Original Article :

Effectiveness of Betel Red Leaf and Binahong on Perineal Wounds of Post Partum Women: A Randomized Trial

Ika Murtiyarini[1], Suryani[1], Dewi Nopiska Lilis[1], Dessi Afrianti[2]

1. Department of Midwifery, Health Polytechnic of Jambi, Public of Health Research Centre, Jambi, Indonesia.
2. Public Health Center Bungo I, Jambi, Indonesia.

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Corresponding Author:

Ika Murtiyarini, Department of Midwifery, Health Polytechnic of Jambi, Public of Health Research Centre, Jambi, Indonesia, ikamurtiyarini.poltekkes@gmail.com

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Abstract

Background and Aims:
Perineal infection is often found in mothers after giving birth. This study aims to explain the effectiveness of red betel leaves and Binahong on perineal wound healing.

Methods:
This a randomized trial study used a two-group with a control posttest design involving 100 postpartum mothers with ruptured perineum who were allocated to the Binahong group, as many as 50 postpartum mothers who received intervention of Binahong leaves and 50 other postpartum mothers to the betel group who received intervention of red betel leaves. Research data were analyzed using the Wilcoxon test.

Results:
The results showed that the average healing time for perineum wounds using red betel leaves was 1-6 days, while the average healing time for Binahong leaves was 7-14 days or even more. The Wilcoxon test results showed that red betel and Binahong leaves were effective in treating perineal wounds in postpartum mothers (p-value <0.001).

Conclusions:
Boiled water from red betel leaves is more effective in healing perineal wounds than boiled water from Binahong leaves.

Keywords:
Betel Red, Binahong, Perineal Wounds, Postpartum Period

Introduction:

Perineal wound care methods affect the duration of wound healing, where the better the perineal care, the faster the perineal wound healing[1]. Perineal wound care can be done using three techniques, namely techniques with antiseptics, dry cleaning techniques, and traditional methods[2–4].

Ensuring diligent post-birth care is crucial, as statistics reveal a staggering 60% of maternal fatalities linked to childbirth happen in the postpartum period, with half of those occurring within the initial 24 hours [5]. Leading causes of maternal demise include hemorrhaging (30.3%), hypertension (27.1%), infections (7.3%), and miscellaneous factors (40.8%). The immediate post-delivery week commonly witnesses morbidity stemming from conditions such as endometriosis, mastitis, episiotomy or laceration infections, urinary tract infections, and various other ailments[6].

Reports from health service facilities in Jambi Province in 2021 showed 53 cases of maternal death, totaling 70,223 live births. If projected, the maternal mortality rate in Jambi Province in 2020 will be 75 per 100,000 live births. The highest number of maternal deaths in Jambi Province in 2021 were in Jambi City (9 cases), Merangin Regency (8 cases), and Bungo Regency (5 cases). In 2015 maternal deaths in Bungo Regency increased dramatically with 46 cases, and until July 2016, maternal deaths had reached 18 cases. Currently, Bungo Regency is in the first position with the highest maternal mortality[7].

The normal postpartum period (puerperium) is the time needed for the mother's internal genital organs to return to normal anatomically and functionally, around 6 weeks. Injury to the birth canal can occur because labor is not led as it should, childbirth by vacuum extraction, sharp-point extraction, embryotomy, and birth canal injuries can also occur because of intentional actions such as an episiotomy. Perineal tears occur in almost all first deliveries and are not uncommon in subsequent deliveries [8]. The perineum is a sensitive area, and muscles are involved when the mother sits, bend over, squat, urinate and defecate. Perineal tears can cause pain that interferes with activity[9].

Poor perineal wound care can lead to infection, where puerperal infection is one of the causes of postpartum maternal death[10,11]. Tears in the birth canal or episiotomy cause cases of this infection (25-55%). Mothers with this infection mostly complain of pain in the episiotomy area and are worried that the stitches will come off. For this reason, a mother neglects to carry out good personal hygiene care such as bathing, wiping, and changing dressings for injuries to the birth canal, which

are good media for developing germs. The mother's low immune system causes it after giving birth, poor care and poor hygiene[12,13].

Perineum care traditionally uses plants containing natural ingredients as raw materials. The traditional way can be done in several ways, including using boiled water from Binahong leaves and boiled water from red betel leaves. Binahong and red betel plants are easy to obtain, cheap, and have low danger and risk. People rarely use traditional medicine to treat wounds (back to nature), even though traditional medicine is good, including using efficacious plants[14–16].

This study intends to evaluate the effectiveness of red betel and Binahong leaves in promoting the healing of perineal wounds in postpartum women at the Bungo I Health Center.

Materials and Methods:

Design study:

This type of research is a randomized trial using a two-group design with a control posttest design carried out in April - June 2022 at the Bungo I Community Health Center, Jambi City, Indonesia.

A two-group posttest control design is an experimental approach in which subjects are divided into two groups: a control group and a treatment group, with outcomes compared between the two [17]. In this study, the treatment group received a decoction of binahong leaves, while the control group was given a decoction of sihih leaves. The results of the intervention were measured after both groups had received their respective treatments.

Participant:

The participants in this study were 100 postpartum women with perineal injuries in the working area of the Bungo I Public Health Center who were randomly selected and met the inclusion requirements such as postpartum mothers with second-degree perineal wounds due to rupture, postpartum women who gave birth normally, second day postpartum, whereas postpartum mothers with perineal wounds due to episiotomy were excluded from the study.

The first step is to identify postpartum mothers as the target population, specifically those receiving care at Bungo I Community Health Center in Jambi City. The next step involves defining the sample criteria, which include postpartum mothers with second-degree perineal tears, those who delivered vaginally, and mothers in their second day postpartum. Samples are then selected based on these criteria. A list of eligible postpartum mothers is compiled, and samples are chosen by selecting odd-numbered entries in the sequence until a total of 100 participants is reached.

The participants are then divided into two groups: 50 for the treatment group and 50 for the control group.

The investigation enlisted 100 individuals categorized into two distinct groups. This count was derived through computations utilizing the Slovin formula [18]. Specifically, the calculation involved a population of 134 with a margin of error of 0.05, resulting in a sample size of 100.

Intervention:

The dependent variable of the study was the healing time of perineal wounds in postpartum mothers, while the independent variable of the study was the administration of Binahong leaves and boiled water from red betel leaves.

In the Binahong leaf intervention, 9 pieces of dried Binahong leaves were prepared. Furthermore, 5 grams of Binahong leaves are boiled using 2 cups of boiling water (400 ml) for 15 minutes until 1 cup of water (200 ml) remains. The remaining 1 cup of boiled water is then lowered to a temperature of 35-400C, then filtered. The boiled water is then used for wiping twice daily, in the morning and evening. Mothers are educated about the correct method of wiping by pouring boiled water from Binahong leaves with their hands over the perineal wound area.

After giving red betel leaf boiled water, 5 grams of dried red betel leaves were boiled in 2 cups of boiling water (400 ml) for 15 minutes until 1 cup of water (200 ml) remained. Then let it stand until the temperature is 35-400C, then filter so that only the water remains. The boiled water is then used for wiping twice daily, in the morning and evening.

Prior to giving the intervention, the perineal area was cleaned first using soap and rinsed with water from front to back. After that, clean with boiled water from Binahong leaves and red betel leaves.

After the intervention, the researchers made observations every day after giving red betel leaf boiled water for 14 days; then, on the 15th day, observations and assessments were made of the condition of the perineal wound. The criteria for perineal wound healing use 3 categories, Fast: if the wound heals within 1-6 days; normal: if the wound heals within 7-14 days and Long: if the wound heals within >14 days.

Outcomes:

The results of healing perineal wounds were obtained using boiled water from Binahong leaves and red betel leaves.

Data collection:

The data collection technique used an observation sheet for observation, measurement, and direct examination of post-partum mothers on the first day using boiled red betel leaves with boiled Binahong leaves for 7 days. In collecting data, the au-

thors were assisted by village midwives in the working area of the Bungo I Health Center, whom researchers had trained.

Ethical Consideration:

The researcher's meeting with participants begins with introducing himself and explaining the purpose of the research and how the research will be carried out. Researchers verbally asked about participants' willingness to participate. The researcher also gave freedom to the participants to withdraw from the research at any time. Researchers also guarantee the confidentiality of participants, especially for private matters. Participants willing to participate are then given an informed consent sheet to sign. The study was approved by the Ethics Committee of the Ministry of Health, Jambi, and registration number: LB.02.06/2/13/2022.

Statistical analysis:

The information is depicted through numerical figures and proportions for categorical variables. Variable The average duration of healing of perineal wounds is continuous data. Continuous data were expressed as mean ± standard deviation (SD) or median with Interquartile Range (IQR). The data normality test uses Kolmogorov Smirnov, and the results show that the data is not normally distributed. Subsequently, a bivariate analysis was undertaken employing the ANCOVA test to assess the impact of video and leaflet interventions on knowledge. Any tests yielding a p-value (p) below 0.05 were deemed statistically significant. Statistical computations were executed utilizing the SPSS version 16.0 software.

Results:

There is a difference in the healing time of perineal wounds using Binahong leaves and red betel leaves, where boiled water from red betel leaves heals perineal wounds more quickly. The distribution of perineal wound healing duration was presented in table1.

Table 1: Distribution of perineal wound healing duration:

Criteria	Binahong	Red Betel
Fast	(0%) 0	(92%) 46
Normal	(16%) 8	(8%) 4
Long	(84%) 42	(0%) 0

Table 2: Average duration of perineal wound healing:

Variable	n	Mean±SD	Mean different	P-value
Binahong				
Pre-test	50	2**±0.0**	13.1	0.001
Post-test	50	15.1**±2.18**		
Red Betel				
Pre-test	50	2**±0.0**	3.94	0.001
Post-test	50	5.94**±0.87**		

Table 2 show that in the group of postpartum women who received boiling water from Binahong leaves, the average perineal

wound healing was on day 15, while in the group of postpartum women who received the intervention of boiling water from red betel leaves on day 6. However, statistically, both interventions were significant, meaning they were effectively used for healing perineal wounds.

Discussion:

1. Binahong leaves:

Every vaginal delivery process results in injury to the perineum [19]. If left un-treated, it can lead to infection. Infection is the fourth highest cause of maternal death in Indonesia during the postpartum period. Postpartum infection occurs in the genital tract after birth caused by bacteria. As an effort to prevent postpartum infec-tion, non-pharmacological therapy is given: Binahong leaves (Anredera Cordifolia) and betel leaves (piper bitle) as vulva hygiene to speed up wound healing. There is an antibiotic effect in the boiled water of Binahong leaves and betel leaves[8,20].

Binahong leaf in this study, although the effect lasts longer than red betel leaf, is statistically significant. The benefits of Binahong are that it is useful in wounds treatment. Previous study has shown that Binahong leaves contain active compounds of flavonoids, alkaloids, terpenoids, and saponins. Flavonoid com-pounds exhibit antibiotic properties by directly disrupting the function of microor-ganisms like bacteria and viruses. These compounds possess pharmacological effects that include anti-inflammatory, pain-relieving, and antioxidant properties[21–23].

The findings of present study corroborate with a study conducted by Gupta in India [24], which highlighted the superior efficacy of boiled Malabar spinach leaf water (known as Binahong leaves in Indonesia) in facilitating the healing of perineal wounds. Additionally, the research conducted by Purwasih et al. reported that the extract from Binahong leaves accelerates wound healing in animals, suggesting its potential as an alternative therapeutic approach [25].

Numerous research endeavors have explored the beneficial impact of Binahong leaf extract across various contexts. These include studies on its efficacy in promoting wound healing in postpartum rabbit uteruses, addressing Staphylococcus aureus infections in rats, reducing burn surface areas in Sprague Dawley rats, facilitating re-epithelialization of epidermal tissue in burns of Sprague Dawley rats, expediting wound recovery in Webster male Swisskusus, and assessing the effectiveness of Binahong leaf extract ointment on rabbits infected with Staphylococcus aureus[26].

The active ingredients in Binahong leave inhibit the growth and reproduction of bacteria. The inhibition of microbial de-

velopment will affect the development of reduced tissue damage. Furthermore, the wound-healing process can be accelerated. The highwater content in Binahong leaves will condition the wound in a moist state and support new tissue growth or granulation and tissue epithelialization, especially for postpartum mothers who experience perineal tears.

2. Betel leafThe findings of the research indicate that individuals utilizing betel leaves tend to experience quicker perineal wound healing compared to those who do not use betel leaves or employ Binahong leaves. It is due to betel leaves' chemical content, which can accelerate the wound-healing process. The compounds contained in red betel cooking water contain antiseptic. Perineal wound healing occurs quickly because postpartum mothers use betel leaf boiled water for 2-4x/day after bathing, so it can be said that the treatment of birth canal injuries using betel leaves by boiling and using the water to clean birth canal injuries can accelerate wound healing because betel leaves contain chavicol, and several other biochemical compounds[27]. This biochemical compound can kill germs, fungi, and bacteria 5 times that of ordinary phenol and contains antioxidants. In addition, red betel leaf is also a natural antiseptic with no side effects, so it is safe to use. Using boiled wa-ter from betel leaves for wiping will help speed up wound healing.

The boiled water extracted from betel leaves contains chemical constituents that elicit vascular responses, stimulate cellular activity, and facilitate the production of mediator substances within the wound site, all of which are interconnected ele-ments crucial for the process of wound healing. According to research reviews, it was discovered that the application of boiled water from red betel leaves proved ef-ficacious in the healing of perineal wounds [27–29]. The underlying theory suggests that the chemical composition and properties of betel leaves, including hydroxy chavikol, cavi-betol, estragol, eugenol, metileugenol, and carvacrol, confer potent antibacterial capabilities, surpassing those of conventional phenols by fivefold. Chavicol, a constituent of betel nut, functions as an antiseptic agent. Furthermore, the essential oils found in red betel leaves, containing chavicol and chavibetol, pos-sess antiseptic properties. The effectiveness of this antiseptic action is believed to stem from its ability to impede bacterial growth in wounds [30]. Betel leaves also con-tain saponins, which promote the synthesis of collagen, a pivotal protein involved in the wound healing process [31].

According to a literature review, no harmful effects of betel leaf decoction on humans have been identified, although ex-

cessive use may lead to adverse outcomes. Daily consumption of betel leaf decoction can eliminate not only harmful bacteria in the digestive system but also beneficial bacteria (Mulyanto & Mulyono, 2003).

Study limitation:

The limited sample size may reduce the ability to generalize the study's findings to a broader population. Additionally, the control group samples were drawn from the same institution or location as the treatment group.

Conclusion:

The healing of perineal wounds is more efficient when treated with boiled red betel leaves compared to boiled Binahong leaves. The group of postpartum women who received boiling water from Binahong leaves, the average perineal wound healing was on day 15, while in the group of postpartum women who received the intervention of boiling water from red betel leaves on day 6. These findings can increase people's confi-dence in using natural food ingredients and medical drugs in treating perineal wounds in postpartum mothers so that they are very effective in reducing family expenses.

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Authors' Contribution:

IM and SY, conceptualization, methodology, software, formal analysis, data curation, investigation, visualization, resources, writing, and original draft preparation; DNL and DA, conceptualization, methodology, supervision, validation, data curation, formal analysis, reviewing, and editing

Ethical Approval:

The study was approved by the Ethics Committee of the Ministry of Health, Jambi, and registration number: LB.02.06/2/13/2022.

Conflicts of interest:

There are no competing interests for this study.

Informed Consent:

Written and verbal consent was obtained from the postpartum women.

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