

The Relationship Between Perineal Care Practices And Nutritional Status Of Postpartum Mothers And Perineal Wound Healing Time At Oekam Health Center

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ABSTRACT

Perineal wounds are susceptible to infection, particularly when the healing process is prolonged or perineal care is inadequate. This study aimed to examine the association between perineal care, nutritional status, and perineal wound healing time among postpartum mothers at the Oekam Health Center. A correlational study with a cross-sectional design was conducted. The study population consisted of all postpartum mothers with perineal wounds at the Oekam Health Center. Using a total sampling technique, 16 respondents were included in the study. The independent variables were perineal care and nutritional status, while the dependent variable was perineal wound healing time. Data were collected through observation and analyzed using multiple linear regression with a significance level of $\alpha = 0.05$. The results showed that 50.0% of the respondents had adequate perineal care, 62.5% had normal nutritional status, and 50.0% experienced prolonged perineal wound healing. Simultaneous analysis revealed a statistically significant association between perineal care, nutritional status, and perineal wound healing time ($p < 0.001$). These findings indicate that both adequate perineal care and good nutritional status play important roles in accelerating the healing process of perineal wounds. Therefore, postpartum mothers are encouraged to maintain proper perineal hygiene and consume a balanced, nutritious diet during the postpartum period to promote faster wound healing and reduce the risk of infection.

Keywords: Care and nutritional status of postpartum mothers, Length of healing of perineal wounds

I. Introduction

Perineal tears occur in almost all first vaginal deliveries and are also common in subsequent deliveries (Farrer, 2020). Trauma to the birth canal may occur spontaneously during childbirth or intentionally through procedures such as episiotomy (Prawirohardjo, 2017). The healing of perineal wounds is influenced by several factors, including sleep quality, perineal wound care, Kegel exercises, the type of suture material, suturing techniques, and the timing of wound closure. In addition, nutritional status plays a crucial role in the wound-healing process. Women with good nutritional status generally experience faster perineal wound healing because adequate nutrition provides the essential nutrients required for tissue repair. Optimal nutritional status can be achieved through the consumption of a balanced and nutritious diet (Rahmawati, 2015).

Previous studies have demonstrated that proper perineal care and adequate nutritional status are important determinants of perineal wound healing among postpartum women. Good perineal hygiene helps prevent wound infection, while adequate nutritional intake promotes tissue regeneration and accelerates the healing process. However, most previous studies have investigated perineal care and nutritional status as separate factors, with limited evidence examining their combined influence on perineal wound healing time. Furthermore, the findings remain inconsistent regarding which factor has the greatest impact on wound healing outcomes. In addition, evidence from primary healthcare settings in rural Indonesia, particularly at Oekam Health Center, remains limited. Therefore, this study aimed to investigate the relationship between postpartum perineal care, nutritional status, and the healing time of perineal wounds among postpartum mothers at Oekam Health Center.

Suryani et al. (2021) reported that appropriate perineal care significantly accelerated perineal wound healing among postpartum women. Likewise, Rahmawati et al. (2022) found that adequate nutritional intake was associated with faster tissue regeneration and shorter wound-healing time. In contrast, Putri et al. (2023) reported that nutritional status alone was not significantly associated with perineal wound healing after controlling for infection and hygiene practices. These inconsistent findings highlight the need for further research to clarify the combined contribution of postpartum perineal care and nutritional status to the healing process.

Globally, an estimated 2.7 million women experienced perineal lacerations during childbirth in 2017, and this number is projected to increase to 6.3 million by 2050 (WHO, 2017). In Indonesia, the prevalence of perineal lacerations was reported to be 24% among women aged 25–30 years and 62% among those aged 32–39 years (Ministry of Health of the Republic of Indonesia, 2017). According to the East Nusa Tenggara Provincial Health Office (2023), perineal trauma occurs in approximately 70% of vaginal deliveries, and infections related to perineal wounds remain a significant maternal health problem. The number of reported perineal laceration cases increased from 1,652 in 2017 to 1,834 in 2018, representing a 9.9% increase (East Nusa Tenggara Provincial Health Office, 2023). In South Central Timor Regency (Timor Tengah Selatan Regency), 134 cases of perineal laceration were reported in 2018 (South Central Timor Regency Health Office, 2023).

A preliminary study conducted by the researchers at Oekam Health Center in March 2026 identified 16 vaginal deliveries, of which 11 women (68.8%) experienced perineal lacerations. Among these 11 women, seven (63.6%) had delayed wound healing, as the wounds remained moist even after eight days postpartum. Three women experienced normal healing within 6–7 days, while one woman achieved complete wound healing within five days.

Wound healing is a dynamic and complex biological process involving four overlapping phases: haemostasis, inflammation, proliferation, and remodelling, all of which are essential for restoring tissue integrity following injury. Successful wound healing depends on the coordinated interaction of inflammatory cells, growth factors, extracellular matrix components, adequate oxygen supply, and sufficient nutritional intake. Nutritional status plays a fundamental role in tissue repair by providing the energy and nutrients necessary for collagen synthesis, angiogenesis, immune function, and cellular proliferation. Poor nutritional status can prolong the inflammatory phase, impair tissue regeneration, increase susceptibility to infection, and ultimately delay wound healing (Stechmiller, 2020; Deutz et al., 2021; Barazzoni et al., 2023).

Inadequate perineal care and poor personal hygiene during the postpartum period increase the risk of wound contamination and infection, thereby delaying the healing process. Maintaining proper perineal hygiene is therefore essential to reduce bacterial colonization, prevent infection, and promote faster wound healing among postpartum women (WHO, 2022; ACOG, 2023). Because perineal wounds provide a potential entry point for pathogenic microorganisms, postpartum women should actively maintain personal hygiene to minimize the risk of postpartum infection (Prawirohardjo, 2016). This is supported by Eliyana (2017), who reported that delayed perineal wound healing among postpartum women in Pamekasan was associated with inadequate perineal care practices.

Appropriate interventions are therefore needed to reduce delayed perineal wound healing among postpartum women. Health education should emphasize the importance of proper perineal hygiene and adequate nutritional intake as essential components of postpartum care. Counseling provided during postnatal and neonatal care visits can improve mothers' knowledge and practices regarding wound care and nutrition, thereby reducing the risk of perineal infection and promoting faster wound healing (Proverawati, 2017).

II. Methods

This study employed an analytical observational design with a cross-sectional approach.

The study was conducted at Oekam Health Center, Indonesia. The study population consisted of all postpartum mothers with perineal wounds who visited the health center during the study period.

A total sampling technique was applied, resulting in a sample of 16 postpartum mothers. The independent variables were postpartum perineal care and maternal nutritional status, while the dependent variable was perineal wound healing time.

Postpartum perineal care was assessed using a 15-item structured questionnaire covering personal hygiene, wound care practices, sanitary pad replacement, hand hygiene, and compliance with postpartum care recommendations. Nutritional status was assessed using Body Mass Index (BMI) based on maternal weight and height measurements. Perineal wound healing time was evaluated through direct observation using the REEDA Scale (Redness, Edema, Ecchymosis, Discharge, and Approximation) until the wound was completely healed. Prior to data collection, the questionnaire was tested for validity and reliability. All questionnaire items demonstrated acceptable validity (r -value > 0.30) and good internal consistency (Cronbach's alpha = 0.82).

Data were analyzed using descriptive statistics and multiple linear regression analysis with a significance level of $p < 0.05$.

III. Results and Discussion

The perineal care in postpartum mothers in Table 1.1 Perineal care in postpartum mothers at the Oeekam Health Center is as follows.

Perineum Care for Postpartum Mothers at Oeekam Health Center

No.	Perineum Care	Frequency	Percentage (%)
1	Less	4	25,0
2	Enough	8	50,0
3	Good	4	25,0
Quantity		16	100,0

Based on table 1.1, it is known that half of the respondents have *perineal care* in the sufficient category, namely 8 respondents (50.0%).

Nutritional Status of Postpartum Mothers in Perineum Care in Postpartum Mothers at Oeekam Health Center

No.	Nutritional status	Frequency	Percentage (%)
1	Underweight	3	18,8
2	Normal	10	62,5
3	Overweight	3	18,8
4	Obesity	0	0,0
Quantity		16	100,0

Based on table 1.2, it is known that most of the respondents have nutritional status in the normal category, namely as many as 10 respondents (62.5%).

Duration of Periennum Wound Healing in Postpartum Mothers at Oeekam Health Center

No.	Wound Healing Time	Frequency	Percentage (%)
1	Old	8	50,0
2	Normal	6	37,5
3	Fast	2	12,5
Quantity		16	100,0

Based on table 1.3, it is known that half of the respondents have a long healing time for *perineal* wounds in the old category, namely 8 respondents (50.0%).

Results of Analysis of the Relationship between Postpartum Care and the Healing Time of *Perineal Wounds* at the Oeekam Health Center

	Unstandardized Coefficients		t	Say.
	B	Std. Error		
Perineum Care	0,636	0,149	4,274	0,001

The results of linear regression *analysis* showed that the *p-value* of *perineal care* = 0.001 < $\alpha = 0.05$, then H_0 was rejected and H_1 was accepted, which means that there is a relationship between postpartum care and the healing time of *perineal* wounds at the Oeekam Health Center.

Results of Nutritional Status Analysis with the Healing Time of *Perineal Wounds* at Oeekam Health Center

Variable	B	Standard Error	t	p-value
Nutritional Status	0.455	0.172	2.644	0.020

The linear regression analysis showed that nutritional status was significantly associated with perineal wound healing time (B = 0.455, SE = 0.172, t = 2.644, p = 0.020). Therefore, the null hypothesis (H_0) was rejected, indicating that nutritional status had a significant relationship with perineal wound healing time among postpartum mothers at Oeekam Health Center.

The Relationship between *Perineal Care* and Nutritional Status with the Healing Time of *Perineal Wounds* at the Oeekam Health Center.

Source	Sum of Squares	df	Mean Square	F	p-value
Regression	5.636	3	2.818	17.333	<0.001
Residual	2.114	13	0.163		
Total	7.750	16			

Table 1.6 shows that the overall multiple linear regression model was statistically significant (F = 17.333, p < 0.001). These findings indicate that postpartum perineal care and nutritional status, when analyzed simultaneously, were significantly associated with perineal wound healing time among postpartum mothers at Oeekam Health Center.

Perineal care in postpartum mothers at the Oeekam Health Center

The findings of this study showed that 50.0% of postpartum mothers at Oeekam Health Center had an adequate level of perineal care, representing the largest proportion of respondents.

Perineal care is an essential component of postpartum care and should be performed according to established clinical practice guidelines. Proper perineal wound care includes maintaining hand hygiene before and after wound care, cleaning the perineal area appropriately, replacing sanitary pads regularly, and using sterile dressings when indicated to prevent wound contamination and infection (Ministry of Health of the Republic of Indonesia, 2017). Since perineal wounds provide a potential entry point for pathogenic microorganisms, postpartum women play a crucial role in maintaining personal hygiene to reduce the risk of postpartum infection and promote wound healing (Prawirohardjo, 2016).

The finding that half of the respondents demonstrated only an adequate level of perineal care suggests that many postpartum mothers had not fully implemented recommended perineal care practices. Although most respondents were between 20 and 35 years of age, which is considered the optimal reproductive age, many were likely experiencing childbirth and postpartum self-care for the first time. Limited experience in performing perineal wound care may have contributed to suboptimal care practices. In addition, educational background may have influenced respondents' knowledge and behavior regarding perineal care. Higher educational attainment generally facilitates better access to health information and improves an individual's ability to understand and apply health-related recommendations. Although most respondents had completed senior high school education, their knowledge regarding appropriate perineal wound care appeared to be insufficient, indicating that formal education alone does not guarantee adequate postpartum self-care practices. This finding suggests that continuous health education and counseling provided by healthcare professionals are essential to improve mothers' knowledge and adherence to proper perineal care during the postpartum period.

Nutritional status of postpartum mothers at the Oeekam Health Center

The findings of this study showed that 62.5% of the postpartum mothers at Oeekam Health Center had normal nutritional status, representing the majority of the respondents.

Adequate nutritional intake is essential for the wound-healing process because it supports protein synthesis, immune cell activity, collagen formation, and tissue regeneration (Wiryan, 2017). Proper nutrition provides the energy and nutrients required for cell proliferation, angiogenesis, and the production of extracellular matrix components involved in wound repair. Conversely, inadequate nutritional intake may impair fibrin formation, delay collagen synthesis, prolong the inflammatory phase, and ultimately slow the wound-healing process (Wilson, 2017). During the postpartum period, women have increased energy and nutrient requirements to support tissue recovery and lactation. It is recommended that lactating mothers consume approximately 330 additional kilocalories per day during the first six months postpartum compared with non-pregnant women. However, cultural food restrictions during the postpartum period may reduce the intake of essential nutrients, particularly protein and iron, thereby increasing the risk of anemia and delayed perineal wound healing (Supiati, 2015).

The predominance of normal nutritional status among the respondents may be attributed to the physiological weight gain that occurs during pregnancy, which provides maternal energy reserves to support postpartum recovery. These nutritional reserves are important for meeting the increased metabolic demands associated with tissue repair, wound healing, and breastfeeding. In addition, most respondents had completed secondary education, which may have contributed to a better understanding of the importance of adequate nutrition during pregnancy and the postpartum period. Higher educational attainment generally enhances health literacy, enabling mothers to make more informed dietary choices that support optimal nutritional status and recovery after childbirth.

Length of healing of perineal wounds in postpartum mothers at Oeekam Health Center

he findings of this study showed that 50.0% of the postpartum mothers at Oeekam Health Center experienced prolonged perineal wound healing, representing the largest proportion of respondents.

Perineal wound healing is a dynamic biological process consisting of four overlapping phases: hemostasis, inflammation, proliferation, and remodeling. The inflammatory phase generally occurs during the first 1–4 days after injury, followed by the proliferative phase, which typically lasts from day 5 to day 20, and finally the remodeling or maturation phase, which may continue for several weeks to months depending on the severity of the wound (Smeltzer, 2014). Successful progression through these phases requires an adequate supply of nutrients to support collagen synthesis, angiogenesis, tissue regeneration, and immune function. Therefore, optimal nutritional status is essential for effective wound healing and infection prevention.

Delayed wound healing may result from several factors, including excessive bleeding, wound infection, wound dehiscence, poor tissue perfusion, and inadequate nutritional intake (Hidayat & Musrifatul, 2014). Clinical manifestations of delayed healing commonly include persistent inflammation, redness, swelling, pain, fever, wound discharge, and delayed closure of the wound. These conditions prolong the inflammatory phase and interfere with the normal progression of tissue repair.

The high proportion of respondents with prolonged perineal wound healing suggests that the healing process was disrupted by one or more contributing factors. Under normal conditions, perineal wounds are expected to show substantial healing within the first week postpartum and gradually progress into the remodeling phase. However, many respondents in this study still exhibited signs of delayed healing beyond the expected recovery period. This finding may be associated with inadequate perineal hygiene, which increases the risk of bacterial contamination and wound infection, thereby delaying tissue repair. In addition, insufficient nutritional intake may impair collagen formation, cellular proliferation, and immune function, ultimately slowing the wound-healing process. Since tissue repair requires adequate energy, protein, vitamins, and minerals, mothers with inadequate nutritional intake may experience slower regeneration of damaged perineal tissue, resulting in prolonged wound healing.

The relationship between postpartum care and the length of time to heal perineal wounds at the Oeekam Health Center

The results of the linear regression analysis showed a statistically significant association between postpartum perineal care and perineal wound healing time ($p = 0.001$, $p < 0.05$). Therefore, the null hypothesis was rejected, indicating that postpartum perineal care was significantly associated with the healing time of perineal wounds among postpartum mothers at Oeekam Health Center.

The primary objectives of perineal wound care are to promote tissue healing, maintain cleanliness of the perineal and vulvar areas, and prevent infection of the perineum, vulva, and reproductive tract (Prawirohardjo, 2016). Appropriate perineal care includes proper hand hygiene, gentle cleansing of the perineal area, regular replacement of sanitary pads, and keeping the wound clean and dry. In contrast, improper wound care practices, such as excessive friction during cleansing or poor hygiene, may damage newly formed capillaries, increase the risk of bleeding, and delay the wound-healing process. Many postpartum mothers may not perform appropriate perineal care because they lack adequate knowledge regarding proper wound-care techniques and hygienic practices. Consequently, inadequate perineal care increases the risk of wound infection, delays tissue repair, and prolongs perineal wound healing. Conversely, appropriate perineal care helps maintain wound cleanliness, improves local blood circulation, and promotes faster tissue regeneration (Uzzi, 2018).

The significant association observed in this study suggests that proper perineal care plays an essential role in accelerating perineal wound healing. Inadequate perineal hygiene allows lochia to accumulate around the wound, creating a moist environment that facilitates bacterial growth and increases the risk of infection. Once infection occurs, the inflammatory response is prolonged, tissue repair is impaired, and wound healing is delayed. In severe cases, infection may damage surrounding healthy tissue, resulting in wound dehiscence or enlargement of the wound. In contrast, postpartum

mothers who consistently practice appropriate perineal hygiene are more likely to maintain a clean wound environment, reduce bacterial contamination, improve tissue perfusion, and promote faster healing of perineal wounds.

The relationship between the nutritional status of postpartum mothers and the length of time to heal perineal wounds at the Oeekam Health Center

The results of linear regression analysis showed that $p\text{-value} = 0.020 < \alpha = 0.05$, then H_0 was rejected and H_1 was accepted, which means that there is a relationship between nutritional status and the healing time of perineal wounds at the Oeekam Health Center.

Nutritional fulfillment is especially important in the wound healing process, because inadequate nutritional fulfillment can cause the process of forming fibrin threads to be slower, resulting in the wound healing process being hampered. In addition to providing substances to heal wounds, nutrition can also have an impact on the ability to provide proteins to form T cells, B cells and macrophages as a form of the body's defenses to avoid infection (Wilson, 2017).

A significant relationship between nutritional status and the healing time of perineal wounds occurs because the body that has adequate nutritional reserves has the function of providing replacement cells, energy and the immune system so that with the fulfillment of sufficient nutrients it encourages the availability of replacement cells so that the intake of nutrients consumed daily will be maximally used to repair damaged body tissues. Different conditions occur in postpartum mothers with underweight nutritional status, underweight conditions cause the body to have difficulty fulfilling nutritional needs quickly through the metabolism of nutrient reserves in the body due to the limited reserves they have. Poor nutritional status, if followed by the fulfillment of inadequate nutrition during the healing phase, will reduce the quality of wound healing.

The relationship between care and nutritional status of postpartum mothers with the healing time of perineal wounds at the Oeekam Health Center

The results of the multiple linear regression analysis demonstrated that perineal care and maternal nutritional status were jointly and significantly associated with perineal wound healing time among postpartum mothers at Oeekam Health Center ($p < 0.001$). Therefore, the null hypothesis was rejected, indicating that both perineal care and nutritional status significantly influenced the duration of perineal wound healing.

Appropriate perineal care is essential for maintaining wound hygiene and preventing infection during the postpartum period. Inadequate perineal care may allow lochia to accumulate around the wound, creating a moist environment that promotes bacterial growth and increases the risk of perineal infection. If left untreated, the infection may spread to the urinary tract or reproductive tract, leading to more serious postpartum complications (Suwiyoga, 2018). At the same time, nutritional requirements increase substantially during the postpartum period to support both lactation and tissue repair, particularly in women with perineal trauma or episiotomy wounds. Therefore, postpartum women are encouraged to consume a balanced diet containing adequate amounts of carbohydrates, proteins, fats, vitamins, and minerals to meet the increased metabolic demands of recovery (Sumarah, 2021).

Adequate nutrition plays a fundamental role in every stage of wound healing. Protein deficiency impairs collagen synthesis, reduces T-lymphocyte function, decreases phagocytic activity, and lowers antibody production, thereby weakening the immune response and increasing susceptibility to infection. Furthermore, insufficient carbohydrate and fat intake limits the energy required for tissue repair and reduces the availability of essential fatty acids needed for phospholipid membrane formation and prostaglandin synthesis, both of which are critical for cellular metabolism and the inflammatory response during wound healing (Arnold, 2016).

The findings of this study indicate that postpartum mothers who practiced appropriate perineal care and maintained normal nutritional status experienced faster perineal wound healing than those with inadequate hygiene practices or poor nutritional status. These results suggest that the effects of perineal

care and nutritional status are complementary rather than independent. Proper perineal hygiene reduces bacterial contamination and infection risk, while adequate nutritional intake provides the substrates necessary for collagen synthesis, angiogenesis, immune function, and tissue regeneration. Together, these factors facilitate timely progression through the inflammatory, proliferative, and remodeling phases of wound healing.

IV. Conclusion

Based on the findings of this study, several conclusions can be drawn. First, half of the postpartum mothers demonstrated an adequate level of perineal care. Second, the majority of the respondents had normal nutritional status. Third, half of the respondents experienced prolonged perineal wound healing. Furthermore, perineal care was significantly associated with perineal wound healing time, and maternal nutritional status was also significantly associated with the duration of wound healing. Finally, perineal care and nutritional status were jointly associated with perineal wound healing time among postpartum mothers at Oekam Health Center. These findings suggest that appropriate perineal care, together with adequate nutritional status, plays an important role in promoting faster perineal wound healing during the postpartum period. Therefore, postpartum care programs should incorporate comprehensive education on proper perineal hygiene and balanced nutritional intake to enhance maternal recovery and reduce the risk of wound-related complications.

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