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The effectiveness of warm ginger compresses in reducing back pain among third trimester pregnant women at Arinda Clinic, Palembang City

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ABSTRACT

This study aimed to determine the effectiveness of warm ginger compresses in reducing back pain among third-trimester pregnant women. A quasi-experimental study with a one-group pretest–posttest design was conducted at Arinda Clinic, Palembang. A total of 46 third-trimester pregnant women experiencing mild to moderate low back pain were selected using purposive sampling. The intervention consisted of warm ginger compress application for 15–20 minutes per session, three times per week for two weeks. Pain intensity was measured using the Visual Analog Scale before and after the intervention. Data were analyzed using the Wilcoxon test. The results showed a significant decrease in back pain intensity after the intervention. Before treatment, most respondents experienced moderate pain, while after the intervention, most experienced mild pain and several respondents reported no pain at all. Statistical analysis indicated a significant difference between pretest and posttest pain scores ($p < 0.05$). In conclusion, warm ginger compress therapy is effective in reducing back pain intensity in third-trimester pregnant women and can be recommended as a safe and low-cost complementary non-pharmacological intervention in maternity care.

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1. Introduction

Low back pain (LBP) is one of the most common musculoskeletal complaints experienced by pregnant women, particularly during the third trimester (Amalia, Erika and Dewi, 2020). This condition arises due to physiological and biomechanical changes during pregnancy, such as weight gain, postural changes, ligament relaxation induced by the hormone relaxin, and a shift in the body's center of gravity (Rizqi *et al.*, 2023). The prevalence of back pain among pregnant women in Indonesia is reported to be relatively high, ranging from 60% to 70% (Widiyastika, Wardiyah and Rilyani, 2023). This condition not only reduces maternal quality of life but also interferes with daily activities, sleep, and readiness for childbirth (Friska, 2024).

Acoording to the *American College of Obstetricians and Gynecologists* (2022), pain management in pregnant women should avoid pharmacological therapy due to the risk of adverse effects on the fetus (Novelia, Rukmaini and Anisah, 2021). Therefore, non-pharmacological interventions such as heat therapy, postural exercises, massage, physiotherapy, and the use of warm compresses are considered the main safe and recommended options for reducing muscle tension and improving local blood

circulation (Munir *et al.*, 2022) (Susanti and Madhav, 2022) (Novelia, Rukmaini and Anisah, 2021). Local heat therapy can reduce pain perception through mechanisms of vasodilation, muscle relaxation, and increased tissue blood flow (Jesica and Amir, 2025)(Irma M. Yahya, Sarwan and Andini P. Napu, 2025).

One natural ingredient that has long been traditionally used in warm compress therapy is ginger (Rizqi *et al.*, 2023). Ginger contains active compounds such as gingerol, shogaol, and zingerone, which possess anti-inflammatory, analgesic, and antioxidant properties (Ni and Wardani, 2023). Several studies have shown that the application or consumption of ginger can reduce muscle pain, osteoarthritis, and dysmenorrhea through mechanisms involving the suppression of prostaglandin and pro-inflammatory cytokine production (Heriyanto, 2022)(Abidah and Anggraini, 2022). These effects make ginger a potential safe intervention for pregnant women with back pain complaints, provided it is used topically under proper supervision (Ni and Wardani, 2023).

From a scientific perspective, the potential superiority of warm ginger compresses over regular warm compresses can be explained by the synergistic interaction between thermal effects and ginger's bioactive compounds. The combination of warm compresses and ginger is believed to have a synergistic effect in reducing back pain in pregnant women (Irma M. Yahya, Sarwan and Andini P. Napu, 2025). Heat from the compress enhances the penetration of ginger's active compounds into the tissues, improves blood circulation, and stimulates thermal receptors that suppress pain signal transmission in the peripheral nervous system (Monazzami *et al.*, 2021) (Rizqi *et al.*, 2023). Meanwhile, ginger's bioactive compounds act at the cellular level to inhibit local inflammatory responses (Ni and Wardani, 2023). This approach is classified as a non-pharmacological complementary therapy that is safe, inexpensive, and easy to implement in primary healthcare facilities such as maternity clinics.

Several studies have demonstrated that warm ginger compresses are effective in reducing musculoskeletal pain intensity. A study by Abidah and Anggraini (2022) published in the Bali Medical Journal reported that the application of ginger compresses to third-trimester pregnant women for three sessions, each lasting 15 minutes, significantly reduced low back pain. These findings are consistent with those of Monazzami et al. (2021), who found that the group receiving ginger compresses experienced a greater reduction in Visual Analog Scale (VAS) scores compared to those receiving ordinary warm compresses among breastfeeding mothers with pain due to breast engorgement. Meanwhile, Handiana, Zulisa, and Husna (2024) explained that heat application increases the penetration of ginger's active compounds into subcutaneous tissues, thereby enhancing its analgesic and muscle relaxation effects (Abidah and Anggraini, 2022) (Monazzami *et al.*, 2021) (Handiana, Zulisa and Husna, 2024).

The consistency of findings across various studies indicates that warm ginger compresses have substantial potential as an effective and safe non-pharmacological intervention in reducing low back pain during pregnancy. However, most existing studies have been conducted on limited populations and employed quasi-experimental designs. Therefore, further research is needed at the primary care level, such as at Arinda Clinic, Palembang, to confirm the effectiveness of warm ginger compresses in reducing back pain among third-trimester pregnant women within the context of local settings and evidence-based midwifery practice.

This condition highlights a research gap, particularly in the context of private clinics in urban areas such as Palembang, which have patient characteristics different from rural populations. Arinda Clinic, Palembang, is one of the midwifery service facilities that frequently receives complaints of back pain from third-trimester pregnant women; however, warm ginger compress therapy has not yet been implemented as part of routine intervention. Therefore, this study is important to evaluate the effectiveness of warm ginger compresses in reducing back pain in third-trimester pregnant women as an effort to develop evidence-based, safe, natural, and contextual midwifery practice.

Although previous studies have reported the potential benefits of ginger-based therapies in alleviating musculoskeletal pain during pregnancy, several research gaps remain. Most existing studies were conducted in community or home-based settings and did not specifically evaluate the effectiveness of warm ginger compresses in a clinical maternity care setting. In addition, many studies did not focus exclusively on third trimester pregnant women, a period when back pain is most prevalent due to increased fetal weight and postural changes. Furthermore, variations in intervention methods

and limited evidence from local Indonesian clinical contexts highlight the need for further investigation. Therefore, this study addresses these gaps by examining the effectiveness of warm ginger compresses in reducing back pain among third trimester pregnant women in a clinical setting at Arinda Clinic, Palembang City.

Thus, this study not only provides a scientific contribution to strengthening complementary therapy in midwifery care but also offers practical benefits for healthcare providers in improving the comfort and quality of life of pregnant women approaching childbirth.

2. Methods

This study employed a quasi-experimental design with a one-group pretest–posttest approach to evaluate the effectiveness of warm ginger compresses in reducing low back pain among third-trimester pregnant women. The study was conducted at Arinda Clinic, Palembang City, in September 2025. The study population consisted of all third-trimester pregnant women who received antenatal care at the clinic during the study period, with a total of 46 participants selected using a purposive sampling technique. The selection of this sample size was based on the accessible population of pregnant women who met the study criteria during data collection. In quasi-experimental pretest–posttest designs, a sample size exceeding 30 participants is generally considered adequate to detect within-subject changes, particularly when non-parametric analyses such as the Wilcoxon Signed Rank Test are applied.

The inclusion criteria were pregnant women with a gestational age of 28–40 weeks who experienced mild to moderate low back pain (Visual Analog Scale [VAS] score of 4–7), had no wounds or infections in the lower back area, were not consuming analgesic medication, and were willing to participate in the study. Pregnant women with obstetric complications, those who did not complete the intervention, or those who refused post-intervention assessment were excluded. The intervention involved the application of a warm ginger compress prepared from 100 grams of fresh ginger (*Zingiber officinale*), which was grated, wrapped in sterile gauze, soaked in water at a temperature of 40–45°C for five minutes, covered with a flannel cloth, and applied to the lower back area for 15–20 minutes. The intervention was administered in three sessions with a one-day interval between applications.

Pain intensity was measured using the Visual Analog Scale (VAS) prior to the first intervention (pretest) and after the final intervention session (posttest). Data were analyzed using the Wilcoxon Signed Rank Test to compare pretest and posttest pain scores, with the level of statistical significance set at $p < 0.05$. The findings are presented in tables and descriptive narratives to illustrate the effectiveness of warm ginger compress therapy in reducing low back pain among third-trimester pregnant women.

3. Result and Discussion

Table 1.
Frequency Distribution of Respondents' Characteristics

Characteristics	Category	Frequency (f)	Percentage (%)
Maternal Age (years)	At risk (<20 or >35)	8	17.4
	Not at risk (20–35)	38	82.6
Parity	Primigravida	20	43.5
	Multigravida	26	56.5
Occupation	Employed	18	39.1
	Unemployed (Housewife)	28	60.9
Gestational Age	28–32 weeks	15	32.6
	33–36 weeks	31	67.4

Most respondents were in the non-risk age group (20–35 years), indicating that the majority of pregnant women in this study were within a safe reproductive age. Based on parity, most respondents were multigravida, meaning that a proportion of the participants had experienced previous pregnancies. In terms of occupation, the majority of respondents were unemployed or housewives, suggesting that their physical activity levels tended to be lighter compared to working pregnant

women. Meanwhile, regarding gestational age, most respondents were in the 33–36 weeks range, which represents the late phase of the third trimester, a period during which back pain complaints are generally more frequently experienced due to increased fetal weight and postural changes.

Table 2.
Wilcoxon Test Results

Back Pain	Pre-test (f)	Pre-test (%)	Post-test (f)	Post-test (%)	Ties	Z-Score	p-value
No Pain	0	0	12	26.1			
Mild	18	39.1	28	60.9	3	-4.782	0.000
Moderate	28	60.9	6	13.0			
Total	46	100	46	100			

The results showed that before the intervention (pre-test), the majority of respondents experienced moderate back pain, totaling 28 individuals (60.9%), while 18 respondents (39.1%) experienced mild pain, and none were pain-free. This condition indicates that back pain is a common complaint among third-trimester pregnant women, particularly due to postural changes and increased fetal load on the lower back. After the intervention in the form of warm ginger compresses for three consecutive days, with each session lasting 15 minutes (post-test), a substantial reduction in pain intensity was observed. Most respondents experienced a decrease to mild pain (60.9%), and 12 respondents (26.1%) no longer experienced back pain at all. Only 6 respondents (13.0%) continued to experience moderate pain after the intervention.

The Wilcoxon Signed Rank Test produced a Z value of −4.782 with a ρ value of 0.000 ($p < 0.05$), indicating a statistically significant difference in back pain intensity before and after the administration of warm ginger compresses. Beyond statistical significance, the magnitude of change reflects a clinically meaningful improvement, as most participants shifted from moderate pain to mild or no pain, which is likely to enhance comfort and daily functioning in late pregnancy. Thus, it can be concluded that warm ginger compress therapy is effective in reducing the intensity of back pain among third-trimester pregnant women at Arinda Clinic, Palembang.

Discussion

Based on the findings presented in the table, these results are consistent with the study by Abidah and Anggraini (2022), who reported that ginger compress therapy in third-trimester pregnant women significantly reduced back pain after three applications, each lasting 15 minutes. The heat effect helps to increase local blood flow and promote muscle relaxation, while the ginger content particularly gingerol and shogaol acts as a natural anti-inflammatory and analgesic agent (Salari et al., 2023). These results are further supported by Jesica and Amir (2025) in Padang, who found that warm water compresses with red ginger (Zingiber officinale var. rubrum) reduced the average back pain score in third-trimester pregnant women from 4.19 to 2.88 on the pain scale. The combination of heat and ginger was proven to be more effective than warm compresses without herbal ingredients. (Abidah and Anggraini, 2022) (Salari *et al.*, 2023) (Jesica and Amir, 2025).

Another study by Senturk and Tasci (2021), using a randomized controlled trial design in patients with knee osteoarthritis, also demonstrated that ginger kidney compress therapy for seven days significantly reduced pain intensity and improved physical function compared to the control group. These findings indicate that the effects of ginger compress therapy are not only relevant to pregnancy but are also effective in other musculoskeletal pain conditions. Meanwhile, Rondanelli et al. (2020) in *Phytotherapy Research* emphasized that ginger possesses strong analgesic and anti-inflammatory activities through the inhibition of prostaglandins, inflammatory cytokines, and the NF-κB pathway. This biological mechanism can explain the pain reduction observed in the present study (Senturk and Tasci, 2021) (Rondanelli *et al.*, 2020).

Similarly, Sulistyana, Nurseskasatmata, and Fauzi (2023) also support these findings, where the combination of warm ginger compresses and static stretching effectively reduced gout arthritis pain

significantly through similar mechanisms, namely improved blood circulation and muscle relaxation. Warm ginger compress therapy works through the combined effect of thermotherapy and the active phytochemical compounds of the ginger rhizome. The heat generated by the compress increases local vasodilation, enhances blood flow, and reduces muscle spasms, which are among the main causes of back pain in pregnant women. In addition, the heat helps to open skin pores, thereby accelerating the absorption of active ginger compounds such as gingerol and shogaol. These compounds possess natural anti-inflammatory and analgesic properties that work by inhibiting cyclooxygenase (COX) enzymes and reducing prostaglandin production, which are key mediators that trigger pain and inflammation in muscle and joint tissues (Sulistyana, Nurseskasatmata and Fauzi, 2023).

The combined effects of heat and ginger's active compounds create a sense of relaxation, reduce tension in the lumbar area, and gradually increase comfort. The study by Rondanelli et al. (2020) in *Phytotherapy Research* confirmed that both oral and topical applications of ginger can reduce musculoskeletal pain intensity through peripheral anti-inflammatory mechanisms. This is further strengthened by Senturk and Tasci (2021), who found that ginger kidney compress therapy significantly decreased pain intensity and improved physical function in patients with knee osteoarthritis. Thus, warm ginger compresses provide not only physiological effects through heat but also pharmacological effects from their bioactive compounds, making them a safe and effective non-pharmacological therapeutic alternative for pregnant women experiencing back pain. This therapy not only offers physical comfort but also serves as a rational alternative to reduce dependence on pharmacological analgesics during pregnancy (Rondanelli *et al.*, 2020) (Senturk and Tasci, 2021).

4. Conclusion

Based on the results of this study, it can be concluded that warm ginger compresses are effective in reducing the level of back pain among third-trimester pregnant women. Prior to the intervention, most respondents experienced moderate back pain; however, after receiving warm ginger compress therapy over three intervention sessions, a statistically significant reduction in pain intensity was observed, as indicated by the Wilcoxon test ($\rho = 0.000$). These findings suggest that the combined effects of heat application and the bioactive compounds in ginger, such as gingerol and shogaol, contribute to improved blood circulation, muscle relaxation, and modulation of pain mediators.

From a clinical perspective, warm ginger compresses may be considered a safe, simple, and low-cost complementary non-pharmacological therapy to alleviate back pain in pregnant women and may be integrated into routine midwifery care. However, this study has several limitations, including the use of a one-group pretest–posttest design without a control group and the application of purposive sampling in a single private clinic with a relatively limited sample size. These factors may restrict the generalizability of the findings to broader populations of pregnant women. Therefore, further studies employing randomized controlled designs, larger and more diverse samples, and comparisons with other complementary therapies are recommended to confirm and expand upon these results.

References

Abidah, S.N. and Anggraini, F.D. (2022) 'The effect of ginger compress on reducing back pain on the third trimester pregnant women', *Bali Medical Journal*, 11(2), pp. 918–920. Available at: https://doi.org/10.15562/bmj.v11i2.3418.

Amalia, A.R., Erika, E. and Dewi, A.P. (2020) 'Effectiveness of Warm Compress on Back Pain Intensity in Third Trimester Pregnant Women', *Holistic Nursing and Health Science*, 3(1), pp. 24–31.

Friska, D. (2024) 'The Effect of Ginger Compress on Back Pain in Pregnant Women in the Work Area of X Health Center, Cianjur Regency, Indonesia', *Eureka Herba Indonesia*, 5(1), pp. 420–422. Available at: https://doi.org/10.37275/ehi.v5i1.111.

Handiana, C.M., Zulisa, E. and Husna, N. (2024) 'Efektivitas Warm Compress Terhadap Nyeri Punggung', (2), pp. 1–6.

Heriyanto, H. (2022) 'Efektivitas Kompres Jahe pada Lanjut Usia Penderita Nyeri Osteoarthritis The Effectiveness of Ginger Compress on Elderly Patients with Osteoarthritis Pain', pp. 91–99.

Irma M. Yahya, Sarwan and Andini P. Napu (2025) 'Pengaruh Pemberian Kompres Hangat Terhadap Penurunan Nyeri Punggung Pada Ibu Hamil Trimester Iii Di Wilayah Kerja Puskesmas Paceda Kota Bitung', *Intan Husada : Jurnal Ilmiah Keperawatan*, 13(01), pp. 55–65. Available at: https://doi.org/10.52236/ih.v13i1.676.

Jesica, F. and Amir, A.Y. (2025) 'Effect of Giving Warm Water Compresses with Red Ginger (Zingiber Officinale) on Lower Back Pain in Third-Trimester of Pregnant Women', *Journal of Health Science and Medical Therapy*, 3(02), pp. 174–183. Available at: https://doi.org/10.59653/jhsmt.v3i02.1612.

Monazzami, M. *et al.* (2021) 'Comparing the effects of hot compress and hot ginger compress on pain associated with breast engorgement', *Nursing and Midwifery Studies*, 10(2), pp. 73–78. Available at: https://doi.org/10.4103/nms.nms_24_20.

Munir, M. *et al.* (2022) 'Endorphin Massage Effect on Back Pain in Third Trimester Pregnant Women', *Indonesian Midwifery and Health Sciences Journal*, 6(2), pp. 163–171. Available at: https://doi.org/10.20473/imhsj.v6i2.2022.163-171.

Ni, A. and Wardani, L.K. (2023) 'The Effect Of Warm Compresses Of Ginger Decoction And Exercises Range Of Mation (Rom) To Decreased Joint Pain For The Elderly At Posyandu Tengger Lor Kediri Village', *The Effect Of Warm Compresses Of Ginger Decoction And Exercises Range Of Mation (Rom) To Decreased Joint Pain For The Elderly At Posyandu Tengger Lor Kediri Village*, 3(4), pp. 155–162. Available at: https://thejhsc.org/index.php/jhsc/article/view/181.

Novelia, S., Rukmaini and Anisah, S. (2021) 'The Effect of Warm Compress on Low Back Pain during Pregnancy', *Nursing and Health Sciences Journal (NHSJ)*, 1(3), pp. 254–257. Available at: https://doi.org/10.53713/nhs.v1i3.55.

Rizqi, J. *et al.* (2023) 'Ginger and Warm Water Compress Reduce Complaints of Lower Back Pain in the Elderly in Gaura Village, West Sumba District, Indonesia', *Jurnal Keperawatan Respati Yogyakarta*, 10(2), p. 94. Available at: https://doi.org/10.35842/jkry.v10i2.740.

Rondanelli, M. *et al.* (2020) 'Clinical trials on pain lowering effect of ginger: A narrative review', *Phytotherapy Research*, 34(11), pp. 2843–2856. Available at: https://doi.org/10.1002/ptr.6730.

Salari, N. *et al.* (2023) 'The global prevalence of low back pain in pregnancy: a comprehensive systematic review and meta-analysis', *BMC Pregnancy and Childbirth*, 23(1), pp. 1–13. Available at: https://doi.org/10.1186/s12884-023-06151-x.

ŞENTÜRK, S. and TAŞCI, S. (2021) 'The Effects of Ginger Kidney Compress on Severity of Pain and Physical Functions of Individuals with Knee Osteoarthritis: A Randomized Controlled Trial', *International Journal of Traditional and Complementary Medicine Research*, 02(02), pp. 83–94. Available at: https://doi.org/10.53811/ijtcmr.972187.

Sulistyana, C.S., Nurseskasatmata, S.E. and Fauzi, A. (2023) 'Warm Ginger Compress and Static Stretching for The Change of Pain in Gout Arthritis', *Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery)*, 10(3), pp. 302–308. Available at: https://doi.org/10.26699/jnk.v10i3.art.p302-308.

Susanti, N.Y. and Madhav, N. (2022) 'Exercise for Pregnancy and Pregnant Women Back Pain', *STRADA Jurnal Ilmiah Kesehatan*, 11(1), pp. 15–19. Available at: https://doi.org/10.30994/sjik.v11i1.886.

Widiyastika, S., Wardiyah, A. and Rilyani, R. (2023) 'Prevalence of back pain among pregnant women attending public health center in west Lampung, Indonesia', *Malahayati International Journal of Nursing and Health Science*, 6(2), pp. 93–102. Available at: https://doi.org/10.33024/minh.v6i2.8203.