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Correlation of giving early white eggs on acceleration of wound healing perineum degrees II in postpartum mother

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Abstract

The postpartum period begins after the placenta is delivered and lasts approximately six weeks, during which mothers are vulnerable to complications such as puerperal infections. One contributing factor is perineal injury, particularly second-degree tears that commonly occur during childbirth. Optimal healing of these wounds is crucial to prevent infection, and adequate protein intake—including easily accessible sources such as egg whites—may help accelerate the healing process. In Indonesia, perineal ruptures remain common, occurring in a considerable proportion of mothers across reproductive age groups. This condition highlights the need for effective nutritional interventions to support postpartum recovery. This study aims to determine the effect of additional egg white consumption on the acceleration of second-degree perineal wound healing in postpartum mothers at PMB Utin Mulia Pontianak. Using a descriptive analytic design with a cross-sectional approach, the study included 20 postpartum mothers selected through purposive sampling, divided equally into intervention and control groups. Data analysis using the Chi-Square test showed a significant relationship between egg white consumption and wound healing. In conclusion, egg white supplementation was found to positively support the acceleration of perineal wound healing in postpartum mothers, indicating its potential as a simple and beneficial nutritional intervention during the postpartum period.

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INTRODUCTION

The postpartum period begins after the placenta is delivered and ends when the reproductive organs return to their pre-pregnancy state, lasting approximately six weeks. During this period, mothers are vulnerable to various health problems, including perineal suture wounds, which may lead to complications such as hematoma, inflammation, infection, sepsis, or even death if not properly managed (Ambarawati, 2010). Perineal injuries are among the most common causes of postpartum infection, and the healing process is often prolonged because the affected area does not dry easily. It is estimated that 70% of women who give birth vaginally experience some degree of perineal trauma, indicating the significance of effective wound management.

Perineal wounds result from lacerations occurring during childbirth, and their healing is influenced by several factors, including early mobilization, vulvar hygiene, wound size, age, vascularization, stress, and nutrition. A perineal wound is considered healed when it becomes dry, closed, and free of infection within one week (Roma et al., 2023). In Indonesia, perineal lacerations occur in 75% of vaginal births, and among 1,951 spontaneous deliveries in 2013, 57% required suturing (28% due to episiotomy and 29% due to spontaneous tears) (Desti, & Yanuarti, 2023). In Pontianak City, postpartum infections accounted for 21% of maternal health issues, emphasizing the need for proper postpartum wound care. Nutrition, especially protein, plays a major role in wound healing, as nutrients such as protein, iron, zinc, and vitamins A and C support collagen synthesis and epithelialization.

Egg whites are a rich source of albumin, a key protein required for tissue repair. Egg whites contain no fat and are affordable and accessible, making them suitable for assisting the wound healing process. Albumin constitutes 60% of plasma proteins and contributes to the growth of new cells, thus accelerating the recovery of damaged tissue (van de Wouw, & Joles, 2021). Chicken egg whites contain an average of 10.5 grams of protein per 100 grams, with 95% of it being albumin (van de Wouw, & Joles, 2021). Budiarti, Y., & Mahda (2023) found that egg whites were more effective than snakehead fish in promoting wound healing, with most postpartum mothers showing rapid wound recovery.

Despite these findings, the healing of second-degree perineal wounds generally requires 6–7 days for new tissue formation, which may limit maternal mobility and daily activities (Mas'adah, 2010). Meanwhile, observations at PMB Utin Mulia show that most postpartum mothers follow regular dietary patterns without major restrictions, consuming rice, vegetables, fruits, and side dishes, although spicy foods are avoided. With an increasing number of deliveries reaching approximately 300 births in 2018 and most experiencing second-degree perineal tears, there is a clear need to evaluate practical, affordable nutritional interventions that can support wound healing among postpartum mothers in this setting.

Based on the above, the gap lies in the limited evidence regarding the targeted use of egg white consumption specifically for accelerating second-degree perineal wound healing in community-based midwifery practices such as PMB Utin Mulia. The novelty of this study is the application of egg white intake as a focused dietary intervention for postpartum wound healing within a real-world midwife-led care environment, supported by controlled comparison between intervention and non-intervention groups. Therefore, the purpose of this study is to determine the effect of additional egg white consumption on accelerating the healing of second-degree perineal wounds among postpartum mothers at PMB Utin Mulia Pontianak.

METHOD

This study employed a descriptive analytical design, which aims to describe a phenomenon occurring in the community and analyze the relationship between variables. The approach used was a cross-sectional study, in which the independent and dependent

variables were measured simultaneously at a single point in time. This approach is appropriate for assessing the relationship between albumin intake (egg white consumption) and the healing of perineal wounds among postpartum mothers.

The population in this study consisted of all postpartum mothers who experienced second-degree perineal tears and received care at PMB Utin Mulia, Pontianak City. The sample was selected using a purposive sampling technique based on predetermined inclusion criteria, including postpartum mothers with second-degree perineal wounds who were willing to participate and able to complete the study procedures.

The total sample size was 20 respondents, divided into two groups of 10 participants each: an intervention group that received egg-white (albumin) intake and a control group. This sample size was determined based on the feasibility of the available population and the research objective of assessing differences in wound-healing outcomes between groups.

Data were collected through direct observation of perineal wound conditions using a standardized wound-healing assessment checklist, as well as documentation of egg-white consumption according to the intervention protocol. Wound assessment was carried out daily until the seventh postpartum day to evaluate healing indicators such as dryness, wound closure, and the absence of infection.

The collected data were then analyzed descriptively to describe respondent characteristics and wound-healing status, followed by bivariate analysis to examine the relationship between egg-white administration and perineal wound-healing acceleration using appropriate statistical tests based on data type and distribution.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondents Based on Mother's Age in the Intervention and Control Groups At PMB Utin Mulia, Pontianak City, June 2019.

Age (years)	Intervention (N)	%	Control (N)	%
< 20 years	0	0	0	0
20–35 years old	7	70	8	80
> 35 years old	3	30	2	20
Total	10	100	10	100

Table 1 shows that of the 10 respondents in the intervention group, 7 respondents (70%) were aged between 20 and 35 years, while 3 respondents (30%) were aged over 35 years. Meanwhile, in the control group, 8 respondents (80%) were aged between 20 and 35 years, while 2 respondents (20%) were over 35 years old. Therefore, based on Table 5.1, the frequency distribution of respondents based on the age of the mother in the intervention and control groups at BPM Utin Mulia, Pontianak City, in June 2019, showed that the average age was 20–35 years.

Table 2. Tabulation of the Relationship Between Postpartum Mothers Who Were Given and Not Given Additional Egg White Consumption and Healing Grade II Perineal Wounds at PMB Utin Mulia Hospital, Pontianak City, June 2019.

Wound Healing	Acceleration of Perineal Wound Healing Day 5				p-value
	Egg White		Not White Egg		
	N	%	N	%	
Recovered	9	90	3	30	0.010
Not recovered	1	10	7	70	
Total	10	100	10	100	

Based on Table 2, among the 10 respondents who received additional egg-white

consumption, 9 respondents (90%) showed accelerated healing of second-degree perineal wounds by the fifth postpartum day, while only 1 respondent (10%) experienced delayed healing. In contrast, among the 10 respondents who did not receive egg-white supplementation, only 3 respondents (30%) demonstrated accelerated wound healing on the fifth day, whereas the remaining 7 respondents (70%) experienced delayed healing.

To determine whether there was a statistically significant relationship between egg-white consumption and the acceleration of second-degree perineal wound healing, a Chi-Square test was initially performed. However, because the test did not meet the required assumptions, the analysis was continued using the Fisher's Exact Test with a significance level (α) of 0.05. The result showed a P-value of 0.010, indicating that H_0 was rejected and H_a was accepted.

These findings demonstrate a significant relationship between additional egg-white consumption and the acceleration of second-degree perineal wound healing in postpartum mothers at PMB Utin Mulia, Pontianak City. This suggests that egg-white intake can effectively support faster recovery during the postpartum period.

DISCUSSION

Based on Table 2, the majority of postpartum mothers who received additional egg-white consumption experienced accelerated healing of second-degree perineal wounds by the fifth postpartum day, with 90% showing rapid healing and only one respondent experiencing delayed recovery. Protein contained in egg whites plays a vital role in rebuilding damaged tissue, as it functions as the main structural component required for cell formation (Dong, & Zhang, 2021; Ge, et al., 2021; Yang et al., 2023). Eggs are also known to contain high-quality protein because they have complete essential amino acids, making them a benchmark for assessing protein quality in various food ingredients (Drewnowski, et al., 2021; Pratama, et al., 2021; Onyenweaku et al., 2022). In this study, egg whites were boiled to ensure safe consumption, and chicken eggs were selected due to their higher protein content. Their choline and albumin content assist in repairing damaged tissue, allowing new, healthy cells to form more effectively.

In contrast, Table 2 shows that among the mothers who did not receive additional egg-white consumption, only 30% experienced accelerated healing by the fifth day, while the remaining 70% had delayed recovery. Several maternal characteristics contributed to these differences, such as age, nutritional intake, and mobility. Most respondents were aged 20–35 years, which aligns with safe motherhood guidelines, as younger women generally experience faster tissue healing than older women who are less tolerant of physical stress such as trauma or infection (Coughlin, 2021; Alcock et al., 2024; Ricci, 2024). However, despite being within the ideal reproductive age range, many mothers lacked knowledge about the importance of nutrition especially protein from egg whites in healing perineal wounds. Some respondents also adhered to cultural beliefs that egg whites could hinder the drying of stitches or cause itching, leading them to avoid this food. Their diets tended to be dominated by tofu, tempeh, and small amounts of vegetables, with infrequent consumption of higher-protein foods such as chicken, shrimp, or meat. Limited mobility and poor genital hygiene, especially allowing the stitched perineal area to remain moist, further slowed wound healing.

The relationship between egg-white consumption and accelerated healing of second-degree perineal wounds is evident from the findings presented in Table 2. Nearly all mothers who consumed egg whites 90% experienced rapid healing, and statistical testing using Fisher's Exact Test at a significance level of 0.05 produced a P-value of 0.010. This indicates that H_0 was rejected and H_a was accepted, confirming a significant relationship between additional egg-white intake and accelerated perineal wound healing at PMB Utin Mulia in

Pontianak City. Meanwhile, most mothers in the control group experienced delayed recovery by the fifth postpartum day. These results demonstrate strong alignment between clinical findings and existing theories stating that protein intake is crucial during postpartum recovery. Protein from eggs functions as an essential building block that forms muscle and tissue structures and supports wound healing in the perineal area (Purwaningsih, & Andriani, 2022; Budiarti, & Mahda, 2023; Wulandari et al., 2024). Furthermore, choline in boiled eggs contributes to repairing damaged cells and supports the formation of new, healthy tissue (Wilcox et al., 2021; Zhang, & Mine, 2023). Thus, the findings support the conclusion that egg-white consumption is an effective and accessible nutritional intervention to accelerate perineal wound healing in postpartum women.

CONCLUSION

In conclusion, egg white supplementation was found to positively accelerate perineal wound healing in postpartum mothers, demonstrating its potential as a simple, accessible, and beneficial nutritional intervention during the postpartum period. To strengthen the evidence, future research should examine the optimal dosage and duration of egg white consumption, involve larger and more diverse populations through randomized controlled trials, and include biochemical assessments such as inflammatory markers and collagen formation to better understand the underlying mechanisms. Comparative studies with other protein sources or nutritional therapies are also recommended to determine its relative effectiveness in supporting postpartum wound recovery.

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