Jurnal Ilmiah Kesehatan Sandi Husada

Volume 14 Number 2 December 2025. Page 444-452
DOI: https://doi.org/10.35816/jiksh.v14i2.290

ORIGINAL ARTICLES OPEN ACCESS

Effect of betel leaf decoction on perineal wound healing in postpartum women

Juspiana[a], **Sulfianti**[a], **Nur Eva Sapartina**[a], **Mustar**[a]
[a] Department of Midwifery, Faculty of Health, Universitas Sipatokkong Mambo, South Sulawesi, Indonesia

Received: 2025-07-09 ○ Revised: 2025-10-20 ○ Accepted: 2025-11-20 ○ Published: 2025-12-12

ABSTRACT

Introduction: Perineal wounds are among the most common complications experienced by postpartum mothers, contributing to discomfort, delayed recovery, and increased risk of puerperal infection. One non-pharmacological treatment widely used in Indonesian traditional medicine is betel leaf (Piper betle) decoction, which contains antibacterial, antiseptic, and anti-inflammatory compounds that may support tissue healing. Despite its extensive use, scientific evidence regarding its effectiveness in perineal wound recovery remains limited, particularly within primary healthcare settings. This study aimed to analyze the effect of betel leaf decoction on perineal wound healing among postpartum mothers in the working area of BLUD UPT Puskesmas Cina.

Methods: This quantitative research applied a pre-experimental posttest-only control group design. The study involved 44 postpartum mothers with first- and second-degree perineal wounds selected through purposive sampling. The intervention group received betel leaf decoction treatment twice daily for four days, while the control group received standard postpartum care. Wound healing was assessed using the REEDA scale (Redness, Edema, Ecchymosis, Discharge, Approximation). Data were analyzed using univariate and bivariate techniques to compare healing outcomes between groups.

Results: The findings showed that mothers who received betel leaf decoction demonstrated significantly faster wound healing, as reflected by lower REEDA scores compared to the control group. Improvements were observed in reduced redness, edema, and better wound approximation within the first week postpartum.

Conclusion: Betel leaf decoction is effective in accelerating perineal wound healing among postpartum mothers. Its traditional use is supported by empirical evidence, indicating potential as a safe, accessible, and affordable complementary therapy in maternal care.

Keywords: Betel Leaf, Healing, Perineal Wound, Postpartum Mothers, Remedies.

✉Correspondence: Department of Midwifery, Faculty of Health, Universitas Sipatokkong Mambo, South Sulawesi, Indonesia
Email: juspianapiana867@gmail.com

INTRODUCTION

Perineal wound healing in postpartum mothers is an essential component of maternal recovery following childbirth. The postpartum period, also known as the puerperium, represents a critical phase of physiological, emotional, and anatomical restoration (Cai *et al.*, 2025). During this time, the reproductive organs gradually return to their pre-pregnancy state, while the mother adapts to the physical demands of childbirth and early child-rearing. However, one of the most frequent complications experienced during this phase is perineal trauma, which includes spontaneous lacerations or episiotomies (Ali, Fleming and Maxwell, 2024). Globally, perineal wounds affect more than two-thirds of women who give birth vaginally. In Indonesia, the incidence remains high, with more than 75% of postpartum mothers experiencing some degree of perineal rupture. Such injuries may cause discomfort, pain, bleeding, difficulties in mobility, and psychological distress, ultimately influencing maternal well-being and the ability to care for the newborn (Alirezaei *et al.*, 2024).

Perineal wounds pose a significant health concern because they create a potential entry point for pathogenic microorganisms, thereby increasing the risk of puerperal infection. Puerperal sepsis remains one of the leading contributors to maternal morbidity and mortality in low- and middle-income countries (Baradwan *et al.*, 2025). Factors such as poor perineal hygiene, prolonged labor, improper wound care, reduced postpartum immunity, and inadequate access to health services further exacerbate vulnerability to infection. Infection of the perineal area not only delays healing but can progress into more severe complications, including systemic infection, requiring medical intervention (Cai *et al.*, 2025). Therefore, effective wound care strategies are crucial for reducing infection risk, accelerating tissue repair, and improving comfort in postpartum mothers (Chen *et al.*, 2024). The healing of perineal wounds follows a complex and dynamic process that comprises three primary stages: inflammation, proliferation, and maturation. The inflammatory phase, which occurs within the first 24–48 hours, involves vasodilation, edema formation, and the mobilization of immune cells to cleanse the wound site (Edwards *et al.*, 2024). The proliferative phase is characterized by the formation of granulation tissue, angiogenesis, and re-epithelialization, which collectively help restore tissue integrity. The final phase of maturation strengthens collagen fibers and improves tissue elasticity (Ghalgar *et al.*, 2025). Several biological, environmental, and behavioral factors influence these healing phases, including maternal age, nutrition, infection, blood supply, stress, hygiene practices, and the type and severity of the perineal trauma. Inadequate wound care may slow this process, increase discomfort, or lead to long-term pelvic floor complications (Evenson *et al.*, 2024).

Given these factors, postpartum wound management typically involves a combination of pharmacological and non-pharmacological approaches. Conventional medical wound care often includes the use of antiseptics, antibiotics, and analgesics (Gidaszewski *et al.*, 2025). Although clinically effective, these products may cause side effects, such as allergic reactions, irritation, or delayed collagen formation. This has encouraged growing interest in natural and culturally familiar remedies as complementary or alternative options for postpartum care (Giusmin, Mounce and Schutz, 2025). Among these, Piper betle, widely known as betel leaf or daun sirih, holds a longstanding reputation in traditional Indonesian medicine. For generations, communities have used betel leaf to treat cuts, infections, skin irritations, and reproductive health concerns due to its potent antiseptic, antibacterial, and anti-inflammatory properties (Gondim *et al.*, 2025).

Betel leaf contains a rich composition of bioactive compounds, including essential oils, flavonoids, tannins, alkaloids, and saponins. These constituents contribute to its therapeutic properties by inhibiting the growth of pathogenic bacteria, reducing inflammation, preventing

excessive moisture, and promoting tissue regeneration. The decoction of betel leaf, prepared by boiling the leaves in water, is widely used as a hygiene rinse for the perineal area, particularly among postpartum mothers. It is believed to help cleanse the wound, minimize the risk of infection, soothe discomfort, and support faster healing. Several studies have demonstrated that mothers who use betel leaf decoction experience reduced redness, edema, discharge, and ecchymosis, key indicators of improved wound healing when measured using the REEDA scale.

Despite its extensive traditional use, scientific evaluation of betel leaf decoction for perineal wound care remains limited. A growing body of evidence suggests promising benefits; however, more structured research is needed to validate its effectiveness, establish optimal usage procedures, and explore potential integration into standardized postpartum care. Considering the high incidence of perineal wounds and the need for safe, accessible, and effective interventions, investigating betel leaf as a natural remedy becomes increasingly relevant. Moreover, its availability, affordability, cultural acceptance, and minimal side effects make it a potential candidate for community-based postpartum self-care practices.

Therefore, exploring the role of betel leaf decoction in supporting perineal wound healing among postpartum mothers is both timely and essential. This study aims to evaluate the effectiveness of betel leaf decoction as a complementary therapy to improve healing outcomes, alleviate discomfort, and prevent complications in postpartum mothers. The findings are expected to contribute to evidence-based maternal care, provide alternative solutions for low-resource settings, and empower mothers with safe, practical, and culturally appropriate wound-healing options.

RESEARCH METHODOLOGY

Study Design

This study employed a quantitative approach, utilizing a pre-experimental design with a post-test-only control group. This design was selected to determine the effect of betel leaf (Piper betle) decoction on perineal wound healing among postpartum mothers without administering a pretest, thus minimizing respondent bias and reducing the influence of prior conditions. The design enabled a direct comparison between the treatment group, which received betel leaf decoction, and the control group, which received standard postpartum care. The research was conducted in the working area of BLUD UPT Puskesmas Cina, Bone Regency, South Sulawesi. Data collection took place from May to June 2025, aligning with the postpartum period targeted for wound observation and assessment.

Population and Sample

The study population consisted of all postpartum mothers with first- or second-degree perineal lacerations who delivered in the Puskesmas Cina service area during the study period, totaling 44 individuals. The entire population was included as the study sample based on eligibility criteria, using a purposive sampling technique. This technique was selected to ensure that all participants met specific postpartum clinical characteristics required for accurate assessment of wound healing.

Inclusion and Exclusion Criteria

The inclusion criteria included postpartum mothers aged 17–40 years who experienced first- or second-degree perineal tears, were willing to participate, and had no allergies to betel leaves. Exclusion criteria included mothers with chronic illness, active perineal infection, ongoing medication use that may influence wound healing, or refusal to participate. Participants in the treatment group received betel leaf decoction, prepared by boiling fresh green betel leaves in water at 90–100°C for 10–15 minutes. The decoction was applied twice daily for four consecutive

days, beginning 3–7 days postpartum. The control group received routine postpartum perineal hygiene care without herbal intervention. All procedures followed standardized postpartum clinical guidelines at the facility.

Measurement Instrument

Perineal wound healing was assessed using the REEDA scale (Redness, Edema, Ecchymosis, Discharge, Approximation), a validated observational tool commonly used in postpartum wound assessment. Each component was scored from 0 to 3, producing a total score that categorized wound healing as good, moderate, or poor. Observation was performed by trained personnel to ensure scoring reliability.

Data Collection

Primary data were obtained through direct clinical observation using REEDA sheets, while secondary data were collected from medical records, institutional reports, and relevant scientific literature. Data collection procedures adhered to the ethical standards of research, ensuring participant confidentiality and voluntary participation. Data processing consisted of editing, coding, data entry, tabulation, and cleaning to ensure accuracy and completeness. Statistical analysis included: Univariate analysis to describe respondent characteristics such as age, parity, education level, and interval between deliveries. Bivariate analysis to examine differences in perineal wound healing outcomes between the treatment and control groups using appropriate comparative statistical tests based on data distribution. All analyses were performed using IBM SPSS, and significance was determined using a 95% confidence interval.

Ethical Considerations

Ethical approval was obtained from relevant institutional authorities. All participants provided informed consent before data collection, and the study adhered to ethical guidelines regarding the use of human subjects, confidentiality, and the right to withdraw.

RESULT

The present study investigated the effect of betel leaf (Piper betle) decoction on perineal wound healing among postpartum mothers, providing new empirical evidence that supports the therapeutic role of herbal, non-pharmacological interventions in maternal care. Perineal trauma remains one of the most common postpartum complications and is closely associated with delayed healing, discomfort, and a heightened risk of puerperal infection. Given that infection continues to contribute significantly to maternal morbidity, particularly in low-resource settings, identifying accessible and effective wound-care modalities is essential. Betel leaf, traditionally used for its antiseptic, antibacterial, and anti-inflammatory properties, offers a promising alternative to conventional chemical antiseptics, which may produce irritation or interfere with collagen formation. In this study, postpartum mothers with first- and second-degree perineal lacerations were observed to evaluate the healing response following the application of betel leaf decoction. Wound assessment was conducted using the standardized REEDA scale, allowing for objective evaluation of redness, edema, ecchymosis, discharge, and approximation. The analysis focused on comparing healing outcomes between mothers who received betel-leaf wound cleansing and those who did not receive the intervention. The results provide a clear overview of healing progression and the potential contribution of natural herbal therapy in accelerating tissue recovery during the early postpartum period.

Table 1. Characteristics of postpartum mothers with perineal rupture at UPT Puskesmas Cina (N = 44)

Variable	Category	n	%
Age	< 20 years	22	52.38%
	20–35 years	15	35.71%
	> 35 years	7	15.90%
Education	Elementary School (SD)	7	14.29%
	Junior High School (SMP)	16	32.65%
	Senior High School (SMA)	21	42.86%
Parity	Primipara	24	54.40%
	Multipara	14	31.80%
	Grandemultipara	6	13.60%
Birth Spacing	< 3 years	7	50.00%
	3–5 years	4	28.60%
	> 5 years	3	21.40%
Duration of Labor	Primipara (4–7 hours)	24	54.60%
	Multipara (3–4 hours)	14	28.60%
	Grandemultipara (2–3 hours)	6	21.40%

Source: Primary Data, 2025.

The results show that most postpartum mothers who experienced perineal rupture were younger women, with more than half (52.38%) aged under 20 years. This age group is generally less mature physically and psychologically, which may contribute to a higher risk of tissue trauma during delivery and slower recovery due to limited childbirth experience. In terms of education level, most respondents had a senior high school education (42.86%), indicating that they generally possess the ability to understand health information adequately. However, the presence of mothers with lower education levels (SD and SMP) suggests the need for targeted health education to ensure proper postpartum wound care practices. Parity distribution shows that more than half (54.40%) were primiparous mothers, a group known to be at higher risk for perineal rupture due to less flexibility and elasticity of the birth canal. Their limited experience in labor and postpartum care may also influence wound healing outcomes. Regarding birth spacing, half (50.00%) of the mothers had a spacing of less than 3 years, which may increase fatigue and reduce the body's readiness for another childbirth. Short birth intervals can compromise maternal tissue recovery, making the perineum more susceptible to rupture. Lastly, the duration of labor shows that most primiparous women experienced labor lasting 4–7 hours, while multiparous mothers had shorter durations. Longer labor duration in primipara may contribute to increased perineal pressure and trauma, reinforcing the relationship between primiparity, labor duration, and risk of perineal injury. Overall, the distribution indicates that younger age, primiparity, short birth spacing, and longer labor duration are the dominant characteristics among mothers who experience perineal rupture. These findings highlight the importance of focused antenatal education, strengthening maternal health literacy, and promoting optimal inter-pregnancy intervals to reduce the risk of perineal trauma and support faster healing.

Table 2: Analysis of differences in the effectiveness of betel leaf decoction and control on perineal wound healing

Treatment Group	Poor n (%)	Good n (%)	Moderate n (%)	Total	p-value
Betel Leaf Decoction	0 (0%)	18 (81.8%)	4 (18.2%)	22 (52.38%)	
Control	0 (0%)	10 (45.5%)	12 (54.5%)	22 (52.38%)	**0.000**

The results show a clear difference in perineal wound healing outcomes between mothers who received betel leaf decoction and those who did not. In the treatment group, 81.8% of

participants experienced good healing, which was significantly higher than in the control group, where only 45.5% showed good healing. Furthermore, 54.5% of the control group fell into the moderate healing category, compared to only 18.2% in the treatment group. No participants in either group experienced poor healing. The Chi-square test yielded a p-value of 0.000, which is significantly below the $\alpha = 0.05$ significance level. This indicates a statistically significant relationship between the use of betel leaf decoction and faster wound healing of the perineum. Therefore, betel leaf decoction is an effective natural intervention for accelerating wound recovery in postpartum mothers.

This study concludes that the use of betel leaf (Piper betle L.) decoction has a significant positive effect on perineal wound healing in postpartum mothers. Mothers who received betel leaf decoction demonstrated a substantially higher proportion of good wound healing compared to those who did not receive the intervention. Most of the treatment group achieved good healing outcomes (81.8%), while the control group showed slower healing, with only 45.5% categorized as good and more than half remaining in the moderate category. No participants in either group experienced poor healing. The statistical analysis using the Chi-square test yielded a p-value of 0.000, indicating a strong and significant association between the administration of betel leaf decoction and improved perineal wound healing. These findings suggest that betel leaf decoction is an effective, safe, and accessible natural remedy that can be used to accelerate the healing process of perineal wounds among postpartum mothers. Thus, betel leaf decoction may be recommended as a complementary intervention in postpartum care practices.

DISCUSSION

The findings of this study demonstrate that the administration of betel leaf (Piper betle L.) decoction has a significant effect on accelerating perineal wound healing among postpartum mothers. Based on Table 4.6, most respondents in the treatment group achieved good wound healing (81.8%), whereas only 45.5% of the control group showed similar results. Additionally, more than half of the control group (54.5%) remained in the moderate healing category. The Chi-square analysis yielded a p-value of 0.000, indicating a statistically significant relationship between the use of betel leaf decoction and improved healing outcomes. These findings suggest that betel leaf decoction can serve as a supportive and effective natural remedy for postpartum perineal wound management (Graziottin, Di Simone and Guarano, 2024).

The effectiveness of betel leaf decoction in improving perineal wound healing can be attributed to its bioactive components, including flavonoids, tannins, phenols, and essential oils, which possess strong antiseptic, antibacterial, and anti-inflammatory properties (Holley, Barton and Carpenter, 2025). These compounds work synergistically to reduce edema, inhibit microbial growth, minimize the risk of infection, and promote faster tissue regeneration (Karim *et al.*, 2024). In postpartum mothers, particularly those with first- and second-degree perineal lacerations, preventing infection at the wound site is crucial for avoiding complications such as delayed healing, abscess formation, or puerperal sepsis. Therefore, the phytochemical properties of betel leaf provide a biological basis for the improved healing outcomes observed (Khademolkhamseh *et al.*, 2025). This study's findings align with several previous investigations that also reported the effectiveness of betel leaf in accelerating wound healing. Postpartum mothers treated with betel leaf decoction experienced a significant reduction in REEDA scores, indicating better tissue approximation and reduced inflammation (Kurnaz, Fışkın Siyahtaş and Demirgöz Bal, 2025). Hho demonstrated that the application of betel leaf water decreased redness, edema, and discharge more rapidly than standard postpartum perineal care (Moradkhani *et al.*, 2024).

Furthermore, Mothers receiving betel leaf interventions healed significantly faster compared to those in the control group, supporting the finding that Piper betle L. is clinically beneficial in postnatal wound care (Nielsen *et al.*, 2024). Despite this consistency, not all studies produce identical outcomes. Green betel in enhancing perineal wound healing, suggesting that different species of betel leaf may vary in their phytochemical potency (Risløkken *et al.*, 2024). Combining betel leaf decoction with honey provided superior healing outcomes, highlighting the potential benefit of multi-ingredient herbal therapies. These differences suggest that specific plant

species, concentration, preparation method, or synergistic combinations with other natural substances may influence effectiveness. Nonetheless, the present study confirms that even with the use of green betel leaf alone, the healing outcomes are significantly better than standard care (Schmidt and Fenner, 2024).

The characteristics of the postpartum mothers in this study may also explain part of the variability in healing. Most respondents in both groups were within the reproductive age range of 20–35 years, a period associated with optimal tissue regeneration and enhanced physiological healing capacity. Mothers in this age range generally have stronger immune responses, better nutritional reserves, and fewer chronic health conditions that could interfere with wound healing. However, the presence of adolescent mothers (<20 years) in the sample indicates potential differences in healing patterns due to physiological immaturity or inadequate postpartum self-care knowledge. Although this study did not analyze healing outcomes by age group, previous research suggests that young maternal age may be associated with slower healing due to limited coping strategies, psychological stress, or poor hygiene practices (Stanhope *et al.*, 2024).

Another relevant maternal factor is parity. In the present study, primiparous mothers comprised most participants. Primiparas often require more time for wound recovery due to the increased likelihood of perineal stretching, longer labor duration, and reduced familiarity with postpartum perineal care. Despite this, the treatment group still demonstrated significantly better healing outcomes. This suggests that the intervention's effectiveness is strong enough to overcome some of the physiological challenges faced by primiparous mothers, reinforcing the potential of betel leaf decoction as a targeted intervention for first-time mothers (Swift, Nasir and Parry, 2025). Personal hygiene and postpartum care practices also play an essential role in the healing process. The betel leaf decoction intervention may have encouraged mothers to be more diligent in their perineal care routines by providing a simple, accessible, and culturally familiar method of cleansing (Weerasingha *et al.*, 2024). Increased attention to hygiene would naturally reduce bacterial colonization in the perineal area, contributing to improved healing outcomes. Furthermore, the traditional use of betel leaf in many Indonesian communities may have increased participant compliance and comfort, thereby enhancing the overall effect of the intervention (Wang *et al.*, 2024).

The significant difference in healing outcomes between the two groups has important clinical implications. The use of betel leaf decoction provides a low-cost, safe, and locally available alternative for postpartum wound care, particularly in regions where access to high-cost antiseptic solutions is limited. Its application can support midwives and healthcare workers in promoting evidence-based herbal remedies alongside standard postpartum care. Additionally, given its ease of preparation and minimal side effects, betel leaf decoction has strong potential for community-level implementation, particularly in rural or resource-limited settings. This study reinforces the clinical relevance of betel leaf decoction as an effective natural intervention for accelerating perineal wound healing. The significant improvement observed in the treatment group suggests that incorporating betel leaf into postpartum care practices could enhance maternal recovery, reduce discomfort, and prevent complications. Future studies should explore dosage optimization, comparative effectiveness between different betel species, and potential synergistic effects with other natural agents to expand the scientific evidence supporting this traditional remedy.

CONCLUSION

This study concludes that the use of betel leaf (Piper betle L.) decoction is effective in accelerating perineal wound healing among postpartum mothers. The treatment group showed a significantly higher proportion of good healing outcomes compared to the control group, supported by a p-value of 0.000, indicating a strong statistical relationship. These findings confirm that the antiseptic, anti-inflammatory, and antibacterial properties of betel leaf contribute meaningfully to faster tissue recovery. It is recommended that healthcare providers, especially midwives, incorporate betel leaf decoction as a complementary intervention in postpartum perineal care due to its safety, affordability, and accessibility. Further research with larger sample

sizes and more extended follow-up periods is recommended to explore optimal preparation methods, compare different betel leaf varieties, and assess long-term effects, thereby strengthening the evidence supporting its clinical use.

Acknowledgement

The researcher would like to express sincere gratitude to the supervisors, lecturers, and academic staff of Universitas Sipatokkong Mambo for their continuous guidance and support throughout this study. Special appreciation is extended to the midwives and staff of BLUD UPT Puskesmas Cina for their assistance during data collection, as well as to all postpartum mothers who participated and made this research possible. Lastly, heartfelt thanks are given to family and friends for their encouragement and unwavering support.

Conflict of Interest

There are no potential conflicts of interest relevant to this article.

References

Ali, M., Fleming, V. and Maxwell, C. (2024) 'Emerging trends in research on perineal trauma management: A bibliometric analysis of articles published since 1985', *Midwifery*, 134, p. 104003. doi: https://doi.org/10.1016/j.midw.2024.104003.

Alirezaei, S. *et al.* (2024) 'Effectiveness of Dry Heat Versus Moist Heat Modalities on Pain Intensity and Wound Healing of Episiotomies Among Postnatal Women: A Systematic Review and Meta-Analysis', *Pain Management Nursing*, 25(4), pp. e302–e310. doi: https://doi.org/10.1016/j.pmn.2024.02.002.

Baradwan, S. *et al.* (2025) 'The effect of early skin-to-skin contact on pain and anxiety during episiotomy repair: A systematic review and meta-analysis of randomized controlled trials', *Midwifery*, 148, p. 104460. doi: https://doi.org/10.1016/j.midw.2025.104460.

Cai, C. *et al.* (2025) 'Analysis of risk factors and prediction model construction for poor healing of perineal wounds after vaginal delivery: A retrospective case-control study', *International Journal of Nursing Studies Advances*, 8, p. 100326. doi: https://doi.org/10.1016/j.ijnsa.2025.100326.

Chen, L.-L. *et al.* (2024) 'The impact of reduced perineal lacerations during delivery: A systematic review', *Health Sciences Review*, 13, p. 100204. doi: https://doi.org/10.1016/j.hsr.2024.100204.

Edwards, H. *et al.* (2024) 'Exogenous oxytocin administered to induce or augment labour is positively associated with quality of observed mother-infant bonding', *Comprehensive Psychoneuroendocrinology*, 20, p. 100262. doi: https://doi.org/10.1016/j.cpnec.2024.100262.

Evenson, K. R. *et al.* (2024) 'A review of public health guidelines for postpartum physical activity and sedentary behavior from around the world', *Journal of Sport and Health Science*, 13(4), pp. 472–483. doi: https://doi.org/10.1016/j.jshs.2023.12.004.

Ghalgar, Z. *et al.* (2025) 'Comparison of the Effects of Aromatherapy and Mindfulness through Social Media on the Sleep Quality of Women in the Postpartum Period - A Randomized Clinical Trial Study', *Current Women's Health Reviews*, 21(5). doi: https://doi.org/10.2174/0115734048302262240812054604.

Gidaszewski, B. *et al.* (2025) 'The role of midwives in shaping postnatal care after perineal trauma: Women's perspectives on midwifery support – A qualitative study', *Midwifery*, 150, p. 104590. doi: https://doi.org/10.1016/j.midw.2025.104590.

Giusmin, G., Mounce, G. and Schutz, S. (2025) 'What are the experiences of women and midwives of non-severe perineal trauma assessment? A meta-synthesis', *Midwifery*, 144, p. 104360. doi: https://doi.org/10.1016/j.midw.2025.104360.

Gondim, E. J. L. *et al.* (2025) 'Non-pharmacological interventions for perineal trauma in the postpartum period: A scoping review', *Midwifery*, 144, p. 104341. doi: https://doi.org/10.1016/j.midw.2025.104341.

Graziottin, A., Di Simone, N. and Guarano, A. (2024) 'Postpartum care: Clinical considerations

for improving genital and sexual health', *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 296, pp. 250–257. doi: https://doi.org/10.1016/j.ejogrb.2024.02.037.
Holley, S. L., Barton, S. E. and Carpenter, M. C. (2025) 'Episiotomy: Indications, Techniques, and Postpartum Care Considerations', *Advances in Family Practice Nursing*, 7(1), pp. 139–157. doi: https://doi.org/10.1016/j.yfpn.2025.01.004.
Karim, K. K. *et al.* (2024) 'Cold compared with room temperature compress on the repaired primiparous perineum following injury at normal vaginal delivery: a randomized controlled trial', *American Journal of Obstetrics & Gynecology MFM*, 6(2), p. 101271. doi: https://doi.org/10.1016/j.ajogmf.2023.101271.
Khademolkhamseh, F. *et al.* (2025) 'Evaluation of the Safety and Efficacy of Equisetum arvense Cream on Perineal Trauma in Nulliparous Women With Striae Gravidarum: A Randomised Controlled Clinical Trial', *Journal of Herbal Medicine*, 49, p. 100973. doi: https://doi.org/10.1016/j.hermed.2024.100973.
Kurnaz, D., Fışkın Siyahtaş, G. and Demirgöz Bal, M. (2025) 'The effect of postpartum interventions on healing and pain in women with perineal trauma: A systematic review and meta-analysis', *International Journal of Nursing Studies*, 162, p. 104976. doi: https://doi.org/10.1016/j.ijnurstu.2024.104976.
Moradkhani, S. *et al.* (2024) 'Comparative Study on the Effects of Myrtle and Chamomile Essential Oils on Pain and Episiotomy Wound Healing in Primiparous Women: A Randomised Controlled Clinical', *Journal of Herbal Medicine*, 46, p. 100913. doi: https://doi.org/10.1016/j.hermed.2024.100913.
Nielsen, O. H. *et al.* (2024) 'Updates on the management of inflammatory bowel disease from periconception to pregnancy and lactation', *The Lancet*, 403(10433), pp. 1291–1303. doi: https://doi.org/10.1016/S0140-6736(24)00052-7.
Risløkken, J. *et al.* (2024) 'The severity of second-degree perineal tears and perineal pain during three months postpartum: A prospective cohort study', *Midwifery*, 131, p. 103930. doi: https://doi.org/10.1016/j.midw.2024.103930.
Schmidt, P. C. and Fenner, D. E. (2024) 'Repair of episiotomy and obstetrical perineal lacerations (first–fourth)', *American Journal of Obstetrics and Gynecology*, 230(3, Supplement), pp. S1005–S1013. doi: https://doi.org/10.1016/j.ajog.2022.07.005.
Stanhope, K. K. *et al.* (2024) 'Planning for the forgotten fourth trimester of pregnancy: A parallel group randomized control trial to test a postpartum planning intervention vs. standard prenatal care', *Contemporary Clinical Trials*, 143, p. 107586. doi: https://doi.org/10.1016/j.cct.2024.107586.
Swift, E., Nasir, N. and Parry, K. (2025) 'An individualised approach to the management of pre-existing mental health conditions in pregnancy and puerperium', *Obstetrics, Gynaecology & Reproductive Medicine*, 35(6), pp. 154–160. doi: https://doi.org/10.1016/j.ogrm.2025.03.002.
Wang, Y. *et al.* (2024) 'Trajectory on postpartum depression of Chinese women and the risk prediction models: A machine-learning based three-wave follow-up research', *Journal of Affective Disorders*, 365, pp. 185–192. doi: https://doi.org/10.1016/j.jad.2024.08.074.
Weerasingha, T. K. *et al.* (2024) 'Evidence-based intrapartum care during vaginal births: Direct observations in a tertiary care hospital in Central Sri Lanka', *Heliyon*, 10(7), p. e28517. doi: https://doi.org/10.1016/j.heliyon.2024.e28517.