



# The Impact of Betel Leaf Decoction on the Rate of Perineal Wound Healing at Datoe Binangkang Regional General Hospital

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**Abstract.** The efficient production of breast milk during the postpartum phase is crucial for the success of exclusive Perineal sores are prevalent complications in postpartum moms, potentially leading to pain, discomfort, and an increased risk of infection if inadequately managed. A decoction of betel leaves, which possesses antibacterial and anti-inflammatory properties, is a supplemental therapy applicable in perineal wound care. This study is to assess the impact of betel leaf decoction administration on the rate of perineal wound healing at RSUD Batu Binangkang. This research used a quasi-experimental design with a one-group pretest-posttest methodology. The research sample comprised 30 postpartum moms with perineal lesions, recruited by purposive sampling methodology. Data were gathered utilizing a perineal wound recovery observation sheet prior to and during the intervention. Data analysis was performed using univariate and bivariate methods. The research findings indicate that the mean perineal wound score prior to the intervention was 6.20, which diminished to 2.43 post-intervention, resulting in an average difference of 3.77. The majority of responders exhibited accelerated wound recovery, with 27 individuals (90.0%) demonstrating improvement, whilst 3 individuals (10.0%) reported no change. The statistical test yielded a p-value of 0.000 or  $p < 0.05$ , indicating a significant effect of betel leaf decoction on the rate of perineal wound recovery. This study concludes that the administration of betel leaf decoction influences the rate of perineal wound healing in postpartum moms at RSUD Batu Binangkang.

**Keywords:** Adjunct Therapy; Betel Leaves; Postpartum Women; Perineal Injuries; Wound Healing.

## 1. Introduction

The postpartum period is a crucial recovery time for moms following childbirth, particularly for those with perineal injuries resulting from spontaneous rupture or episiotomy. Perineal sores may result in pain, discomfort during movement, challenges in sitting, disturbances in elimination, difficulties in infant care, and an elevated risk of infection if inadequately managed (Man et al., 2025). Perineal wound infection occurs in 5.5% of women within six weeks postpartum, with an elevated infection rate observed in those who underwent episiotomy (Man et al., 2025).

The healing of perineal wounds is affected by various factors, including the severity of the wound, perineal hygiene, nutritional status, maternal health, suturing technique, adherence to wound care, and the presence of infection indicators. Improperly healing perineal wounds may result in wound disintegration, persistent pain, disruptions in activities, and a diminished quality of life for moms in the postpartum phase (Man et al., 2025). Consequently, appropriate perineal wound care must be conducted to ensure cleanliness, inhibit microbial proliferation, alleviate discomfort, and expedite the wound healing process (WHO, 2022). Perineal wound care for postpartum women often involves maintaining personal cleanliness, performing regular pad changes, ensuring the perineal area remains clean and dry, and observing for indicators of infection, including heightened pain, erythema, edema, malodorous discharge, or open lesions. The WHO underscores the significance of high-quality postpartum care to facilitate the recovery of mothers and infants following childbirth (WHO, 2022). Effective pain management and surveillance of perineal conditions are crucial components of postpartum care, as perineal discomfort can hinder the mother's comfort and activity following childbirth (WHO, 2022).

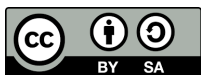
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Alongside traditional care, the exploration of natural compounds as adjunctive therapy is gaining momentum, one such ingredient being betel leaf (*Piper betle* L.). Betel leaves are recognized as a medicinal plant extensively utilized in traditional practices in Indonesia, notably for the maintenance of female hygiene. Betel leaves possess numerous phytochemical substances, including phenols, flavonoids, tannins, saponins, and alkaloids, which may exhibit antibacterial and anti-inflammatory properties (Nayaka et al., 2021). Numerous investigations indicate that betel leaf extracts exhibit antibacterial and antifungal properties against a range of pathogens, including *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Candida albicans* (Nayaka et al., 2021). This activity is crucial as perineal wound infections can impede the healing process and intensify pain in postpartum mothers. In vitro studies indicate that *Piper betle* extract may enhance fibroblast proliferation and facilitate wound healing by diminishing the expression of specific inflammatory factors (Thi et al., 2021).

A decoction of betel leaves can serve as a readily available, straightforward, and locally informed supplemental treatment option. Nevertheless, its application requires scientific investigation to substantiate its advantages for perineal wound healing by quantifiable research. Prior investigations on the application of betel leaves for perineal wound management indicate a potential to expedite healing; nevertheless, the evidence derived from studies conducted in particular locales and demographics requires more fortification (Kurniasih, 2024).

Batu Binakang Regional General Hospital (RSUD) serves a crucial function in delivering obstetric services, particularly postpartum treatment for moms with perineal injuries. Postpartum moms with perineal wounds necessitate care that is safe, effective, easily implementable, and capable of expediting the recovery process. The investigation of the impact of betel leaf decoction on the rate of perineal wound healing at RSUD Batu Binakang is essential to establish a scientific foundation for the application of complementary therapies in postpartum midwifery care.

## 2. Research Method

This study employs a quasi-experimental design utilising a one-group pretest-posttest methodology to assess the status of perineal wounds in postpartum moms prior to and following the administration of a boiling betel leaf infusion. The study was carried out at RSUD Batu Binakang. The study population included all postpartum moms with perineal wounds receiving postpartum care at RSUD Batu Binakang. The sample was chosen by purposive sampling methods according to the inclusion criteria set by the researcher.

The intervention involved the application of boiled betel leaves for perineal wound care over a specified duration in accordance with the research design. The rate of perineal wound healing is evaluated with a wound healing observation sheet, which includes parameters such as redness, swelling, pain, fluid presence, tissue union, and infection indicators. The data were analysed univariately to characterise the respondents and the state of the perineal wounds, and bivariately to assess the impact of betel leaf decoction on the rate of perineal wound healing. The statistical analysis use the paired sample t-test for normally distributed data or the Wilcoxon test for non-normally distributed data, utilising a significance threshold of  $p < 0.05$ .

## 3. Results And Discussion

**Table 1.** Characteristics of Respondents.

| Characteristics          | Category           | n  | %     |
|--------------------------|--------------------|----|-------|
| Age                      | <20 years          | 4  | 13,3  |
|                          | 20–35 years        | 23 | 76,7  |
|                          | >35 years          | 3  | 10,0  |
| Education                | Primary school     | 5  | 16,7  |
|                          | Junior high school | 8  | 26,7  |
|                          | Senior high school | 14 | 46,7  |
|                          | Higher education   | 3  | 10,0  |
| Parity                   | Primipara          | 18 | 60,0  |
|                          | Multipara          | 12 | 40,0  |
| Degree of perineal wound | Grade I            | 11 | 36,7  |
|                          | Grade II           | 19 | 63,3  |
| Total                    |                    | 30 | 100,0 |

According to Table 1, the predominant age group among responders is 20–35 years, with 23 individuals (76.7%). This demographic is within the reproductive age often associated with childbirth; nonetheless, the healing of the perineal wound may still be affected by the mother's physical health, perineal hygiene, nutritional status, and compliance with wound care protocols. The postpartum phase is crucial as the woman recuperates after childbirth and necessitates enough care to avert problems (WHO, 2022).

The bulk of responders, 14 individuals (46.7%), possessed a high school education. The degree of education can influence a mother's capacity to acquire information, comprehend healthcare professionals' advice, and effectively implement perineal wound care. A comprehensive grasp of perineal hygiene and infection indicators is crucial to avert delayed wound healing in the postpartum phase (WHO, 2022).

In terms of parity, the majority of participants were primipara, with 18 responses (60.0%). Primiparous moms face an elevated risk of perineal rips due to the perineal tissue's lack of prior stretching from earlier deliveries. The majority of participants sustained second-degree perineal rips, with 19 individuals (63.3%), which necessitate meticulous care due to the potential for pain, discomfort, and infection if inadequately managed. Infection and dehiscence of the perineal wound are problems that may arise following perineal trauma resulting from childbirth (Jones et al., 2019).

**Table 2.** Perineal Wound Scores Pre- and Post-Administration of Betel Leaf Decoction.

| Perineal Wound Score    | Mean $\pm$ SD   | Median | Minimum | Maximum |
|-------------------------|-----------------|--------|---------|---------|
| Before the intervention | 6,20 $\pm$ 1,00 | 6,00   | 4,00    | 8,00    |
| After the intervention  | 2,43 $\pm$ 0,86 | 2,00   | 1,00    | 4,00    |
| Reduction difference    | 3,77 $\pm$ 0,90 | 4,00   | 2,00    | 5,00    |

According to Table 2, the mean perineal wound score before to administration of the boiling betel leaf extract was 6.20, with a standard deviation of 1.00. This number signifies that prior to the intervention, the respondents' perineal wounds necessitated care due to persistent indicators of inadequate recovery, including discomfort, erythema, oedema, or incomplete wound healing. Postpartum perineal wounds require monitoring to prevent infections and open wounds if the healing process is inadequate (Jones et al., 2019).

Following the administration of a boiled betel leaf infusion, the mean perineal wound score diminished to 2.43, with a standard deviation of 0.86. The reduction in this score signifies an enhancement in the state of the perineal wound following the intervention. Betel leaves (*Piper betle* L.) possess phytochemical constituents, including phenols, flavonoids, tannins, and saponins, which may demonstrate antibacterial and anti-inflammatory properties (Nayaka et al., 2021).

The average decrease difference of 3.77 signifies that the administration of betel leaf decoction facilitates a beneficial improvement in the healing of perineal lesions. The biological process of wound healing is affected by factors such as wound cleanliness, infection management, inflammation, tissue regeneration, and the approximation of wound edges. Numerous recent research indicate that the application of boiled green betel leaf water influences the healing of perineal lesions in postpartum moms (Husnalizat, 2025).

**Table 3.** Categories of Perineal Wound Healing Pre- and Post-Intervention.

| Perineal Wound Recovery Category | Before Intervention n | Before Intervention % | After Intervention n | After Intervention % |
|----------------------------------|-----------------------|-----------------------|----------------------|----------------------|
| Slow                             | 20                    | 66,7                  | 2                    | 6,7                  |
| Moderate                         | 10                    | 33,3                  | 9                    | 30,0                 |
| Fast                             | 0                     | 0,0                   | 19                   | 63,3                 |
| Total                            | 30                    | 100,0                 | 30                   | 100,0                |

According to Table 3, prior to the intervention, the majority of respondents, totalling 20 individuals (66.7%), fell into the sluggish wound recovery category. This condition signifies that at the study's inception, the majority of perineal lesions had not yet exhibited indications of optimal healing. Gradually healing perineal wounds might result in pain, discomfort, activity limitations, and heightened infection risk during the postpartum phase (WHO, 2022).

Following the administration of a boiled betel leaf infusion, the number of respondents in the slow wound recovery category fell to 2 (6.7%), whereas the quick wound recovery category rose to 19 (63.3%). This alteration signifies that most responders observed an enhancement in wound status following the intervention. The findings endorse the utilisation of boiled betel leaves as an adjunctive treatment to promote perineal hygiene and facilitate wound healing. Studies indicate that boiled red betel leaf water is utilised in postpartum perineal wound care for moms, representing a method of familial wound management (Purwaningsih & Ernawati, 2024).

The enhancement in wound healing speed post-intervention can be ascribed to the efficacy of betel leaves as a natural antibacterial agent. The antimicrobial action is crucial in wound care as bacteria proliferation can impede healing and elevate the risk of infection. Pharmacological research indicates that Piper betle possesses antibacterial and antifungal properties against many harmful microorganisms (Nayaka et al., 2021).

**Table 4.** Modifications in Perineal Wound Healing Post-Intervention.

| Change in Perineal Wound Recovery | n  | %     |
|-----------------------------------|----|-------|
| Improved more rapidly             | 27 | 90,0  |
| Unchanged                         | 3  | 10,0  |
| Worsened                          | 0  | 0,0   |
| Total                             | 30 | 100,0 |

According to Table 4, the predominant number of respondents exhibited a more rapid enhancement in perineal wound recovery following the administration of a boiling betel leaf infusion, with 27 respondents (90.0%). Three respondents (10.0%) did not exhibit substantial changes, and no respondents reported a deterioration of the wound state. The findings suggest that the boiled betel leaf infusion positively impacts most postpartum mothers.

The enhancement of perineal wounds post-intervention may result from boiled betel leaves, which assist in preserving the cleanliness of the perineal region and promoting optimal wound conditions. Betel leaves possess bioactive compounds with possible antibacterial effects, hence aiding in the inhibition of microbe proliferation in wound sites. Numerous phytochemical and pharmacological research have documented the antibacterial and antifungal properties of betel leaf (Nayaka et al., 2021).

The existence of three responders who experienced no changes may be attributed to various causes, including the severity of the wound, compliance with care, perineal hygiene, nutritional status, mobility, and the mother's health condition. The repair of perineal wounds is affected not only by the therapies administered but also by both internal and external factors that facilitate tissue regeneration. Complications of perineal wounds, including infection and dehiscence, might differ among individuals; therefore, the condition of the wound must be monitored by healthcare specialists (Jones et al., 2019).

**Table 5.** The Impact of Betel Leaf Decoction on the Rate of Perineal Wound Healing.

| Variable             | Mean Before Intervention | Mean After Intervention | Mean Difference | P-value |
|----------------------|--------------------------|-------------------------|-----------------|---------|
| Perineal wound score | 6,20                     | 2,43                    | 3,77            | 0,000   |

According to Table 5, the mean perineal wound score prior to the intervention was 6.20, which diminished to 2.43 following the administration of a betel leaf decoction, resulting in an average difference of 3.77. The reduction in score signifies an enhancement in the state of the perineal wound following the intervention. A lower wound score indicates superior perineal wound recovery.

The statistical test yielded a p-value of 0.000, indicating  $p < 0.05$ . This indicates a substantial impact of betel leaf decoction administration on the rate of perineal wound healing in postpartum moms at RSUD Batu Binakang. Consequently, the research hypothesis is validated, indicating that the administration of betel leaf decoction influences the rate of perineal wound healing.

These findings are consistent with prior studies indicating that the infusion of green betel leaves positively influences the healing of perineal lesions in postpartum moms, as evidenced by a significant p-value (Husnalizat, 2025). A further study examined the efficacy of red betel leaf decoction against binahong leaf decoction in the healing of perineal wounds in postpartum women, hence affirming the continued relevance of herbal therapies in perineal wound care research (Priyanti et al., 2024).

#### 4. Conclusion

The findings indicate that the administration of betel leaf decoction influences the rate of perineal wound healing in postpartum women at RSUD Batu Binakang. Subsequent to the intervention, the mean perineal wound score diminished, and the majority of participants reported expedited wound healing. Consequently, boiled betel leaves may serve as an adjunctive therapy for perineal wound care in the postpartum phase. Postpartum mothers are instructed to uphold hygiene in the perineal region and administer wound care as per healthcare professionals' directives. Healthcare providers can educate on safe perineal wound care, including the application of boiled betel leaves as an adjunct therapy. Researchers are encouraged to employ a greater sample size, incorporate a control group, and extend the duration of observation.

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