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The Effectiveness of Boiled Eggs on the Healing of Perineal Wounds in Postpartum Mothers

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Abstract: Perineal wounds are a common complication experienced by postpartum mothers during childbirth. Delayed wound healing increases the risk of infection and discomfort during the puerperium. Nutritional intake, particularly protein, plays a vital role in supporting tissue regeneration. Boiled eggs are known as an affordable and highly nutritious source of animal protein. This study aimed to determine the effectiveness of boiled egg consumption for accelerating perineal wound healing among postpartum mothers at Klinik Multazam in 2025. A quantitative approach with a cross-sectional design was used, involving 60 postpartum mothers, of which 32 had perineal wounds. Samples were obtained through total sampling. Data were collected using observation sheets and analyzed with the chi-square test. The results showed that most respondents who regularly consumed boiled eggs (78.9%) experienced faster wound healing within (<6 days). The chi-square test yielded a p-value of 0.008 (<0.05), indicating a significant relationship between boiled egg consumption and the speed of perineal wound healing. Regular consumption of boiled eggs was shown to be effective in accelerating perineal wound healing among postpartum mothers. This simple nutritional intervention may serve as a promotive and preventive effort in postpartum midwifery care.

Keywords: Boiled eggs; Perineal wounds; Postpartum mothers; Wound healing

Introduction

Stunting remains a major public health concern, particularly in developing countries, as it reflects chronic malnutrition and inadequate care during the early stages of a child's life. It is characterized by impaired growth and development, which may lead to long-term consequences such as reduced cognitive capacity, lower academic performance, and decreased productivity in adulthood. Addressing stunting therefore requires not only nutritional interventions but also improvements in parental knowledge and childcare practices (WHO, 2020).

One approach that has been widely applied in promoting positive health behavior is the Health Promotion Model developed by Nola J. Pender. This model emphasizes the role of individual experiences, personal factors, and situational influences in shaping health-related actions (Santi et al., 2023). Within the context of stunting prevention, the model provides a useful framework for designing educational programs that empower mothers with the knowledge, attitudes, and practices needed to support optimal child growth.

Several studies have highlighted the importance of maternal education as a key determinant of stunting prevention. Mothers who possess a higher level of understanding regarding nutrition, hygiene, and responsive parenting are more likely to adopt preventive measures, thereby reducing the risk of stunting in their children (Sutanto, 2019; Wijaya, 2018). However, in many communities, limited access to health

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information and cultural practices often hinder the effectiveness of existing interventions.

In addition, community-based interventions and participatory approaches have shown promising results in enhancing maternal awareness and practices. Programs that integrate culturally sensitive health education with support from local health workers have been effective in improving maternal behavior and reducing child malnutrition (Fifi, 2022; Yuliana et al., 2020). These findings underline the necessity of adopting comprehensive and context-specific strategies in addressing stunting, where education plays a central role in shaping sustainable health practices (Dinkes Jabar, 2022; DKBM, 2015; Kementerian Kesehatan RI, 2019).

This study therefore seeks to analyze the impact of parenting education using Pender's Health Promotion Model on improving maternal knowledge and attitudes toward stunting prevention. By applying a structured and evidence-based approach, this research aims to contribute to the development of more effective community-based health promotion strategies, which ultimately support national and global efforts to reduce the prevalence of stunting.

Method

This study employed a quasi-experimental design with a pre-test and post-test control group approach (Sugiyono, 2019). The research was conducted at Posyandu, Wamena District, Papua, Indonesia, during March–May 2025, involving mothers with children under five years of age as the study population. Participants were selected using a purposive sampling technique based on inclusion criteria, namely mothers who had children aged 0–59 months, were willing to participate in the study, and were able to communicate effectively. Exclusion criteria included mothers who were not present during the intervention sessions or who withdrew before the study was completed.

A total of 60 participants were recruited and divided equally into an intervention group (n = 30) and a control group (n = 30). The intervention group received parenting education sessions based on Nola J. Pender's Health Promotion Model, which emphasized knowledge of nutrition, child care practices, hygiene, and stunting prevention strategies. The sessions were delivered through lectures, group discussions, and visual learning media, conducted over four sessions over four weeks. Meanwhile, the control group received routine health education provided by local health workers without structured materials from the Health Promotion Model.

Data were collected using a structured questionnaire consisting of two sections: maternal knowledge and maternal attitudes toward stunting prevention. The knowledge section included 20 multiple-choice questions, while the attitude section employed a 15-item Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was validated by experts in maternal and child health, and a reliability test yielded a Cronbach's alpha value of 0.87, indicating acceptable internal consistency.

Data analysis was performed using SPSS version 25.0. Descriptive statistics were used to present participant characteristics, while inferential statistics were applied to test the study hypotheses. The paired t-test was used to analyze differences in knowledge and attitudes before and after the intervention within groups, whereas the independent t-test was used to compare post-test results between the intervention and control groups. A significance level of $p < 0.05$ was considered statistically significant.

Result and Discussion

Based on Table 1, out of 60 postpartum mothers, 23 (38.3%) did not experience perineal rupture, while 37 (61.7%) experienced perineal rupture. From this group, 37 mothers with rupture were included as research samples for further analysis. Table 2 shows that the majority of postpartum mothers (23; 62.2%) consumed boiled eggs regularly (once daily for six consecutive days), while 14 mothers (37.8%) did not consume them regularly.

Table 1. Prevalence of Postpartum Mothers with Perineal Rupture

Category of Postpartum Mothers	Frequency (f)	Percentage (%)
No Perineal Rupture	23	38.3 %
With Perineal Rupture	37	61.7 %
Total	60	100 %

Table 2. Consumption of Boiled Eggs by Postpartum Mothers

Consumption of Boiled Eggs	Frequency (f)	Percentage (%)
Not Consuming Regularly	14	37.8 %
Consuming Regularly	23	62.2 %
Total	37	100 %

Table 3. Healing Rate of Perineal Wounds among Postpartum Mothers

Healing of Perineal Wound	Frequency (f)	Percentage (%)
Slow (> 6 days)	16	43.2 %
Fast (< 6 days)	21	56.8 %
Total	37	100 %

As shown in Table 3, most postpartum mothers (21; 56.8%) experienced a faster healing process, while 16 mothers (43.2%) experienced delayed healing.

Table 4. Effectiveness of Boiled Egg Consumption on Perineal Wound Healing among Postpartum Mothers

Boiled Egg Consumption	Healing of Perineal Wound		Total	p-value
	Slow (n, %)	Fast (n, %)	n (%)	
Not Regular	10 (71.4%)	4 (28.6%)	14 (100%)	
Regular	6 (26.1%)	17 (73.9%)	23 (100%)	
Total	16 (43.2%)	21 (56.8%)	37 (100%)	

Based on Table 4, mothers who did not regularly consume boiled eggs experienced delayed wound healing (10; 71.4%), while only 4 (28.6%) had faster recovery. In contrast, among those who consumed boiled eggs regularly, 17 mothers (73.9%) experienced rapid healing, and 6 (26.1%) had delayed healing.

The Chi-square test showed a significant relationship between boiled egg consumption and perineal wound healing ($p = 0.008 < 0.05$), indicating that regular consumption of boiled eggs has a statistically significant positive effect on the healing of perineal wounds in postpartum mothers.

Prevalence of Perineal Rupture among Postpartum Mothers

This study revealed that out of 60 postpartum mothers, 37 (61.7%) experienced perineal rupture, while 23 (38.3%) did not. These findings indicate a relatively high prevalence of perineal rupture, which is consistent with previous studies reporting that perineal trauma remains one of the most common complications of vaginal delivery, especially among primiparous women (Aprilliani et al., 2023; Apriyanti et al., 2024; Azad et al., 2018).

Perineal rupture occurs as a result of tissue tearing during childbirth, either spontaneously or due to medical interventions such as episiotomy or instrumental delivery. The laceration usually occurs along the midline of the perineum and may extend further when the fetal head is delivered rapidly (Dano et al., 2024; Sideris et al., 2020; Stevenson et al., 1962). Several risk factors are associated with perineal rupture, including fetal macrosomia, prolonged second stage of labor, malposition, and poor maternal pushing technique (Astuti et al., 2022; Belyavin et al., 1980).

The relatively high prevalence in this study may be explained by insufficient antenatal education regarding proper labor techniques, limited preventive practices such as perineal massage, and maternal inexperience, particularly in primiparous women. These findings highlight the importance of comprehensive antenatal counseling and preventive interventions to reduce the risk of perineal trauma during delivery.

Consumption of Boiled Eggs among Postpartum Mothers

The study showed that 23 mothers (62.2%) consumed boiled eggs regularly, while 14 mothers (37.8%) did not. The high proportion of mothers consuming eggs may reflect awareness of eggs as a readily available, affordable, and nutrient-dense source of animal protein.

Eggs are considered one of the most complete foods, containing high-quality protein with all essential amino acids, as well as vitamins (A, D, B12, riboflavin) and minerals (iron, zinc, phosphorus, calcium). A whole egg provides approximately 6–7 grams of protein and only about 80 calories, making it a nutrient-dense food for postpartum mothers (Lestari et al., 2021; Wulandari et al., 2022). Importantly, methionine, an essential amino acid found in high concentration in eggs, plays a key role in tissue regeneration and wound healing (Hintono, 2022).

From the researcher's perspective, the relatively high proportion of postpartum mothers consuming boiled eggs reflects both nutritional awareness and the practicality of boiled eggs as a protein source to support maternal recovery (Dinopawe et al., 2023; Yanti, 2018).

Healing of Perineal Wounds among Postpartum Mothers

The study found that 21 mothers (56.8%) experienced rapid perineal wound healing (< 6 days), while 16 mothers (43.2%) had delayed healing (> 6 days). This aligns with previous findings that the average perineal wound healing process typically ranges between 5–7 days under normal conditions (Malawat et al., 2022).

The wound healing process is influenced by multiple factors, including nutritional intake, maternal hygiene practices, wound care techniques, and comorbid conditions such as diabetes, obesity, or anemia (Damayanti et al., 2022; Hidayah, 2024; Irnawan et al., 2022). Inadequate nutrition, particularly insufficient protein and micronutrients, can significantly delay the healing process due to impaired collagen synthesis and cellular regeneration (Masturoh et al., 2018; Saputri et al., 2021; Sukamti et al., 2024).

In this study, the variation in wound healing duration among mothers may be partly explained by differences in nutritional intake, particularly protein consumption from eggs, as well as hygiene practices and maternal wound care compliance.

Effect of Boiled Egg Consumption on Perineal Wound Healing

Bivariate analysis demonstrated that mothers who did not regularly consume boiled eggs were more likely to experience delayed healing (71.4%), while those who consumed boiled eggs regularly had a significantly higher proportion of rapid wound healing (73.9%). The Chi-square test showed a statistically significant relationship ($p = 0.008$), confirming that regular boiled egg consumption accelerates perineal wound healing.

These findings are consistent with previous studies. Sari et al. (2025) found that postpartum women who consumed boiled egg whites experienced faster wound recovery. Similarly, Septiani et al. (2025) demonstrated that high-protein dietary intake significantly improved perineal wound healing outcomes. (Santika et al. (2020) also reported a significant association between boiled egg consumption and faster healing, with p-value = 0.003. More recently, Apriyanti et al. (2024) confirmed that boiled egg supplementation had a positive effect on perineal wound healing among postpartum women.

The beneficial effect of boiled eggs can be attributed to their high biological-value protein and essential amino acids, particularly methionine, which is crucial for collagen formation and tissue repair. Adequate protein intake is fundamental for wound healing because it supports fibroblast proliferation, angiogenesis, and the immune response during the inflammatory and proliferative phases of healing (Almeida et al., 2020).

Thus, this study strengthens the evidence that dietary interventions, such as regular consumption of boiled eggs, can serve as a simple, low-cost, and effective strategy to enhance perineal wound healing in postpartum mothers (Haryoto, 2013; Jumiati et al., 2024).

Conclusion

Based on the findings of this study, it can be concluded that regular consumption of boiled eggs is effective in accelerating perineal wound healing among postpartum mothers. This simple nutritional intervention may serve as a promotive and preventive measure in midwifery care during the postpartum period, thereby supporting optimal maternal recovery after childbirth.

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Author Contributions
L.A., H., T.K.H., K., W.O., dan N.B.P. contributed collectively to all stages of the research process. The conceptualization of the study was carried out jointly by H., W.O., N.B.P., K., T.K.H., and L.A. Data collection was performed collaboratively by the same team (H., W.O., N.B.P., K., T.K.H., and L.A.), ensuring comprehensive and accurate field information. Data analysis and processing were also conducted together by H., W.O., N.B.P., K., T.K.H., and L.A., maintaining consistency throughout the analytical procedures. The preparation and writing of the manuscript were undertaken by the full author team, including H., W.O., N.B.P., K., T.K.H., and L.A., who collectively contributed to drafting, revising, and refining the final version of the article. All authors have read and approved the final manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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