THE RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND PERINEAL WOUND HEALING

Yopi Suryatim Pratiwi[1]*, Yesvi Zulfiana[2], Siskha Maya Herlina[3], Sri Handayani[4]

[1,3,4]Prodi Kebidanan Program Sarjana INKES Yarsi Mataram
[2]Prodi Kebidanan Pendidikan Profesi Bidan INKES Yarsi Mataram
Korespondensi email*: yopisuryatimpratiwi@gmail.com

ABSTRAK : HUBUNGAN STATUS GIZI DENGAN PENYEMBUHAN LUKA PERINEUM

Latar Belakang: Angka Kematian Ibu (AKI) masih tinggi secara global dan nasional, termasuk di Indonesia. Infeksi masa nifas, terutama akibat luka perineum yang tidak sembuh optimal, merupakan salah satu penyebabnya. Penyembuhan luka sangat dipengaruhi status gizi karena berperan dalam regenerasi jaringan. Penelitian ini dilakukan untuk mengetahui hubungan status gizi dengan penyembuhan luka perineum.

Tujuan: Mengetahui hubungan status gizi dengan penyembuhan luka perineum pada ibu nifas

Metode: Penelitian analitik dengan desain *cross sectional* pada 41 ibu nifas di wilayah Kota Mataram dan Lombok Barat. Sampel dipilih dengan *purposive sampling* pada ibu hari ke-7 postpartum dengan luka perineum derajat I–II. Status gizi diukur menggunakan IMT, dan penyembuhan luka dinilai dengan skala REEDA. Analisis menggunakan uji Chi-Square (α = 0,05).

Hasil: Sebagian besar responden memiliki status gizi normal (51,2%). Penyembuhan luka terbanyak berada pada kategori kurang (48,8%). Terdapat hubungan signifikan antara status gizi dan penyembuhan luka perineum (p = 0,018). Ibu dengan gizi kurang dan berlebih lebih banyak mengalami penyembuhan buruk dibandingkan ibu bergizi normal.

Simpulan: Status gizi berpengaruh signifikan terhadap penyembuhan luka perineum; gizi normal mendukung pemulihan lebih optimal.

Saran: Peneliti selanjutnya disarankan dapat melakukan penelitian tentang faktor-faktor lain yang memengaruhi lama penyembuhan luka perineum.

Kata Kunci: Nifas, REEDA, Status Gizi

ABSTRACT

Background: Maternal Mortality Rate (MMR) remains high both globally and nationally, including in Indonesia. Puerperal infections, particularly those resulting from poorly healed perineal wounds, are among the contributing causes. Wound healing is strongly influenced by nutritional status because it plays a key role in tissue regeneration. This study was conducted to determine the relationship between nutritional status and perineal wound healing.

Objective: To determine the relationship between nutritional status and perineal wound healing in postpartum mothers.

Methods: This analytical study used a cross-sectional design involving 41 postpartum mothers in the Mataram City and West Lombok areas. Samples were selected using purposive sampling among mothers on the 7th day postpartum with first- or second-degree perineal wounds. Nutritional status was measured using BMI, and wound healing was assessed using the REEDA scale. Data were analyzed using the Chi-Square test (α = 0.05).

Results: Most respondents had normal nutritional status (51.2%). Perineal wound healing was predominantly in the “poor” category (48.8%). A significant relationship was found between nutritional status and perineal wound healing (p = 0.018). Mothers with underweight or overweight status experienced poorer healing compared to those with normal nutrition status.

Conclusion: Nutritional status significantly affects perineal wound healing; normal nutritional status supports more optimal recovery.

Suggestion: Future studies are recommended to explore other factors influencing the duration of perineal wound healing.

Keywords: Postpartum, REEDA, Nutritional Status

INTRODUCTION

The Maternal Mortality Rate (MMR) is a key indicator for assessing the success of maternal health programs. According to a 2017 World Health Organization (WHO) report, the number of maternal deaths worldwide reached 295,000 and decreased to 287,000 in 2020 (World Health Organization, 2017). Although the maternal mortality rate has shown a decline, the rate of decline is still considered slow and requires additional efforts to achieve the Sustainable Development Goals (SDGs) target of reducing the MMR to less than 70 per 100,000 live births by 2030. The main causes of maternal death include hemorrhage (27.1%), hypertension in pregnancy (14.0%), and sepsis or infection (10.7%) (World Health Organization, 2023).

Based on data from the Indonesian Demographic and Health Survey (SDKI), the maternal mortality rate (MMR) in Indonesia rose from 228 per 100,000 live births in 2002–2007 to 359 per 100,000 live births in 2007–2012. The MMR then declined to 305 per 100,000 live births in 2012–2015. In 2019, the number of maternal deaths in Indonesia reached 4,221 (SDKI, 2017).

The main causes of maternal mortality in Indonesia in 2019 included bleeding, hypertension during pregnancy, infection, metabolic disorders, and several other causes (Kemenkes RI, 2019). Approximately 25–50% of maternal deaths are related to problems during pregnancy, childbirth, and the postpartum period (WHO (World Health Organization), 2018). According to the Maternal Perinatal Death Notification (MPDN) report, the main causes of maternal mortality include eclampsia (37.1%), bleeding (27.3%), and infection (10.4%). Maternal deaths also occur frequently during the postpartum period due to the high risk of wound infection after delivery (Mulati, 2022).

In 2023, West Nusa Tenggara Province recorded 91 maternal deaths. The highest maternal mortality ratio per 100,000 live births was in West Lombok Regency (128/100,000), followed by Central Lombok (127/100,000), and Bima Regency (177/100,000). The causes of maternal death in NTB were predominantly hemorrhage (28.57%), bleeding disorders (16.48%), infection (5.49%), eclampsia (5.49%), and other factors (43.96%) (Badan Pusat Statistik Provinsi NTB., 2023; BPS NTB, 2023).

Postpartum infections are a major contributor to high maternal mortality rates. Perineal tears are a common occurrence in vaginal deliveries, occurring in approximately 76.8% of cases, and 1.9% of these cases are infected due to suboptimal care. Perineal wounds can become an entry point for infection due to the presence of open tissue (Ayu Aulia Ramadhiany, Bani Sakti, 2022). This is because the open tissue allows germs and bacteria to easily enter. The incidence of infection ranges from 0.1% to 23.6% in postpartum mothers (Jones, 2019). Perineal wound infections are characterized by perineal pain, ruptured perineal wounds, and purulent vaginal discharge (Simanjuntak, 2022). Infection is a direct cause of maternal injury and death (Ekawati et al., 2024). The healing process of perineal wounds usually varies, with some being fast or slow, influenced by several factors, including the physical condition of the mother during labor, nutritional status, wound condition, and treatment. Improper perineal care can result in the condition of the perineum affected by lochia which will greatly support the development of bacteria which can cause infection (Damayanti, F. N., Mulyanti, L., & Anggraini, 2022).

The healing process for perineal wounds is significantly influenced by various factors, such as the mother's physical condition, nutritional status, wound condition, and quality of care. Poor perineal care can damage the lochia, allowing bacterial growth and infection (Damayanti, 2022). Perineal wounds generally heal within 6–7 days after delivery, with the healing process influenced by vulvar hygiene, nutrition, and personal hygiene (Kusumastuti, 2024).

Rika's research shows a relationship between nutritional status and the speed of perineal wound healing. Good nutrition helps form new tissue and boosts immunity, so mothers with malnutrition tend to experience slower healing times than those with optimal nutrition (Insira, 2022). Another study by Yasmalizar (2013) also confirmed that nutritious food intake in appropriate portions plays a role in accelerating perineal wound healing, particularly because the body requires protein for tissue regeneration (Yasmalizar, 2013).

Perineal wound condition is generally evaluated using the REEDA (Redness, Edema, Ecchymosis, Discharge, Approximation) scale 7–10 days postpartum. Rapid healing occurs when the wound closes properly in less than 7 days, without granulation tissue, and with minimal scarring. Conversely, slow healing occurs when it takes more than 7 days, the wound does not close, the repair process is suboptimal, and sometimes there is pus (Nurhasanah, 2020).

The government has established the KF4 program as an effort to ensure the health of postpartum mothers, including three visits at intervals of 6 hours–3 days, days 4–28, and days 29–42 postpartum. These visits aim to monitor

lochia, bleeding, uterine contractions, personal hygiene, the condition of the birth canal, and signs of infection (Kementerian Kesehatan Republik Indonesia, 2024). Furthermore, routine education regarding vulvar hygiene, physical activity, and nutritional needs such as protein, vitamins, fluids, and calories are needed to accelerate healing and prevent infection (Hardianty, D., Sari, D. K., & Mualimah, 2021; White C, 2022). Based on this description, researchers are interested in examining the "The Relationship between Nutritional Status and Perineal Wound Healing."

RESEARCH METHODS

This study is a quantitative analytical study with the aim of determining the relationship between nutritional status and perineal wound healing in postpartum mothers. The design used is cross-sectional, namely data collection of independent variables and dependent variables was carried out at the same time. The study was conducted at the Community Health Center in the working area of Mataram City and West Lombok Regency from April 8 to May 5, 2025. The sampling method used purposive sampling, with a total of 41 postpartum mothers who met the research criteria. The inclusion criteria in this study were postpartum mothers on the 7th day postpartum, experiencing perineal wounds grade I or II, not receiving additional interventions on perineal wounds (ointments, herbs, compresses, other therapies), and willing to be respondents. Exclusion criteria were mothers who had a history of complications during pregnancy or childbirth (e.g., preeclampsia, infection, gestational diabetes, severe anemia, operative procedures). The data collection instrument in this study used the REEDA Scale, which assesses five aspects: Redness, Edema, Ecchymosis, Discharge, and Approximation. Each component is scored between 0 and 3, resulting in a total score ranging from 0 to 15. A score of 0 indicates excellent healing, while a score of 15 indicates poor healing. The assessment is categorized into three levels: 0 (good healing), 1–5 (poor healing), and more than 5 (poor healing). Wound observations were conducted on the first and seventh days after delivery using the REEDA scale. Nutritional status variables were measured using BMI (Body Mass Index) with categories according to WHO standards (underweight, normal, overweight). Data were analyzed univariately, to see the frequency distribution and percentage of each variable, and bivariately, using the Chi-Square statistical test to determine the relationship between nutritional status and perineal wound healing (α = 0.05). The analysis was performed using the SPSS program.

RESEARCH RESULT

Table 1
Frequency distribution of nutritional status of postpartum mothers

Nutritional Status	Frequency (N=41)	Percentage (%)
Underweight	10	24,4
Normal	21	51,2
Overweight	10	24.4

Based on Table 1, it is known that of the 41 respondents, the majority of postpartum mothers had normal nutritional status, namely 21 respondents (51.2%). Meanwhile, 10 respondents were malnourished (24.4%), and the same number was found in the overweight/obese category, namely 10 respondents (24.4%).

Table 2
Frequency Distribution of Perineal Wound Healing Time

Wound Healing	Frequency (N=41)	Percentage (%)
Good (0)	18	28,6
Poor (1-5)	32	50,8
Bad (>5)	13	20,6

Table 2 shows that the majority of respondents experienced poor perineal wound healing, namely 20 respondents (48.8%). Eleven postpartum mothers (26.8%) experienced good wound healing, and 10 respondents (24.4%) experienced poor wound healing based on the REEDA scale assessment on day 7 postpartum.

Table 3 shows variations in perineal wound healing across nutritional status categories. In the underweight group, 5 (50%) experienced poor wound healing, while only 1 demonstrated good healing. In the normal nutritional status group, most respondents experienced poor and good wound healing, with 12 (57.1%) in the poor category and 8 (38.1%) in the good category; only 1 experienced poor healing. Meanwhile, in the overweight group, 4 (40%) experienced poor healing.

The Chi-Square statistical test showed a p-value of 0.018, indicating a significant relationship between nutritional status and perineal wound healing. Therefore, the better the nutritional status of postpartum women, the greater the likelihood of optimal wound healing. Conversely, both

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underweight and overweight tend to slow perineal wound healing.

Table 3
Relationship between Nutritional Status and Perineal Wound Healing

Nutritional Status	Wound Healing						Number		p-value
	Good		Poor		Bad				
	N	%	N	%	N	%	N	%	
Underweight	1	2,4	4	9,7	5	12,2	10	24,4	
Normal	8	19,6	12	29,3	1	2,5	21	51,2	0,018
Overweight	2	4,9	4	9,7	4	9,7	10	24,4	

DISCUSSION

Nutritional Status

The study found that of the 41 postpartum mothers, 21 (51.2%) had normal nutritional status. Meanwhile, 10 (24.4%) were malnourished, and the same number were found in the overweight/obese category, 10 (24.4%). The results showed that more than half of the respondents had normal nutritional status, while significant proportions of underweight and overweight remained. Maternal nutritional status (including energy-protein intake and body mass index/BMI) plays a crucial role in the body's ability to regenerate tissue and maintain resistance to infection. Nutritional deficiencies, particularly deficiencies in protein and micronutrients involved in the inflammatory and proliferative phases (e.g., vitamins A, C, and zinc), can slow collagen formation and angiogenesis, thereby prolonging wound healing time. These findings align with Mayasari's research, which demonstrated a strong link between nutritional status and wound healing in general in the maternal/postpartum population (Mayasari, 2023).

The nutritional status of postpartum mothers is crucial in supporting the perineal wound healing process, as adequate macro- and micronutrient intake affects the body's ability to regenerate tissue, form collagen, and respond to the immune system. Mutia's research shows that mothers with good nutritional status experience more optimal perineal wound healing than those with poor nutritional status (Mutia, 2025). This is in accordance with the theory that the postpartum period increases the need for energy and protein to repair body tissue after delivery and support breast milk production if breastfeeding, so that mothers with poor nutritional status are at risk of experiencing slow wound healing (Hayu et al., 2025).

Good nutritional status is not just about adequate calories or protein, but also about meeting essential micronutrients such as vitamins and minerals that support the inflammatory, proliferative, and remodeling phases of tissue. A balanced nutritional intake, particularly high in protein, significantly accelerates postpartum perineal wound healing (Sebayang, W. B. R., & Ritonga, 2023). Postpartum mothers need comprehensive nutritional attention, not just "eating a lot," but "eating right," including protein, vitamins, minerals, and a balanced diet for optimal healing.

Healing of Perineal Wounds

The results showed that most respondents experienced poor perineal wound healing, namely 20 people (48.8%). A total of 11 postpartum mothers (26.8%) experienced good wound healing, and 10 respondents (24.4%) experienced poor healing based on the REEDA scale assessment on the 7th day postpartum. Perineal wound healing was assessed using the REEDA scale and on the 7th day postpartum most were in the "poor" or "poor" category. Perineal healing is influenced by multifactorial factors: obstetric characteristics (degree of tear/episiotomy, duration of the second stage of labor, instrumental procedures), suturing techniques, perineal hygiene, the presence of hematoma or necrosis, and maternal systemic conditions such as nutritional status, anemia, diabetes) (Puissegur et al., 2023).

Perineal wound healing is a multistep biological process that includes hemostasis, the inflammatory phase, proliferation (granulation tissue formation and collagen synthesis), and tissue remodeling. In clinical practice and obstetric research, assessment of perineal healing often uses simple, standardized instruments such as the REEDA (Redness, Edema, Ecchymosis, Discharge, Approximation) scale, which is evaluated in the early days and up to the second week postpartum to detect delayed healing or complications such as infection and suture dehiscence. REEDA remains a useful and frequently used tool in postpartum intervention studies due to its ease of clinical observation and its sensitivity to clinical

improvement in the first few days postpartum (Man, 2024).

Recent studies have shown that the nutritional status of postpartum mothers, particularly adequate protein, vitamin, mineral, and total energy intake, significantly influences the healing rate of perineal sutures or tears. For example, research at a Yogyakarta Community Health Center (Puskesmas) found that mothers with good nutritional status had a significantly greater chance of experiencing successful healing of perineal sutures compared to mothers with poor nutritional status (OR = 5.32; p = 0.021) (Sya'bin, 2022). In addition, Sebayang Research shows that optimal nutritional intake significantly accelerates the healing process of perineal wounds, because it supports collagen synthesis, cell regeneration, and immune function, key phases in the wound healing process (Sebayang, W. B. R., & Ritonga, 2023). Therefore, low quality or inadequate nutrition in postpartum mothers could be a contributing factor to the high proportion of suboptimal wound healing in this study, which emphasizes the importance of nutritional intervention from the early postpartum period as part of perineal wound care.

The Relationship between Nutritional Status and Perineal Wound Healing

The results showed that in the underweight group, 5 (50%) experienced poor wound healing, while only 1 showed good healing. In the normal nutritional status group, the majority of respondents experienced poor and good wound healing, with 12 (57.1%) in the poor category and 8 (38.1%) in the good category; only 1 experienced poor healing. Meanwhile, in the overweight group, 4 (40%) experienced poor healing. The chi-square statistical test showed a p-value of 0.018, indicating a significant relationship between nutritional status and perineal wound healing. Therefore, the better the nutritional status of postpartum mothers, the greater the likelihood of optimal wound healing. Conversely, both undernutrition and overnutrition tend to slow down perineal wound healing.

The biological mechanisms underlying this relationship are quite scientifically consistent. Adequate nutrition (sufficient protein, energy, vitamins, and minerals) supports a controlled inflammatory phase, fibroblast cell proliferation, collagen synthesis, and remodeling, thus accelerating wound closure. Conversely, malnutrition (both deficiency and obesity/metabolism) is associated with immune disorders, decreased collagen synthesis, and a higher risk of infection, thus being associated with delayed healing or complications. Mayasari's research shows a similar significant relationship between postpartum nutritional status or diet and perineal healing time. Several simple nutritional interventions, such as increased protein intake, vitamin/mineral supplementation, and even certain functional foods, have been reported to accelerate perineal wound healing (Mayasari, 2023).

Nutritional status is a key systemic factor influencing the phases of wound healing: adequate energy and protein intake are necessary to support fibroblast proliferation, collagen synthesis, and angiogenesis, while adequate micronutrients (vitamin C, vitamin A, zinc, iron) play a role in modulating inflammation and extracellular matrix formation. Literature reviews and observational studies published since 2023 have consistently correlated nutritional indicators (BMI, albumin/serum protein status, or protein intake patterns) with the rate and quality of perineal wound healing; mothers with poor nutritional status are more likely to experience delayed healing or infectious complications than mothers with normal nutritional status (Mayasari, 2023).

Zinc supplementation and increased daily protein intake can help accelerate wound healing and lower REEDA scores on the 7th day after delivery. Several studies have shown that mothers who receive zinc supplements or increase their protein intake experience faster granulation tissue formation and reduced signs of inflammation in perineal wounds. These results are consistent with zinc's role in supporting collagen formation and vitamin C's role in tissue repair (Kasanah et al., 2023; Mayasari, 2023).

Epidemiologically, several studies in primary care facilities have shown that poor nutritional status is associated with a risk of slower wound healing. Bivariate and multivariate analyses even found that poor nutrition remained a strong risk factor even after accounting for other factors such as the extent of the tear and suturing technique. These findings reinforce the recommendation that nutritional status assessments (e.g., BMI or other simple indicators) and appropriate nutritional interventions, such as counseling on increased protein intake or micronutrient supplementation, be routinely implemented in postpartum care at community health centers (Puskesmas) to help accelerate healing and prevent postpartum complications (Festy et al., 2021).

CONCLUSION

The results of this study indicate that although most postpartum women have normal

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nutritional status, the proportion of undernutrition and overnutrition remains quite high and affects the quality of perineal wound healing. Nutritional status plays a crucial role in the healing process through tissue regeneration, collagen synthesis, and immune response. Therefore, women with good nutrition have a better chance of optimal recovery. Therefore, nutritional interventions such as increased protein intake and micronutrient supplementation are necessary in postpartum care to accelerate perineal wound healing.

SUGGESTION

It is recommended that further researchers conduct research on other factors that influence the duration of perineal wound healing.

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