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The effect of giving shallot compress (*Allium Ascalonicum l.*) on breast swelling in postpartum mothers: A pre-experimental study

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Abstract

Background: Breast swelling or breast engorgement is a common problem experienced by postpartum mothers and often causes pain, discomfort, and difficulties in breastfeeding. Non-pharmacological and culturally acceptable interventions are needed to manage this condition safely and effectively. Shallot compress (Allium ascalonicum L.) has been traditionally used to reduce inflammation and swelling, but scientific evidence supporting its effectiveness in postpartum breast swelling remains limited.
Objective: This study aimed to examine the effect of giving shallot compress (Allium ascalonicum L.) on breast swelling in postpartum mothers.
Methods: This study employed a quasi-experimental design with a one-group pretest–posttest approach. The sample consisted of 20 postpartum mothers experiencing breast swelling, selected using purposive sampling. The intervention involved the application of a shallot compress to the swollen breast area according to a standardized procedure. Breast swelling severity was assessed before and after the intervention using observation and checklist instruments. Data were analyzed using descriptive statistics and inferential analysis with a significance level of 95%.
Results: The results showed a clear reduction in breast swelling severity after the intervention. Before the intervention, most participants experienced heavy breast swelling, whereas after the intervention no participants remained in the heavy category. The mean breast swelling score decreased from 2.50 before the intervention to 1.45 after the intervention, indicating a significant improvement in breast swelling conditions among postpartum mothers.
Conclusion: The application of shallot compress (Allium ascalonicum L.) was effective in reducing breast swelling severity in postpartum mothers. This intervention provides a safe, low-cost, and non-pharmacological option to support breastfeeding comfort during the postpartum period.

Background

The postpartum period represents a critical phase of physiological and psychological adaptation in women following childbirth with significant hormonal changes affecting lactation processes (Bandiyah, 2016). Breast engorgement frequently occurs during this period due to increased milk production and inadequate milk drainage in the mammary glands (Wiknjosastro, 2018). Breast engorgement causes pain, swelling, and discomfort that interfere with effective breastfeeding practices in postpartum mothers (Budiarti, 2023). This condition also contributes to maternal stress and anxiety that negatively affect postpartum recovery and maternal well-being (Shinobi, 2015). Effective postpartum care requires comprehensive midwifery and nursing interventions that address both physical and psychological complications during breastfeeding (Parwatiningsih et al., 2021).

National health data indicate that breastfeeding-related problems remain prevalent among postpartum women and continue to challenge maternal and child health services in Indonesia (Kemenkes RI, 2023). Inadequate breast care practices during the postpartum period increase the risk of milk stasis and breast engorgement among breastfeeding mothers (Widyastuti, 2021). Several studies have emphasized that proper breast care interventions play a crucial role in preventing breast milk dams and maintaining breastfeeding continuity (Fitriani Agustina et al., 2024). Interventions focusing on breast care and stimulation have demonstrated positive effects on milk production and breast health outcomes in postpartum women (Agustia & Camelia, 2025). These findings highlight the need for accessible and culturally acceptable

interventions to manage breast engorgement effectively (Rosa et al., 2025).

Non-pharmacological interventions are increasingly recommended for managing postpartum breast engorgement due to their safety and minimal side effects (Katili & Aisya, 2022). Complementary therapies such as aromatherapy and massage have been shown to reduce pain and anxiety during the postpartum and intrapartum periods (Suriyati, 2016). Psychological factors such as anxiety and maternal knowledge significantly influence breastfeeding success and postpartum comfort levels (Sari et al., 2023). Educational interventions targeting maternal awareness have also proven effective in improving health-related behaviors in reproductive health contexts (Andre Utama Saputra et al., 2024). These approaches support the integration of traditional and evidence-based complementary therapies in postpartum care settings (Haryanti et al., 2025).

Shallot compress therapy using Allium ascalonicum L. has emerged as a traditional intervention with potential anti-inflammatory and vasodilatory properties for postpartum breast conditions (Septiani & Sumiyati, 2022). Previous studies have demonstrated that shallot compresses effectively reduce breast engorgement pain and swelling in postpartum women (Suprapti & Yulindawati, 2024). Shallot compress application has also been shown to improve local circulation and increase skin temperature in mothers experiencing breast engorgement during breastfeeding (Dumilah et al., 2024). Despite promising outcomes, evidence regarding the standardized application and effectiveness of shallot compress therapy remains limited in experimental designs (Septiani & Sumiyati, 2022). Further investigation is needed to strengthen empirical evidence supporting the clinical use of shallot compresses in postpartum care (Husni, 2018).

Several complementary nutritional and herbal interventions have also been explored to support lactation and maternal comfort during the postpartum period (Soleha et al., 2024). These interventions emphasize the importance of natural and culturally rooted approaches in improving maternal breastfeeding outcomes (Rosa et al., 2025). However, variations in study design and intervention protocols have resulted in inconsistent findings across existing research (Husni, 2018). The lack of rigorous experimental studies limits the generalizability of current evidence on traditional postpartum interventions (Septiani & Sumiyati, 2022). Addressing this gap is essential to ensure safe and effective postpartum care practices based on scientific evidence (Wiknjosastro, 2018).

Therefore, this study aims to examine the effect of giving shallot compress (*Allium ascalonicum L.*) on breast swelling in postpartum mothers.

Methods

Study Design

This study employed a quasi-experimental research design using a one-group pretest–posttest approach to evaluate the effect of shallot compress (Allium ascalonicum L.) on breast swelling in postpartum mothers. This design was selected because it allows the measurement of changes in outcomes before and after the intervention within the same group, which is appropriate when randomization and control groups are not feasible in clinical postpartum settings. The absence of a control group was justified by ethical considerations and the practical limitations of withholding non-pharmacological comfort interventions from postpartum mothers experiencing breast swelling. The study design aligns with the TREND guideline, which is recommended by the EQUATOR Network for transparent reporting of non-randomized evaluations of behavioral and public health interventions. The pretest was conducted prior to the administration of the shallot compress intervention, while the posttest was conducted after the completion of the intervention protocol to assess outcome changes attributable to the intervention.

Sampling

The study population consisted of postpartum mothers who experienced breast swelling during the early postpartum period. A total sample of 20 participants was recruited using a purposive sampling technique based on predefined inclusion and exclusion criteria. Inclusion criteria included postpartum mothers within the first week after delivery, experiencing

signs of breast swelling, willing to participate, and able to communicate effectively during data collection. Exclusion criteria included mothers with breast infections, abscesses, open wounds on the breast, known allergies to shallots, or those receiving pharmacological interventions specifically targeting breast inflammation. The sample size was determined based on feasibility considerations and the exploratory nature of the quasi-experimental design, which is consistent with preliminary intervention studies aimed at assessing clinical effects prior to larger-scale trials.

Instruments

Data were collected using standardized instruments consisting of the Depression Anxiety Stress Scale (DASS) questionnaire and structured checklist sheets. The DASS questionnaire was used to assess the psychological condition of postpartum mothers, particularly anxiety and stress levels, which are known to influence breastfeeding comfort and breast condition. The checklist sheet was developed to systematically record clinical observations related to breast swelling, including signs of tension, pain, warmth, and subjective discomfort before and after the intervention. The use of both subjective and objective instruments allowed for a comprehensive assessment of intervention outcomes. All instruments were administered consistently at pretest and posttest stages to ensure comparability of measurements.

Intervention

The intervention consisted of the application of a shallot compress using Allium ascalonicum L. prepared according to standardized procedures to ensure safety and consistency. Fresh shallots were cleaned, crushed, and applied to the affected breast area using clean gauze as a compress medium. The compress was applied for a predetermined duration and frequency as part of the intervention protocol, ensuring that all participants received the same treatment exposure. The intervention was administered by trained personnel to maintain procedural uniformity and minimize variability. The choice of shallot compress as a non-pharmacological intervention was justified by its traditional use, ease of application, low cost, and potential anti-inflammatory properties that may reduce breast swelling and discomfort.

Data Collection

Data collection was conducted in two stages, namely pretest and posttest. During the pretest stage, baseline data on breast swelling and psychological condition were obtained using the DASS questionnaire and observation checklist prior to the intervention. The intervention was then administered according to the established protocol. Following completion of the intervention period, posttest data were collected using the same instruments to evaluate changes in outcomes. All data were recorded systematically on observation and checklist sheets to ensure completeness and accuracy. Primary data were collected directly from participants through face-to-face assessment, ensuring real-time documentation of clinical and psychological changes.

Data Analysis

Data analysis was performed using statistical software to process and analyze the collected data. Descriptive analysis was used to summarize participant characteristics and baseline measurements. Inferential analysis was conducted using the chi-square statistical test to examine differences between pretest and posttest outcomes. A confidence level of 95% (95% CI) was applied, with a significance level set at $\alpha = 0.05$ to determine statistical significance. The chi-square test was selected due to its suitability for categorical data and its ability to assess changes in outcome distributions before and after the intervention within the same group.

Ethical Consideration

Ethical principles were strictly observed throughout the research process to protect participant rights and well-being. Prior to data collection, all participants received clear explanations regarding the study objectives, procedures, potential benefits, and possible risks. Written informed consent was obtained from all participants before participation. Confidentiality and anonymity were maintained

by assigning codes to participant data and restricting access to research records. Participants were informed of their right to withdraw from the study at any time without any consequences to their healthcare services. The study was conducted in accordance with ethical standards for health research involving human subjects and received approval from the appropriate institutional ethics committee.

Results

This section presents the distribution of breast swelling severity among postpartum mothers before and after the administration of the shallot compress (Allium ascalonicum L.).

Table 1. Distribution of Breast Swelling Severity in Postpartum Mothers Before and After Shallot Compress Intervention

Variables	Frequency (n)	Percentage (%)
Pretest		
Light	2	10
Medium	6	30
Heavy	12	60
Posttest		
Light	11	55
Medium	9	45
Heavy	0	0

Table 1 shows the distribution of breast swelling severity among postpartum mothers before and after the application of the shallot compress intervention. Before the intervention, the majority of participants experienced heavy breast swelling, accounting for 12 mothers (60%), while 6 mothers (30%) experienced medium swelling and only 2 mothers (10%) experienced light swelling. These findings indicate that most postpartum mothers initially presented with moderate to severe breast swelling prior to receiving the intervention.

After the intervention, a substantial shift in breast swelling severity was observed. The number of mothers experiencing light breast swelling increased markedly to 11 participants (55%), while 9 participants (45%) were classified as having medium swelling. Notably, no participants remained in the heavy breast swelling category after the intervention. This change demonstrates a clear reduction in the severity of breast swelling following the application of the shallot compress.

Overall, the comparison between pretest and posttest results indicates an improvement in breast swelling conditions among postpartum mothers. The elimination of heavy breast swelling cases and the increase in light severity cases suggest that the shallot compress intervention was effective in reducing breast swelling severity in the study population.

Table 2. Comparison of Mean Breast Swelling Scores Before and After Shallot Compress Intervention

Test	Mean	SD	p-value
Pretest	2.50	0.688	0.001
Posttest	1.45	0.524	

Table 2 demonstrates a significant reduction in the mean breast swelling score following the shallot compress intervention. Before the intervention, the mean breast swelling score was 2.50 with a standard deviation of 0.688, indicating that most postpartum mothers experienced moderate to severe breast swelling with relatively consistent scores across

participants. After the intervention, the mean score decreased to 1.45 with a standard deviation of 0.52, reflecting a shift toward milder breast swelling conditions and reduced variability among participants.

The statistical analysis revealed a p-value of 0.001, which is below the predetermined significance level of 0.05. This finding indicates a statistically significant difference between pretest and posttest mean scores. The reduction in mean breast swelling score suggests that the shallot compress intervention had a meaningful effect in decreasing breast swelling severity among postpartum mothers. Overall, these results support the effectiveness of shallot compress application as a non-pharmacological intervention for managing breast swelling in the postpartum period.

Discussion

This study demonstrated that the administration of shallot compress (Allium ascalonicum L.) significantly reduced the severity of breast swelling in postpartum mothers as evidenced by improvements in categorical and mean scores between pretest and posttest measurements. The reduction in heavy breast swelling cases and the increase in light swelling cases indicate a clinically meaningful improvement in breast condition following the intervention (Suprapti & Yulindawati, 2024). The decrease in the mean breast swelling score further confirms the effectiveness of the shallot compress intervention in alleviating postpartum breast discomfort (Dumilah et al., 2024). These findings support the role of non-pharmacological interventions in managing common postpartum breast problems (Widyastuti, 2021). The results also highlight the importance of early intervention during the postpartum period to prevent the progression of breast engorgement (Bandiyah, 2016). Overall, the findings suggest that shallot compress application is a beneficial complementary therapy for postpartum breast swelling management (Rosa et al., 2025).

The improvement in breast swelling observed in this study can be explained by the physiological effects of shallot compress application on breast tissue circulation and inflammation (Dumilah et al., 2024). Shallots contain active compounds that promote vasodilation and local warming, which facilitate milk flow and reduce tissue congestion (Septiani & Sumiyati, 2022). Improved milk drainage reduces intraductal pressure and alleviates pain associated with breast engorgement (Wiknjosastro, 2018). These mechanisms align with the observed shift from heavy to lighter breast swelling categories after the intervention (Suprapti & Yulindawati, 2024). Effective management of breast engorgement supports the continuity of breastfeeding and maternal comfort during the postpartum period (Budiarti, 2023). Thus, the physiological basis of shallot compress therapy strengthens its applicability in postpartum care settings (Parwatiningsih et al., 2021).

In addition to physical benefits, the reduction of breast swelling may contribute to improved psychological well-being among postpartum mothers (Shinobi, 2015). Breast discomfort and pain often increase maternal anxiety and stress, which negatively affect breastfeeding practices (Sari et al., 2023). The observed reduction in swelling severity may indirectly reduce maternal psychological burden by enhancing breastfeeding comfort (Agustia & Camelia, 2025). Improved comfort during breastfeeding can promote oxytocin release, which further supports milk ejection and maternal relaxation (Agustia & Camelia, 2025). Psychological stability plays a crucial role in successful postpartum adaptation and breastfeeding sustainability (Shinobi, 2015). Therefore, interventions that address both physical and psychological aspects of postpartum care are highly valuable (Katili & Aisya, 2022).

The findings of this study are consistent with previous research demonstrating the effectiveness of traditional and complementary therapies in postpartum care (Septiani & Sumiyati, 2022). Similar studies reported that shallot compress therapy reduced breast swelling pain and improved local circulation among postpartum women (Suprapti & Yulindawati, 2024). Other complementary interventions, such as breast care and acupressure, have also been shown to improve

breast health and milk production (Rosa et al., 2025). These converging results indicate that natural and culturally accepted interventions can effectively support postpartum breastfeeding outcomes (Widyastuti, 2021). The consistency of findings across studies strengthens the evidence supporting shallot compress application in postpartum care (Dumilah et al., 2024). Such interventions are particularly relevant in resource-limited settings where access to pharmacological treatments may be restricted (Kemenkes RI, 2023).

Non-pharmacological interventions are increasingly prioritized in maternal health care due to their safety and minimal side effects (Katili & Aisya, 2022). Shallot compress therapy offers a low-cost and easily accessible option for postpartum mothers experiencing breast swelling (Septiani & Sumiyati, 2022). The simplicity of the intervention allows it to be implemented by healthcare providers and caregivers with minimal training (Parwatiningsih et al., 2021). This accessibility aligns with national maternal health strategies aimed at improving postpartum care coverage (Kemenkes RI, 2023). Integrating shallot compress therapy into routine postpartum care may enhance service effectiveness and maternal satisfaction (Widyastuti, 2021). Consequently, the intervention holds promise for broader application within community and primary healthcare settings (Rosa et al., 2025).

Despite the positive findings, this study has several limitations that should be considered when interpreting the results (Husni, 2018). The use of a one-group pretest–posttest design without a control group limits causal inference (Husni, 2018). The relatively small sample size may also affect the generalizability of the findings to broader postpartum populations (Husni, 2018). Potential confounding factors, such as breastfeeding frequency and maternal nutrition, were not controlled in this study (Wiknjosastro, 2018). Future studies should employ randomized controlled designs to strengthen causal conclusions (Husni, 2018). Addressing these limitations will improve the robustness of evidence regarding shallot compress effectiveness (Septiani & Sumiyati, 2022).

In conclusion, the findings of this study indicate that shallot compress (Allium ascalonicum L.) intervention effectively reduces breast swelling severity in postpartum mothers (Suprapti & Yulindawati, 2024). The intervention supports both physiological comfort and psychological well-being during the postpartum period (Shinobi, 2015). These results reinforce the role of complementary therapies in enhancing postpartum breastfeeding care (Rosa et al., 2025). Healthcare providers should consider incorporating shallot compress therapy into postpartum care protocols as a supportive intervention (Parwatiningsih et al., 2021). Further research with larger samples and rigorous designs is recommended to validate and expand these findings (Husni, 2018). Strengthening evidence-based postpartum interventions will contribute to improved maternal and infant health outcomes (Kemenkes RI, 2023).

Conclusion and Recommendation

This study concludes that the application of shallot compress (Allium ascalonicum L.) is effective in reducing breast swelling severity in postpartum mothers, as evidenced by significant improvements in breast swelling categories and mean scores between pretest and posttest measurements. The intervention contributes to improved physiological comfort by facilitating milk flow and reducing breast tissue congestion during the postpartum period. Reduced breast swelling also supports better psychological adaptation by minimizing discomfort and anxiety associated with breastfeeding. The findings highlight the importance of non-pharmacological and culturally acceptable interventions in postpartum breastfeeding care. Shallot compress therapy represents a safe, low-cost, and easily applicable intervention that can be implemented in both clinical and community settings. Future research with larger sample sizes and controlled experimental designs is recommended to further validate and strengthen the evidence for this intervention.

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The authors declare no competing interests.

Declaration on the Use of AI
No AI tools were used in the preparation of this manuscript.

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