

A comparative study to assess the effectiveness of olive oil versus coconut oil on breast engorgement among postnatal mothers admitted in selected hospitals of Pune city

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ABSTRACT

Introduction: Breast engorgement, a common postpartum condition, occurs due to increased milk production in the first week after childbirth, causing swelling, pain, and discomfort. Natural remedies such as olive oil and coconut oil are gaining attention for their anti-inflammatory and soothing properties. **Aim of the Study:** To assess and compare the effectiveness of olive oil versus coconut oil on breast engorgement among postnatal mothers in selected hospitals of Pune city. **Methodology:** A 2-group pre-test post-test design was adopted, involving 60 postnatal mothers with breast engorgement selected through non-probability sampling. Participants were divided equally into olive oil and coconut oil groups. Breast massage (2.5 ml oil) was applied twice daily for 5 minutes over 3 consecutive days using circular motions and gentle strokes. Breast engorgement was assessed before and after the intervention using a validated six-point observational checklist. Demographic data including age, education, occupation, parity, type of delivery, and breastfeeding status were recorded. **Results:** In the olive oil group, pretest mean breast engorgement score of 4.3 reduced to 1.5 post-intervention ($t=17.3, p<0.05$). In the coconut oil group, pretest score of 4.4 decreased to 2.3 ($t=15, p<0.05$). Comparative analysis revealed that the mean reduction in the olive oil group (2.8) was significantly greater than the coconut oil group (2.2) ($t=2.9, p<0.05$). Age, postpartum day, and day of engorgement onset were significantly associated with breast engorgement. **Conclusion:** Both olive oil and coconut oil massages effectively reduced breast engorgement among postnatal mothers, with olive oil showing superior results. Regular massage with olive oil is a safe, natural, and affordable intervention to enhance maternal comfort and breastfeeding outcomes.

KEYWORDS: Breast engorgement, postpartum mothers, olive oil, coconut oil, breast massage, non-pharmacological intervention..

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INTRODUCTION

Breast engorgement, also known as early postpartum engorgement, is the swelling of breasts that occurs shortly after childbirth. It results from the transition from the first stage of lactation, which begins during pregnancy, to the second stage that starts a few days after delivery when milk production increases. During this phase, blood and lymph flow to the breasts increases, causing a higher volume of fluid in the breast tissues. This accumulation can lead to discomfort, swelling, and other related symptoms.¹

Breast engorgement typically occurs three to five days postpartum, though it can appear as late as day nine or ten. It is characterized by swelling, firmness, and pain, particularly in the lower breast regions. Less commonly, it may be accompanied by fever, chills, or sweating. Engorgement can also result from an imbalance between milk production and removal, making it more frequent in individuals who pump. Severe engorgement may hinder infant latching. While systemic symptoms may suggest infection, they often reflect inflammation. Persistent warmth, redness, or progressive symptoms may indicate mastitis, highlighting the need for timely medical evaluation and management.²

Natural remedies for postnatal breast engorgement and pain include applying cold compresses to reduce swelling, using warm compresses or a warm shower to encourage milk flow, and gently massaging the breasts to improve circulation and milk expression. Frequent and effective breastfeeding or pumping is crucial for emptying the breasts, while wearing a supportive, loose bra can offer comfort and prevent further constriction³.

For breast engorgement, the natural use of oils such as olive oil and coconut oil has gained attention due to their anti-inflammatory and moisturizing properties. While both the oils have been traditionally used in skincare and therapeutic massage, limited scientific evidence exists comparing their effectiveness in managing breast distension.⁴

NEED OF THE STUDY

The global incidence of breast engorgement varies, with studies reporting that 72% of postpartum mother's experience some degree of it, particularly within the first two weeks after delivery. In developing, where breastfeeding support may be limited, the incidence can be even higher. Based on research, approximately 20-25% of lactating mothers develop severe breast

engorgement, which significantly impacts their breastfeeding experience and maternal well-being. In southern state of India, the study found that 65% to 75% of lactating mothers experienced breast fullness. This indicates a high prevalence of the condition among breastfeeding mothers. Incidence in Ethiopia, a study reported that 36.1% of lactating women experienced breast engorgement. This highlights the occurrence of the condition in a developing country setting. Various non-pharmacological interventions, including warm compresses, cold therapy, cabbage leaves, and gentle massage, have been recommended to alleviate engorgement symptoms.

However, there is a growing interest in natural remedies, including the use of oils, due to their ease of application, affordability, and potential therapeutic benefits. Olive oil and coconut oil are widely used for their effective measures. Olive oil contains polyphenols and antioxidants that help reduce inflammation and improve skin elasticity. While coconut oil has antimicrobial and soothing properties that may relieve pain and discomfort, the study revealed that olive oil was the most effective in managing nipple soreness, followed by coconut oil, with breast milk showing the least effect.

The researcher chose this study to evaluate effective, natural interventions for breast engorgement, a common postpartum condition affecting maternal comfort and breastfeeding. Studies indicate a high prevalence of engorgement, particularly in developing regions, with significant impact on maternal well-being. While non-pharmacological methods like compresses and massage are commonly used, there is growing interest in oils such as olive and coconut oil for their anti-inflammatory, antimicrobial, and soothing properties. Comparing these oils' effectiveness provides evidence-based guidance for postnatal care. The study aims to identify the most beneficial, accessible, and safe intervention to alleviate breast engorgement and enhance breastfeeding outcomes.

AIMS OF STUDY

The study aim was to assess the effectiveness of olive oil versus coconut oil on breast engorgement among postnatal mothers admitted in selected hospitals of Pune city.

MATERIAL AND METHODS

A 2-group pre-test post-test design was adopted to compare the effectiveness of olive oil and coconut oil on breast engorgement among postnatal mothers. The accessible population included postnatal mothers experiencing breast engorgement from selected hospitals in Pune city. The independent variable was the type of oil (olive or coconut), while the dependent variable was breast engorgement. Demographic variables included age, education, occupation, gravida, type of delivery, gestational week, and breastfeeding status. A total of 60 postnatal mothers were selected through non-probability sampling, with inclusion criteria of breast engorgement and exclusion of those with mastitis or breast abscess. Data were collected using an observational checklist based on a six-point breast engorgement scale, validated by experts and presented in simple language with illustrations in English and Marathi. Mothers were informed about the procedure, and 2.5 ml of olive or coconut oil was applied to the breast. Massage was performed twice daily for 5 minutes over 3 consecutive days using circular motions, acupoint pressing, and gentle strokes from underarm to breast and from downward to upward, covering the entire breast and central areas. Breast engorgement was assessed before and after the intervention using the checklist.

RESULT

Section I: Description of samples (postnatal mothers) based on their personal characteristics

Table 1: Description of samples (postnatal mothers) based on their personal characteristics in terms of frequency and percentage

The majority of postnatal mothers were aged between 20–30 years (86.7%), had primary or secondary education (80.0%), and were homemakers (around 65%). Most were primipara (61.7%), on the 3rd postpartum day (53.3%), and had undergone LSCS delivery (76.7%). Breast engorgement commonly started on the 2nd day after delivery (71.7%), and most mothers had a gestational age of 38–42 weeks (51.7%). The majority were actively breastfeeding their babies (71.7%).

Section II: Analysis of data related to the Assessment of breast engorgement in olive oil group n=30

Table no 1

Level of Breast Engorgement (Olive Oil Group - Pretest)	Frequency (f)	Percentage (%)
Soft, no change in breast	0	0.00%
Slight change in breast	1	3.30%
Firm, non-tender breast	7	23.30%
Firm, beginning tenderness in breast	10	33.30%
Firm, tender breast	7	23.30%
Very firm breast	5	16.70%
Total	30	100%

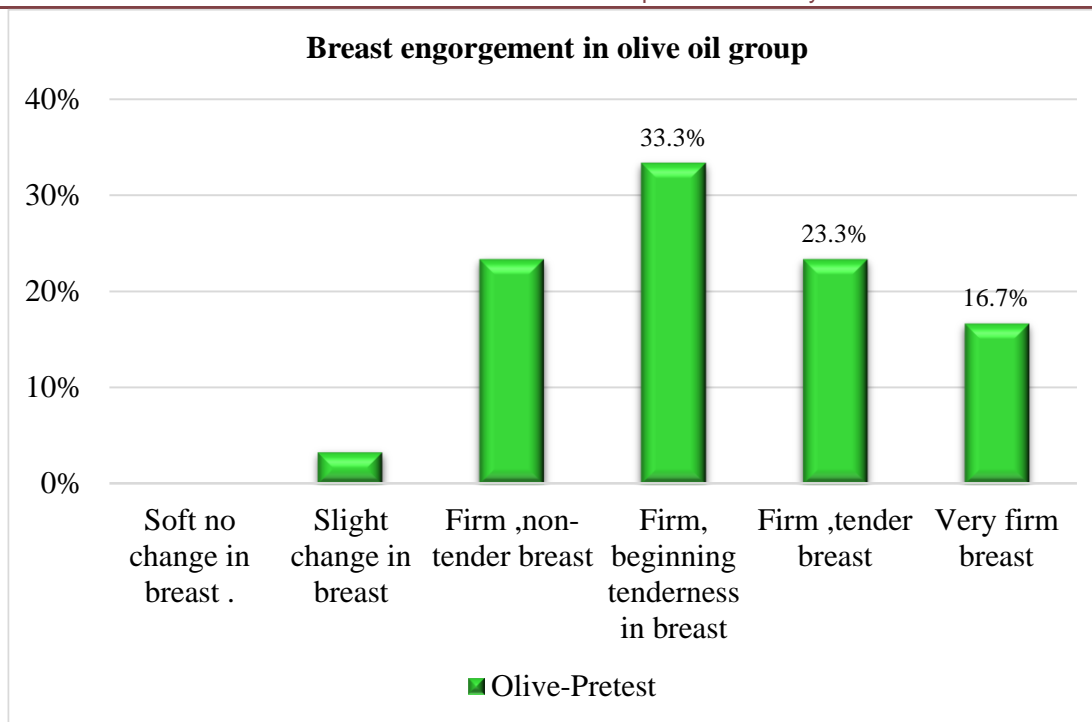


Figure no 1: Bar diagram related to Assessment of breast engorgement in olive oil group

The data in Table 1 and Figure 1 indicate that the majority of postnatal mothers in the olive oil group during the pretest experienced firm breasts with beginning tenderness (33.3%), followed by firm, non-tender breasts (23.3%) and firm, tender breasts (23.3%). A smaller proportion (16.7%) had very firm breasts, while only 3.3% showed a slight change in the breast, and none had soft breasts with no change

Section III: Analysis of data related to the Assessment of breast engorgement in coconut oil group
n=30

Table no 2

Table No. 2: Level of Breast Engorgement (Coconut Oil Group - Pretest)	Frequency (f)	Percentage (%)
Soft, no change in breast	0	0.00%
Slight change in breast	0	0.00%
Firm, non-tender breast	7	23.30%
Firm, beginning tenderness in breast	9	30.00%
Firm, tender breast	8	26.70%
Very firm breast	6	20.00%
Total	30	100%

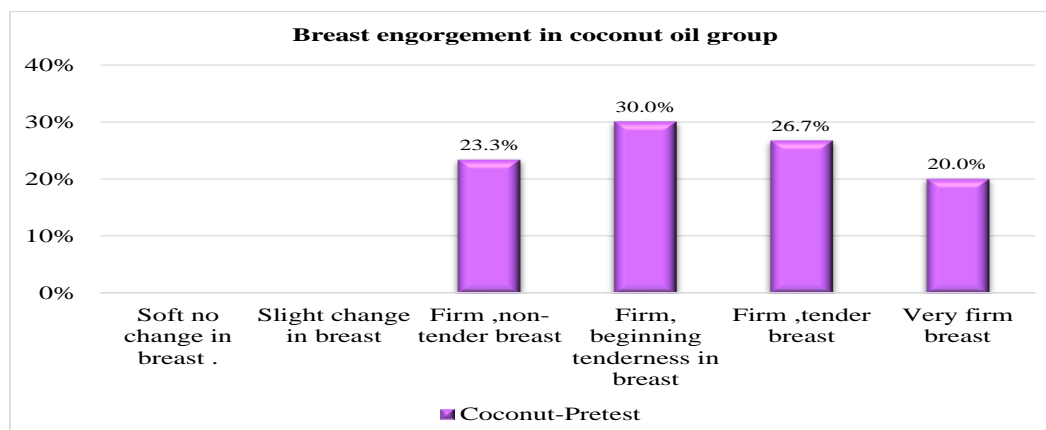


Figure no 2: Bar diagram related to Assessment of breast engorgement in coconut oil group

The data reveal that the majority of postnatal mothers in the coconut oil group during the pretest experienced **firm breasts with beginning tenderness (30%)**, followed by **firm, tender breasts (26.7%)** and **firm, non-tender breasts (23.3%)**. A smaller proportion (20%) had **very firm breasts**, while none reported **slight or no changes**.

Section IV: Analysis of data related to effectiveness of olive oil on breast engorgement

Applied paired t-test for the Effectiveness of olive oil on breast engorgement. Average breast engorgement score in pretest was 4.3 which reduced to 1.5 in posttest. T-value for this test was 17.3 with 29 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average breast engorgement score in posttest is significantly less than that in pretest. It is evident that the olive oil massage is significantly effective in reducing the breast engorgement

Section V: Analysis of data related to the Effectiveness of coconut oil on breast engorgement

Applied paired t-test for the Effectiveness of coconut oil on breast engorgement. Average breast engorgement score in pretest was 4.4 which reduced to 2.3 in posttest. T-value for this test was 15 with 29 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average breast engorgement score in posttest is significantly less than that in pretest. It is evident that the coconut oil massage is significantly effective in reducing the breast engorgement.

Section VI: Analysis of data related to the comparison of the effectiveness of olive oil versus coconut

Applied two t-test for the comparison of the effectiveness of olive oil versus coconut oil massage on breast engorgement. Average reduction in breast engorgement score in olive oil massage group was 2.8 which is 2.2 in coconut oil group. T-value for this test was 2.9 with 58 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average reduction in breast engorgement score in coconut oil massage group is significantly less than that in olive oil massage group. It is evident that the olive oil massage is significantly more effective in reducing the breast engorgement than that in coconut oil massage group.

Section VII: Analysis of data related to the association of breast engorgement among post-natal mothers with their demography.

Since p-values corresponding to age, postpartum day and engorgement started day were small (less than 0.05), the demographic variables age, postpartum day and engorgement started day were found to have significant association with breast engorgement among post-natal mothers

DISCUSSION

The present study aimed to compare the effectiveness of olive oil and coconut oil massage on breast engorgement among postnatal mothers. The findings revealed that both olive oil and coconut oil significantly reduced breast engorgement scores; however, olive oil was found to be more effective. The mean pretest score for the olive oil group decreased from 4.3 to 1.5 after intervention, while in the coconut oil group, it reduced from 4.4 to 2.3. The calculated t-values and corresponding p-values (<0.05) confirmed that both interventions were statistically significant, with olive oil producing greater improvement.

These findings are consistent with the study conducted by **Ghattas et al. (2022)**, which demonstrated that olive oil massage effectively relieved breast engorgement and improved breastfeeding comfort among postnatal mothers. Similarly, **Faridah and Widaningsih (2022)** reported that the use of olive oil in postpartum breast care significantly reduced breast hardness and discomfort, supporting the present results. Another study by **Abo El-Fetoh et al. (2021)** compared different natural remedies and found that olive oil had superior anti-inflammatory effects due to its rich polyphenols and antioxidants, leading to better outcomes in engorgement management.

In comparison, coconut oil also proved beneficial in alleviating engorgement symptoms, consistent with its antimicrobial and soothing properties reported in prior research. However, the slightly lower mean reduction in engorgement score indicates that while coconut oil is effective, olive oil's deeper absorption and anti-inflammatory action make it more potent.

The study "Effect of Cabbage Leaves, Olive Oil Massage and Warm Compress on Relief of Breast Engorgement" also reported that olive oil massage was among the most effective interventions for reducing breast pain and swelling.

Overall, the present study supports the effectiveness of both oils but highlights olive oil as the more effective intervention. Regular breast massage using olive oil can be recommended as a simple, safe, and affordable method to manage breast engorgement in postnatal mothers.

CONCLUSION

The present study aimed to assess and compare the effectiveness of olive oil and coconut oil massages in reducing breast engorgement among postnatal mothers in selected hospitals of Pune city. The findings revealed that both interventions were effective in alleviating symptoms of breast engorgement; however, olive oil demonstrated greater effectiveness. In the olive oil group, 33.3% of mothers initially reported moderate to severe engorgement with a mean score of 4. After the intervention, 53.3% of mothers experienced no or minimal symptoms, and the mean score decreased to 1, indicating a significant improvement. Similarly, in the coconut oil group, 30% of mothers began with a mean score of 4, which improved to 46.7% with a mean score of 2 after the massage.

The statistical analysis using paired t-tests confirmed a significant reduction in engorgement scores in both groups ($p < 0.05$). However, the mean reduction was greater in the olive oil group, signifying that olive oil was more effective in reducing pain, swelling, and discomfort. These results suggest that olive oil, due to its anti-inflammatory and skin-penetrating properties, offers superior relief compared to coconut oil. Hence, regular breast massage using olive oil can be recommended as a safe, natural, and affordable intervention for managing breast engorgement among postnatal mothers.

Authors contribution: - The complete study was carried by Ms. Shivani. S. Suryawanshi under the guidance of Dr. Sujita Devi. The corresponding author for this study is Ms. Shivani Suryawanshi.

Conflict of interest: - None to declare

Statement on human right: - this study is approved institutional ethical committee, Bharati Vidyapeeth (Deemed to Be University) college of nursing. Informed consent was taken from each participants voluntary participation was the key to sample selection.

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