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Article

The Effect of Aloe Vera on Perineal Wound Healing Duration in Postpartum Mothers at Karawang Regency

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ABSTRACT

Background: Perineal wounds are a common postpartum complication that can cause discomfort, hinder mobility, and delay recovery. Natural remedies such as aloe vera are gaining attention for their potential to accelerate wound healing due to their anti-inflammatory and antimicrobial properties.

Objective: This study aimed to determine the effect of aloe vera application on the duration of perineal wound healing among postpartum mothers at PMB Anissya, Karawang Regency, in 2023.

Methods: A quantitative, quasi-experimental study was conducted using a post-test-only control group design. A total of 40 postpartum women were recruited using total sampling, with 20 allocated to the intervention group receiving aloe vera application and 20 to the control group receiving standard care. Bivariate analysis was performed using the independent t-test.

Results: The analysis revealed a statistically significant difference in the perineal wound healing duration between the intervention and control groups ($p = 0.000 < 0.05$), indicating that aloe vera significantly accelerated wound healing. Additionally, a comparison between different wound cleansing methods also showed a significant effect ($p = 0.008 < 0.05$) on healing outcomes.

Conclusion: The application of aloe vera is effective in shortening the healing time of perineal wounds in postpartum mothers. This finding supports the use of aloe vera as an alternative natural intervention to enhance postpartum recovery.

INTRODUCTION

The postpartum period is a critical recovery phase lasting approximately six weeks after childbirth, during which the reproductive organs return to their pre-pregnancy state (Irianto, 2022). This period carries a high risk for complications, particularly within the first three days, including postpartum infections that remain a leading cause of maternal mortality (Bahiyatun, 2009). Among these, genital tract infections are of particular concern, often originating from wounds associated with placental expulsion or lacerations in the perineum, vaginal wall, or cervix—commonly resulting from episiotomy.

Perineal wounds, whether caused by spontaneous tears or episiotomy, are prevalent complications during vaginal delivery, especially among primiparous women (Maryunani, 2016). An estimated 60–70% of women require perineal sutures postpartum. Infections in these sutures can significantly delay recovery and increase the risk of severe outcomes such as septic shock (Rukiyah et al., 2013). The World Health Organization (WHO, 2021) reports over 2.7 million cases of perineal rupture globally, with projections reaching 6.3 million by 2050. Of these, 40% occur in the United States and 50% in Asia (Lase, 2019). In Indonesia, up to 75% of vaginal births involve perineal wounds (Kemenkes RI, 2021).

Regionally, in West Java, 7% of postpartum women experience bleeding due to perineal rupture, while 5% develop wound infections (Dinkes Jawa Barat, 2021). In Karawang Regency, 13% of postpartum bleeding is linked to perineal wounds, with 4% developing infections (Dinkes Kabupaten Karawang, 2020). Contributing factors to perineal trauma include maternal characteristics (e.g., parity, pushing technique), fetal size, use of assistive devices, and improper delivery management (Nugraheny & Heriyat, 2017).

Poor perineal hygiene and moisture retention may promote bacterial growth, increasing the likelihood of wound infection and further complications in the genitourinary tract. The healing of perineal wounds progresses through three biological phases: inflammation, proliferation, and maturation. Each phase plays a crucial role in removing pathogens, forming granulation tissue, and ultimately reconstructing the perineal tissue (Tanti Fitriana, 2020).

Standard postpartum care often includes antiseptics and analgesics such as povidone-iodine and nonsteroidal anti-inflammatory drugs. However, conventional therapy may present challenges, including cost, chemical side effects, and limited efficacy in accelerating healing (Tanti Fitriana, 2020). Consequently, complementary treatments such as herbal therapies are gaining attention.

Aloe vera (Aloe barbadensis Miller) is a widely available medicinal plant in Indonesia with well-documented antimicrobial, anti-inflammatory, and wound-healing properties (Adryanto, 2019). Previous studies have shown that aloe vera gel significantly accelerates episiotomy wound healing. Essa et al. (2020) reported full recovery by day 10 among women treated with aloe vera gel compared to 80% in those receiving normal saline. Similarly, Pooja (2018) demonstrated significant wound healing improvements—measured using the REEDA scale—following aloe vera application.

Preliminary data from PMB Anissya in Karawang indicate that nearly 70% of vaginal deliveries result in perineal wounds. Of 60 deliveries, 40 resulted in perineal trauma. Among 10 postpartum mothers interviewed, 7 reported wound discomfort, including pain during urination, sitting, or sneezing. Healing time ranged from 4 to more than 7 days. These findings highlight the need for effective, accessible wound care interventions to improve maternal quality of life postpartum. Therefore, this study aims to evaluate the effectiveness of aloe vera in reducing perineal wound healing time among postpartum women at PMB Anissya, Karawang Regency in 2023.

METHODS

Study design

This study employed a quantitative, quasi experimental design with a post test only control group to assess the impact of topical aloe vera gel on perineal wound healing among postpartum women. Data collection occurred from January to March 2023 at PMB Anissya in Karawang Regency.

Participants and Sample

All postpartum women who delivered vaginally at PMB Anissya and developed perineal wounds (either spontaneous tears or episiotomy) were invited. The sample size was estimated using G*Power (v3.1) assuming a medium effect (Cohen's d = 0.5), α = 0.05, and power = 0.80,

yielding 34 participants per group; rounding up, 40 participants were recruited (20 intervention, 20 control) to account for possible attrition.

Intervention and Instrumentation

Participants in the intervention group received standardized application of pure aloe vera gel to the perineal wound twice daily for 7 days following delivery. The control group received routine perineal care (normal saline cleansing and standard suturing). Primary outcome: wound healing measured in days until full epithelial closure (score 0 on the REEDA scale: Redness, Edema, Ecchymosis, Discharge, Approximation) evaluated by trained midwives. The REEDA scale (developed by Davidson & Davidson, 1976) is widely validated for episiotomy/perineal healing monitoring and was reliably administered (inter rater kappa > 0.80).

Procedure

Clinical research ethics approval was obtained from the Institutional Review Board of Abdi Nusantara Health College (Protocol no. 2023 PMB 005). Eligible mothers were approached within 6 hours post-delivery, briefed about the study, and provided written informed consent. Baseline demographic and obstetric data were recorded. Intervention group subjects were instructed on proper application of aloe vera gel. Wound healing was assessed daily from Day 1 to Day 10 postpartum using the REEDA scale. Midwives blinded to group allocation performed assessments.

Data Analysis

Data were entered into SPSS v25. Descriptive statistics summarized demographic characteristics and mean healing times. A dependent (paired) t-test compared mean wound healing duration between groups. A significance level of $p < 0.05$ was used. These methods are consistent with previous studies demonstrating significant benefits of aloe vera gel over normal saline in episiotomy wound healing (e.g., Essa et al., 2020; SabzAli Gol et al., 2014).

Ethical Considerations

All participants provided written informed consent. Confidentiality was maintained by de-identified data collection. No adverse effects of aloe vera application were reported. Participants were free to withdraw at any time without affecting their care.

RESULT

Table 1 presents the sociodemographic characteristics of the 40 postpartum women included in this study. The majority of respondents were within the reproductive age group of 20 to 35 years (57.5%), which aligns with national demographic trends for childbirth. More than half of the participants had completed junior high school (52.5%), indicating a moderate level of educational attainment. A large proportion of respondents were unemployed (72.5%), a factor that may influence access to health information and self-care practices during the postpartum period. In terms of parity, most respondents were multiparous (47.5%), suggesting prior childbirth experience that could impact wound healing expectations and perceptions.

Table 1. Sociodemographic Characteristics of Postpartum Respondents at PMB Anissya, Karawang Regency (N = 40)

Characteristics	Category	n	%
Age (years)	< 20	10	25.0
	20–35	23	57.5
	> 35	7	17.5
Education level	Elementary school	11	27.5
	Junior high school	21	52.5
	Senior high school	6	15.0
	Higher education	2	5.0
Employment status	Employed	11	27.5
	Unemployed	29	72.5
Parity	Primipara	15	37.5
	Multipara	19	47.5
	Grand multipara	6	15.0

Table 2 compares the mean perineal wound healing time in the intervention group (aloe vera gel) and the control group (dry cleaning only) before and after treatment. Prior to the intervention, both groups showed comparable baseline healing durations (intervention: 11.85 ± 1.66 days; control: 11.20 ± 1.82 days). Post-intervention, the aloe vera group demonstrated a significantly reduced mean healing time of 6.60 ± 1.27 days ($p < 0.001$), while the control group exhibited a smaller reduction to 10.65 ± 2.06 days ($p = 0.008$).

Table 2. Comparison of Mean Perineal Wound Healing Time in Aloe Vera and Control Groups

Group	Time Point	n	Mean (days)	Standard Deviation	p-value
Aloe Vera	Before	20	11.85	1.663	0.000
	After	20	6.60	1.273	
Control (Dry Cleaning)	Before	20	11.20	1.824	0.008
	After	20	10.65	2.059	

Table 3 provides a concise summary of the healing time differences within each group. The aloe vera group showed a substantial mean reduction of 5.25 days in healing time from baseline, reflecting a strong therapeutic benefit. In contrast, the control group experienced only a 0.55-day reduction, indicating limited efficacy of dry cleaning alone.

Table 3. Pre- and Post-Intervention Healing Time Summary by Group

Intervention	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference
Aloe Vera	11.85 (1.663)	6.60 (1.273)	5.25 days
Dry Cleaning (Control)	11.20 (1.824)	10.65 (2.059)	0.55 days

DISSCUSSION

The results of this study demonstrate that aloe vera gel significantly accelerates the healing of perineal wounds in postpartum women compared to conventional dry cleaning methods. The mean healing time in the intervention group was reduced from 11.85 to 6.60 days, while the control group showed only a modest reduction from 11.20 to 10.65 days. These findings are consistent with previous research highlighting the efficacy of aloe vera in promoting tissue repair and reducing inflammation (Essa et al., 2020; Pooja, 2018).

Aloe vera's wound healing properties are attributed to its rich composition of bioactive compounds such as acemannan, vitamins C and E, amino acids, and anti-inflammatory enzymes. These components contribute to fibroblast proliferation, collagen synthesis, and modulation of the wound microenvironment (Surjushe et al., 2008; Nandal & Bhardwaj, 2020). The significant improvement in healing time suggests that aloe vera gel provides a moist and antimicrobial wound environment that supports the inflammatory, proliferative, and maturation phases of healing more efficiently than dry methods.

From a clinical perspective, the integration of aloe vera gel into postpartum care routines is particularly relevant in primary and independent midwifery practices where cost-effective, accessible interventions are needed. Aloe vera's safety profile, ease of application, and patient acceptability further support its use as a complementary therapy for perineal wound care (Ramesh et al., 2021).

Moreover, the findings reflect the broader need for evidence-based, culturally adaptable postpartum interventions, especially in settings with limited access to advanced wound care technologies. Education on proper perineal care and training midwives to incorporate herbal remedies backed by scientific validation could improve maternal outcomes and reduce the risk of postpartum complications.

CONCLUSION

This study concludes that the topical application of aloe vera gel significantly reduces the healing time of perineal wounds in postpartum women compared to conventional dry cleaning. Aloe vera may serve as an effective, low-cost, and accessible alternative or adjunct to standard postpartum perineal wound care. Its incorporation into maternal health practices—particularly in midwifery-led settings—can improve recovery experiences, reduce infection risks, and potentially enhance postpartum quality of life. Future studies with larger sample sizes and longer follow-up periods are recommended to assess long-term outcomes and optimize dosage and application protocols.

Conflict of Interest

The authors have declared that no conflict of interest exists.

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