

Effectiveness of Alternating Application of Cold and Hot Compresses on Reduction of Breast Engorgement among Lactating Mothers: Literature Review

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Abstract: One of the most common issues among lactating women is breast engorgement. To reduce the level of pain brought on by breast engorgement, both pharmaceutical and nonpharmacological methods are used. The majority of moms are quite concerned about pharmaceutical methods regarding how they can impact the infant. Because they are concerned about the negative side effects of chemical medications and are looking to identify the simplest, most effective nonpharmacological treatments to cure engorgement, breastfeeding women aim to adopt alternative and complementary therapies.

Keywords: nursing care, engorged breasts, applying a cold gel pack, hot compresses and non-pharmacological treatments.

1. LITERATURE REVIEW

1.1 Introduction

One crucial research investigation is the review of the literature. Identification, evaluation, and reporting of existing knowledge on an intriguing topic that has undergone critical analysis A literature review is a useful tool for combining research findings to produce meta-level proof and pinpoint areas that need more investigation. A literature review's main goal is to build a solid knowledge base for carrying out scholarly studies in the fields of instruction and clinical practice. 2019 (Snyder).

This evaluation of the research may be useful in determining the efficacy of alternating applications of cold gel back and heated compresses on nursing women's breast engorgement. Following a conceptual framework, the pertinent data has been organized and theoretically evaluated under the following headings: literature on breast engorgement, ways to manage breast engorgement, use of cold and hot compresses, and nursing responsibilities connected to breast engorgement.

1.2 Search strategy

The researcher used an electronic search to find and compile pertinent English-language papers that had been released between 2015 and 2023. The Saudi Digital Library, Google Scholar, EBSCO, PubMed, Medline, SAGE, CINAHL, and Ovid journals are all included in this database. The primary keywords were used to find the full-text articles. Breast engorgement, "application of breast engorgement," "nonpharmacological interventions for breast engorgement," "breast

cold gel pack," "breast hot compression," "breast anatomy," "breastfeeding prevention," "management of mastitis," "nipple tenderness and breast engorgement," "breast engorgement therapy," and "breast engorgement cesarean birth" were among the reviews that were chosen for inclusion in the study. By looking at the list of all cited papers' bibliographies, further studies were identified.

1.2.1 Part I - Literature Review: The following headings were used to categorize the literature:

1.2.1.1 Section A: Breast engorgement-related literature

The mother's and the child's mental and physical wellness depend on breastfeeding. This study's main focus is breast engorgement, an uncomfortable milk buildup that can make it challenging for the baby to latch on to the mother's breast. Engorgement is the overproduction of milk in the breasts, and it frequently happens in the first few days after giving birth. It causes swollen, painful, and rigid breasts and could cause an early halt to breastfeeding (Kendall-Tackett, K. 2022).

The basis for a baby and newborn child's survival, growth, and wellness as mothers is breastfeeding. The World Health Organization recommends continued nursing with appropriate supplemental foods for the following two years after the first six months of life. According to the WHO (World Health Organization, 2020), early and ongoing skin-to-skin contact, sharing a room, and kangaroo care all significantly increase infant survival and reduce morbidity rates.

Both mothers who deliver naturally and those who undergo cesarean sections experience breast engorgement. Because it may be tempting to forgo the baby's nocturnal feeding after the procedure, breast engorgement is more likely in mothers who give birth normally than it is in mothers who have a cesarean section. Many women who have had cesarean deliveries have also confirmed that it is challenging to nurse after the procedure because of the incorrect positions employed for initiating nursing (Ananthavarsheni, T.R.S., 2019).

The difficulty for the newborn in maintaining the nipple and areola in the mouth, which prevents the intake of breast milk, is the most serious effect of breast engorgement. According to Mounika, Kalabarathi, and Padmapriya (2022), a number of factors can lead to breast engorgement, including abrupt stimulation of the breast following the end of natural nursing, prolonged breastfeeding, inadequate nursing, restricted breastfeeding time and frequency, and skipping alternate feeds between the breasts.

The first few minutes of breastfeeding have a big impact on how long you nurse. Most new mothers have unpleasant breastfeeding experiences, which decreases their desire for breastfeeding primarily as a result of those unpleasant nursing experiences. Issues with postpartum lactation arise in situations that are harmful to the breastfeeding experience. Among the issues that are frequently brought up are low milk supply, nipple scarring and pain, breast engorgement and insufficient breast evacuating mastitis, breast abscess, and flat nipples. One of the most common issues is breast engorgement and soreness, which affect between 20 and 80 percent of women (Shafaei FS et al., 2020).

Breast engorgement is a painful condition when the mother produces excessive amounts of breast milk, whereas an infectious abscess is an infection of the breast caused by an obstruction in the milk duct. It's crucial to use the right method when nursing to maintain wellness. When nursing, it's important for the baby to latch on to its mother's breast properly because poor technique could result in breast engorgement. To effectively suckle, the baby needs to be positioned correctly. Mothers may require guidance or advice in order to feed their children properly (Mohamed RS et al., 2022).

The control of breastfeeding in the initial days following delivery may influence the development of engorgement. Engorgement happens less frequently when mothers and children share a room and breastfeed for longer periods of time during the first two days of life. Assessing the prevalence and treatment options for this illness is difficult due to the wide range of engorgement, which can range from expected normal breast fullness to highly painful engorgement. In addition, some hospitals may provide breastfeeding counseling and assistance that is more successful than environments that are less helpful, which may reduce the frequency of serious problems (Dey, Titin Novayanti, et al., 2023).

One of the fundamental tenets of mother-and-baby care is the advancement of health education around breastfeeding. with a focus on the most effective nursing methods for both the antenatal and postpartum periods. In order to prevent congestion and maximize the benefits and length of breastfeeding, it is crucial to identify solutions to manage engorgement (Cecilio JO et al., 2022).

1.2.1.2 Section B: Literature regarding breast engorgement management.

After giving birth, breast engorgement often begins between the 2nd and 4th days. The postpartum mother will feel discomfort and tenderness from breast engorgement since the breasts initially appear to be so weighty and hard. Additionally, it appears like the infant is not responding to nursing as effectively as it could. If the mother does not know how to correctly manage the engorgement and cannot identify the issues, she will likely avoid breastfeeding the infant during the first postpartum week, which could result in an early discontinuation of breastfeeding (Aprilina HD et al., 2021).

Breast engorgement is a significant worry for nursing mothers and can lead to a number of problems, including obstructed ducts of milk, an infection, breast swelling and damaged nipples, difficulties with feeding, and a decreased milk ejection reflex. If a mother does not take steps to avoid or treat breastmilk stasis caused by intermittent or insufficient breast evacuation, she may be more likely to experience engorgement (Varghese, B., & Patwa, 2020).

In order to increase exclusivity rates and breastfeeding duration, as well as to relieve acute signs within 24 to 48 hours, engorgement of the breasts needs to be treated as soon as feasible. Due to discomfort or a dislike of keeping the baby close to the incisions, lactation can also be delayed in moms who have undergone cesarean sections. Breastfeeding initiation may take longer when moms take analgesics (Ghattas, V. N., Ibrahim, H. I., & Mohamed, M. A. E. S., 2022).

Ibuprofen, paracetamol, and cold packs are the most effective painkillers for treating engorgement. Moms are encouraged to pump milk to lessen engorgement for a limited length of time at the first time to feed a baby who can use manual release or a pump that can be adjusted manually to express between ten and twenty mL of milk to promote a more comfortable latch. Mothers with significant engorgement might also try side-lying or a relaxed nursing technique for a proper latch (Mitchell, K. B., 2022).

Breast engorgement has a negative impact on breastfeeding and breast sucking. Although many mothers may wish to nurse babies, this problem makes it challenging to do so. In order to avoid difficulties, it is crucial for the health of both women and their new babies that such a problem is discovered and addressed as soon as possible after delivery (Lamadah, Sahar Mansour, et al., 2021).

Mastitis typically develops before breast milk stasis and engorgement. Because of the increased sodium levels in the swollen, inflamed breast, the affected mother's milk may be saltier than usual. Sucking will end when the baby becomes aware of the modifications. Breast engorgement treatment aims to improve early breastfeeding and also reduce swelling, pain, and discomfort. Breast engorgement can be successfully controlled to enable long-term nursing (Thomas P. et al., 2017).

The optimal course of treatment for breast engorgement would involve providing prompt pain relief, assisting with the baby's successful attachment to the breast, assisting with the efficient evacuation of milk, and avoiding consequences and related issues, such as mastitis and breast discharge. In order to properly and conveniently nurse her child, the optimum course of therapy should quickly produce effortlessly soft, non-tender breasts. Numerous treatments have been investigated in order to reach these objectives (Ozkaya, M., & Korukcu, O., 2023).

Numerous pharmaceutical and non-pharmacological methods can be used to alleviate breast engorgement and the pain it causes. Although pharmaceutical therapies are thought to be helpful, on occasion, their negative effects exceed their advantages. Many engorgement-specific techniques are advised to reduce pain, support breastfeeding, and avoid issues. Since this method is a recommended treatment due to its convenience, accessibility, and cost-effectiveness (Zagloul et al., 2020), it includes frequent feedings, areola treatments, extracts from herbs, cabbage leaves, infant positions, attachments, gentle applying pressure while feeding, as well as the usage of cold or hot compresses.

Given the importance of nursing and the excruciating pain associated with breast engorgement, effective solutions must be found. Early postpartum breast tenderness is an uncomfortable condition that interferes with breastfeeding and is brought on by improper nursing techniques, a rise in milk consumption, and vascular congestion. For postpartum women, it is a highly uncomfortable condition that makes it difficult for them to nurse and go about their everyday lives (Sharma, R., 2018).

To adequately nurse, a woman's breasts must be entirely empty. Using medicine, using hot and cold compresses, or putting cabbage leaves, rubbing the breasts, and pumping are all considered potential treatments when the breasts are overfilled

with milk and pain develops. Another study found that mothers who breastfed their newborns more frequently within the first 48 hours had less breast engorgement. A study found that using the consultation services of medical professionals during the postpartum period could help prevent or decrease breast problems that might develop during breastfeeding (Duygu, M. O., & Asli, 2022).

Using breast engorgement therapy, edema and pain are treated. Several medical and non-medical techniques were used on the moms, including nipple shields, cold and warmth applications, pumping breast milk, and donning breast pump equipment. A lot of these techniques cost little money or might be beneficial for ladies. Therefore, mothers might be encouraged to employ natural treatments, which are inexpensive and simple to perform at home without professional support (Makwana A., Tiwari A., 2018).

There are several current techniques for draining the breast that can be utilized to treat breast engorgement, comfort discomfort, facilitate nursing, and prevent issues. Frequent feedings, nursing with the infant properly positioned and attached to the breast, light massage before and during feedings, the use of cold compresses, and the use of analgesics and anti-inflammatory drugs when required are some of these. Before feeding, apply a warm compress that is warm to the breast. Skilled assistance that enables the mother to latch her baby to the breast as quickly as possible is crucial in order to reduce engorgement and maintain nursing. If breastfeeding is not possible, repeated hand-expressing or breast-expressing is indicated in conjunction with other symptomatic therapies (Zakarija-Grkovic, I., & Stewart, F., 2020).

When it comes to nursing, traditional and alternative remedies are less expensive, have fewer side effects than modern medication, and provide benefits that have been proven in numerous studies. Health professionals are considering alternate treatments for breastfeeding problems, such as breast engorgement, as a result of increased focus on the physiological aspects of the postpartum period. According to the majority of this research, the strategies under investigation had positive effects on the start-up as well as the persistence of lactation (Rahnemaie, Fatemeh Sadat, et al., 2019).

1.2.1.3 Section C: Literature on the application of hot and cold compresses

The methods used to breastfeed matter for a positive breastfeeding experience because a poor technique could lead to breast engorgement. Over the years, several different techniques have been used to alleviate breast engorgement. The blood vessels are relaxed by using hot or cold compresses, which lessens pain and engorgement. Usually, it is difficult to avoid breast engorgement. For the management of breast engorgement, a number of pharmaceutical and non-pharmaceutical methods have been researched. In addition to using heat or cold compresses directly on the breast, there are numerous other non-pharmacological techniques that can be used to reduce breast engorgement. According to Eittah HF and Ashour ES (2019), both are natural strategies to improve breastfeeding and lessen or eliminate a mother's suffering.

A safe and economical method of addressing breastfeeding difficulties and assisting moms to successfully breastfeed is through the use of various medical interventions. Thus, these strategies can encourage exclusive breastfeeding and lower infant mortality as well as morbidity rates. Traditional and alternative treatments for nursing include benefits that have been demonstrated in several studies, are more cost-effective for families, and are less likely to have adverse side effects than common drugs. According to the majority of studies, breastfeeding's initial development and maintenance were positively impacted by the ways under examination (Rahnemaie, Fatemeh Sadat, et al., 2019).

After giving birth, women who suffered breast engorgement were evaluated for their capacity to nurse, the level of discomfort, stiffness, and heat brought on by the condition, as well as how well cold cabbage leaves and cold gel packs worked. According to studies, cold gel and cold leaves of cabbage both eased discomfort and reduced breast hardness while having no effect on body temperature or the duration of lactation. However, according to Razmjouei, P., et al. (2020).

cold gel packs alongside chilly cabbage leaves may lessen stiffness and pain. Alternative treatments for diseases including mastitis, engorgement, and plugged ducts include the application of warm or cold compresses. Cold gel packs and cold cabbage stems both reduced breast engorgement's pain and hardness. (2002) (Sweet L, Vasilevski V).

One non-pharmacological method for treating breast engorgement is the use of alternately hot and cold compresses. If heat is administered to engorged breasts, blood flow can be increased. Another non-pharmacological method of treating breast engorgement is using ice gel packs. According to Lamadah, Sahar Mansour, et al. (2002), using ice is supposed to be relaxing and to cause vasoconstriction, which slows blood flow to the area and is anticipated to lessen engorgement.

The use of both cold and hot compresses is equivalent to reducing breast soreness and swelling in postpartum women. It has been shown that the discomfort caused by breast engorgement could be reduced more effectively with heat and cold treatments than with only cold cabbage leaves. Due to the fact that they are more readily available, frequently easier to use, more useful, and cheaper than medical therapies, these non-medical treatments are becoming more and more popular as therapeutic options. These prevalent problems can be resolved with quick safeguards and frequent, affordable therapy. Breast engorgement can be reduced with cooled cabbage leaves, heat compression, and other methods (Napisah, Pipih, et al., 2021).

Massage, milk expression, and the use of hot and cold packs are some of the alternative therapies that are widely used in the treatment of disorders like engorgement, blocked ducts, and mastitis. Cool gel packs and cool cabbage leaves provide the most comfort for discomfort and rigidity, according to a study that compared their effects on breast engorgement. It is advised to use heat therapy prior to or throughout a feed or expression to encourage the flow of production and release obstructions in overflowing or enlarged breasts, as well as cold therapy afterwards to relieve pain or minimize inflammation and swelling (Sweet, L., and Vasilevski, 2022). This is identical to how both warm and cold compresses, frequently received breast draining, and massage to the breasts assisted with the swelling of the breast's signs and symptoms.

To promote milk secretion and lessen breast edema, cold packs and the leaves of cabbage should be administered to the filled breast for twenty minutes. Before eating, using hot water to relieve pain and relax opens blood vessels and boosts the flow of oxygen and nutrients to the area around the mouth. Vasodilatation, increased permeability and cell metabolism, anesthesia, and increased circulation are some of the physiological impacts of heat. By widening adjacent capillaries, which enhances blood flow and aids in the body's ability to reabsorb the excess fluid in the breasts (Zagloul MC, Naser EG, Hassan, 2020).

By alternately using warm and cold compresses, breast engorgement can be treated without the use of drugs. Alternative non-pharmacological treatments to reduce breast engorgement include ice gel packs. The application of ice is believed to be relaxing and to produce vasoconstriction, which lowers blood flow to the skin and is supposed to minimize engorgement. Non-medical treatments are increasingly being accepted as viable therapeutic options since they are more widely available, frequently simple to use, practical, and more economical than medical care (Lamadah, Sahar Mansour, et al., 2021).

Breastfeeding should be started as soon as feasible after birth, ideally within an hour. This reduces the risk of swelling in mothers and protects the baby from illnesses. Compresses that are warm are a highly safe technique to ease discomfort and make it easy to express milk; there is no need for medication, and there are no side effects to be concerned about. Heat therapy is the application of dry or moist heat to the skin. Heat can be deep or at the surface. To apply superficial heat, one can utilize warm baths, hot packs, hot soaking compresses (Farshidfar, Bahar, et al., 2020).

Breast engorgement happens about three- or four-days following birth when milk from the breast fills the breast for the first time. It usually comes accompanied by discomfort, warmth, and even fever. The skin seems red, shiny, and hard. A sudden rise in the production of milk, vascular and lymphatic obstruction, and interstitial edema all contribute to it. Inadequate nursing was also done. Engorgement can be effectively treated either by draining the engorged breast or, more usually, by holding the newborn on the breast. Cold packs and leaves of cabbage should be administered to the overfilled breast for around a half-hour to ease discomfort in order to promote milk ejection and lessen breast swelling (Zagloul, M. C., et al., 2020).

Warm compression is the term for utilizing heat to enhance blood flow around the breast. In a previous study, the principal researcher placed a warm, moist gel pack under the armpits, on top of the shoulder, and around the breast region. In order to soften the breast area, warmed, moistened gel packs (37.5–40 °C) were also administered. After that, fingertips ran across the nipples and areolae. The results of the investigations showed that starting lactation sooner, even right after birth, would lower the likelihood of swelling (Eittah, H.F.A., and Ashour, E.S.S., 2019).

By improving blood flow and avoiding blockage of the milk-secreting ducts, breast care aims to promote the production of breast milk. During the first few days after delivery, overflowing the breasts with milk is common. The result is painful, rigid, and swollen breasts. Additionally, this may result in nipple injury, mastitis, reduced production of milk, and an early end to nursing. Studies on a variety of therapies and methods, such as cabbage leaves, cold gel packs, and herbal compresses, have demonstrated their efficacy in the treatment of breast engorgement (Yulia, I., Widowati, & Novelia, 2022).

Breast engorgement can be treated using a few different techniques. Alternating hot and cold massages as well as cold leaves of cabbage were shown to be effective for applying heat to the breasts prior to feeding. Breast massage therapy, milk expression, and the rubbing in of heated ginger, olive oil, and cabbage leaves are additional treatments for breast engorgement that can be used because they are easily accessible and affordable. Warm and cold compresses work better at relieving breast engorgement pain than cold cabbage leaves (Khosravan, Shahla, et al., 2017).

Using the leaves of cabbage as both a warm and cold compress can be one of the most successful natural therapies for breast engorgement, according to a number of studies in the literature. Compresses are put in a freezer for 20 to 30 minutes after breastfeeding to create a cold compress, which is then placed on the clean breast. This compress is applied either once or twice a day for 15 to 20 minutes. Mothers might use a damp cloth to apply a hot compress to the breasts after nursing. The water's real temperature is between 43 and 46 °C. While being applied to the breast for 15-20 minutes, the compresses are frequently changed for 1-2 minutes (ZHÜNER, Y., & ZERDOAN, N., 2022).

1.2.1.4 Section D: The role of nurse regarding breast engorgement

Many women experience a range of mental, physical, and behavioral changes in the early postpartum period. The availability of teaching resources like manuals or mock models, as well as educational programs tailored specifically to breastfeeding mothers' medical needs, would be beneficial to them. Moms might continue post-discharge follow-up in order to evaluate the effectiveness of the therapy in terms of breastfeeding. In order to effectively breastfeed their children and increase their confidence to prevent breast engorgement, the medical professional can give women the knowledge and skills they need, such as position and latching (Huda, Mega Hasanul, et al., 2022).

Nurses are more equipped to provide women with both physical and emotional support as well as to handle breast engorgement issues. Receiving a compress that is warm helps to promote milk flow and reduce breast edema. Postpartum mothers may also gain a lot from utilizing cold packs to reduce breast engorgement. Nurses promote the need for competent, specialized assistance in managing the consequences of lactation in order to enhance the well-being and health of mothers and newborns. In order to apply technique during breastfeeding their children and avoid breast engorgement, nurses should also teach and show milk expression to women (El-Saidy TM, Aboushady RM., 2016).

The healthcare provider should be educated about the best clinical practices for breastfeeding, inform expectant moms about the advantages of breastfeeding, and offer guidance on how-to carry-on nursing. Encourage short, frequent skin-to-skin interactions, settling in, and supporting nursing mothers as soon as feasible. Women should be urged to learn how to spot and react to their baby's feeding cues. Additionally, mothers should get education regarding the negative impacts of using bottles and pacifiers for infants (World Health Organization, 2020).

The nurses should keep monitoring the breastfeeding mother to make sure she feeds the child every two hours without missing a meal, especially at night. Mothers should be instructed to alternate feeding the baby from each breast, wait until the baby has finished feeding on one breast before moving on to the other, ensure that the baby is in the correct position during feeding, and use the correct latch during breastfeeding. In order to improve the standard of care, nurses must promote skin-to-skin contact (Gresh, Ashley, et al., 2019).

The nurse should organize a continuing education program for the staff so they can stay current on breastfeeding promotion strategies. The nurse manager should motivate the medical team to implement education programs by providing expectant women and postpartum mothers with sufficient knowledge concerning the development of advantageous breastfeeding advantages and practices. All expectant mothers should get advice on the benefits and management of breastfeeding as part of prenatal nursing care (Lavanya, K., & Shaji, J. H., 2023).

The positive effects of nurses on the health and wellness of mothers, babies, and families by providing professional and informed care in the administration of breastfeeding. A healthcare professional should also demonstrate their ability by leading, showcasing their talents, helping, and determining the issue. The main goal of engorgement in the breast control is to comfortably accomplish, maintain, and regulate the milk from the breast flow (Hassan, H., et al., 2020) as well as to efficiently remove milk from the breast by preventing engorgement by using the infant or expression.

An equilibrium of placement, connection, and sucking is necessary for breastfeeding. The phrases "positioning" and "attachment" relate to the infant's placement in relation to the mother's body as well as the amount of the areola and breast tissue that is present in the infant's oral cavity. In order to ensure the mother's position, the baby's ability to latch onto the

breast, and the mother's ability to swallow effectively, the caregiver has to maintain proper feeding technique. An effective breastfeeding technique is necessary to start breastfeeding, maintain milk flow, and reduce feeding difficulties in order to avoid any future complications (Tiruye et al., 2018).

Making sure the woman is in good physical shape, able to care for her child, and informed about nursing and breast engorgement is the major objective of postpartum care. Engorgement occurs less frequently in mothers who start nursing soon away after giving birth. It's okay to keep nursing often. If both breasts are still sore after breastfeeding, the nurse can apply a cold compress to reduce swelling. Use a cold bag of cabbage, a cold pack, or a frozen damp cloth. 2018; Masoud, A. A. M.

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