogeshchan, R, Gyanander, A, Jitender, B & Garg. 2015. "Aloevera; a Natural Adjunct Periodontal Therapy." *International Journal of Research and Development Organization* 1(9):1–12.

Sushen, U., C. R. Unithan, S. Rajan, R. Chouhan, C. Sushma, F. Uddin, and R. Kowsalya. 2017. "Aloe Vera : A Potential Herb Used As Traditional Medicine By Tribal People of Kondagatu and Purudu of Karimnagar District ,." *European Journal of Pharmaceutical and Medical Research* 4(7):820–31.

Umu Qonitun, Fitri Novitasari. 2018. "Studi Persalinan Kala Iv Pada Ibu Bersalin Yang Melakukan Inisiasi Menyusu Dini (Imd)." *Jurnal Kessehatan*.

UNICEF, and WHO. 2018. *Capture the Moment – Early Initiation of*

Breastfeeding: The Best Start for Every Newborn.

Wahyuni E.D. 2018. *Asuhan Kebidanan Nifas Dan Menyusui*. Jakarta: Pusdik SDM Kesehatan.

World Health Organization. 2020."Pertanyaan Dan Jawaban Terkait Coronavirus."