

Effect of Free-Range Chicken Eggs on Perineal Wound Healing among Postpartum Women

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A B S T R A C T

10% of maternal mortality during the postpartum period are caused by infection due to bleeding from tears in the birth canal (perineal wound). The wound healing process is influenced by the intake of protein-rich nutrients. Free-range chicken eggs from are a high source of protein (Komala, 2021). This study aims to determine the effect of free-range chicken eggs on perineal wound healing among postpartum women. This was a pre-experimental study with intact group comparison. There were 32 samples who were selected using purposive sampling technique. The samples were assigned into the Intervention Group (administered with free-range chicken eggs) and the Control Group (were not administered with free-range chicken eggs). Data collection was performed through direct observation of perineal wounds using the REEDA scale score. Data were analyzed using the Fisher Exact statistical test. The results showed that there was a faster wound healing process among respondents who were administered with free-range chicken eggs (81.2%) compare to those who were not administered with free-range chicken eggs (25%) with a p value of $0.002 < 0.05$. It can be concluded that the administration of free-range chicken eggs chicken eggs had an effect on perineal wound healing among postpartum women. It is expected that postpartum women who experience perineal wound starting from the second grade will consume boiled free-range chicken eggs to speed up the wound healing process.

10% kematian ibu pada masa postpartum disebabkan oleh infeksi akibat perdarahan dari robekan jalan lahir (luka perineum). Proses penyembuhan luka salah satunya dipengaruhi oleh makanan kaya akan protein. Telur ayam kampung merupakan makanan sumber protein tinggi. Tujuan penelitian ini adalah untuk mengetahui pemberian telur ayam kampung pengaruhnya terhadap penyembuhan luka perineum pada ibu nifas. Penelitian ini merupakan penelitian pre eksperimen dengan Intact Group Comparison. Jumlah sampel 32 dengan teknik pegambilan sampel dengan purposive sampling dan dibagi menjadi Kelompok Intervensi (diberikan Telur ayam kampung) dan Kelompok Kontrol (Tidak diberikan Telur ayam kampung). Teknik pengumpulan data melalui observasi langsung luka perineum menggunakan skor skala REEDA. Data dianalisis dengan uji statistic Fisher Exact Test. Hasil penelitian menunjukkan bahwa proses penyembuhan luka yang diberikan telur ayam kampung lebih cepat sembuh (81,2%) dibandingkan dengan yang tidak diberikan (25%) dengan nilai $p = 0,002 < 0,05$. Dapat disimpulkan bahwa pemberian telur ayam kampung mempunyai pengaruh lebih cepat dalam proses penyembuhan luka perineum pada ibu nifas. Diharapkan bagi ibu nifas yang mengalami luka perineum mulai derajat II untuk mengkonsumsi telur rebus ayam kampung guna mempercepat proses penyembuhan luka.

Introduction

Postpartum period is a critical period as 60% of maternal deaths occur in such period (Elisabeth Siwi Walyani, 2017). Postpartum period begins after the birth of the placenta and ends when the uterus returns to its pre-pregnancy state. This period lasts 6 weeks or 42 days (Wahida Yuliana, 2020). One of the problems that often arise during such period is infection. Infectious complications can lead to endometriosis, metritis, even peritonitis and pelvic abscess (Novila Hardiana Utami, 2017). Postpartum infection is a cause of morbidity and mortality among postpartum women (Trianingsih, I., Yenie, H., & S.P, 2019).

Perineal wounds can trigger postpartum infection. It is known that 4% - 5% perineal wounds are a factor postpartum hemorrhage (Laila, 2021). Postpartum hemorrhage due to perineal sutures is caused by episiotomy scars or spontaneous tears in the birth canal and irregular tissue tears. 85% of women with normal vaginal delivery have perineal tears, 32-33% of which are due to episiotomy and 52% are due to spontaneous tears (Santika et al., 2020). Infections that occur due to perineal wounds can be caused by a lack of wound care. In fact, specific care should be taken to speed up the healing process and avoid complications such as puerperium infection which can inhibit perineal wound healing (Fauziah, F., 2020).

The World Health Organization (WHO) states that perineal sutures among Asian women increase by up to 50%. The number of vaginal deliveries in Indonesia with perineal sutures is 75%, and 57% of them require perineal stitches (Damanik & Siddik, 2018). Based on Central Sulawesi Health Department data, there were 35,337 postpartum women and 17,056 of them experienced perineal rupture (48.26%) (Central Sulawesi Province Health Profile, 2019). Furthermore, there were 7,033 women who had vaginal deliveries in Palu City, and 2,109 (30%) of them experienced perineal sutures (Palu Health Department Profile, 2019).

Proper perineal care can speed up the wound-healing process. Factors that support the healing process include the intake of protein-rich nutrients in the daily diet (Hastuti et al., 2022). Postpartum women need 64 grams of protein in one day (Solehati, 2020). Protein significantly influences the healing process of perineal wounds since the replacement of damaged tissue surely need protein for the process of new cells regeneration (Komala, 2021). Protein is responsible as a substance for the building blocks of muscles, body tissues, but cannot be stored by the body. So, protein intake is needed every day for the wound healing (Sebayang & Ritonga, 2021).

One source of protein-rich food is free-range chicken eggs (Warsito, H., Rindiani, & Nurdyansyah, 2015). Chicken eggs have a reasonably high protein content and quality. In addition, eggs show the best digestibility among other food ingredients with a digestibility value by 100%. Free-range chicken eggs are the source of animal protein that is easy to get anywhere, relatively cheap at a price of 2,500 each. Furthermore, based on the nutritional adequacy rate, 100g of free-range chicken eggs contain 18% protein (Ramadhani et al., 2019). Previous study showed that giving egg white was more effective than giving snakehead fish for healing perineal wounds among postpartum women at Private Practice Midwife in Kediri Regency (Purnani, 2019). Other study also revealed that consumption of

boiled chicken egg whites led to a faster perineal suture wound healing compared to those who did not consume them (Nurhayati et al., 2020). The difference between the previous study and the current study lies in the type of eggs and the type of consumption. Previous study used domestic chicken eggs and only the whites were consumed while the current study used free-range chicken eggs and both the yolks and whites of the eggs were consumed.

Based on a preliminary study, an average of 35 women had vaginal delivery per month, more than 20 perineal ruptures per month, and 14 people had second-degree perineal sutures. Some postpartum women experienced delays in the process of stitches healing. Physiologically, the perineal wound will improve within 6-7 days postpartum. Delays in wound healing can be due to lack of maternal knowledge about wound care, nutrition, personal hygiene, and abstinence culture. This study aims to determine the effect of free-range chicken eggs on second-grade perineal wound healing among postpartum women at Mabelopura Community Health Center, Palu City, Central Sulawesi Province.

Methods

This was a pre-experimental study (Intact Group Comparison). This study was carried out from March to May 2021 at Mabelopura CHC, Palu City, Central Sulawesi Province. The samples enrolled in this study were 32 postpartum women with second-grade perineal sutures, who were assigned into the intervention and control groups, which involved 16 respondents, respectively. The samples were selected using purposive sampling technique based on inclusion criteria, namely postpartum women who were willing to be respondents, had normal vaginal delivery and experienced grade II perineal rupture. The exclusion criteria were women with diabetes mellitus and had an allergy to eggs.

The intervention group was administered with 2 boiled free-range chicken eggs in the morning at 07.00-10.00 WITA and in the afternoon at 15.00 - 17.00 WITA. Boiled free-range chicken eggs were administered for 7 days, at 6 o'clock on the 1st day of postpartum period, and then it would be continued on the 2nd to 7th day at the respondent's house. On the other hand, respondents in the control group were not administered with free-range chicken eggs (administered free-range chicken eggs outside the study period). Every day, the researchers visited to control the compliance of respondents while consuming and not consuming boiled eggs. Data were collected through direct observation of perineal wounds using the REEDA scale score. Fast healing was declared fast if it was ≤ 7 days and it was declared slow if it was > 7 days. Data were analyzed using univariate and bivariate data analysis using the Fisher Exact Test.

Ethical approval for this study was obtained from the Research Ethics Commission of Palu Health Polytechnic through a letter number 0032/KEPK-KPK/III/2021.

Results

The results of this study consisted of univariate and bivariate data. Univariate data presented data on Respondents' characteristics such as age, education, parity, and occupation. More detailed data on respondents' characteristics are presented in Table 1 below:

Table 1. Characteristics of Respondents

Characteristic	Intervention		Control	
	Frequency (n=16)	(%)	Frequency (n=16)	(%)
Age (years)				
▪ <20	0	0	0	0
▪ 20-35	12	75	12	75
▪ >35	4	25	4	25
Education				
▪ Primary	3	18.8	5	31.2
▪ Secondary	4	25	1	6.3
▪ Higher Education	9	56.2	10	62.5
Parity				
▪ Primipara	8	50	6	37.5
▪ Multipara	8	50	10	62.5
Occupation				
▪ Honorary staff	3	18.8	3	18.8
▪ Civil Servant	2	12.5	1	6.2
▪ Housewife	11	68.7	12	75
Total	16	100	16	100

Table 1 showed that most of respondents in the intervention group were in the age range of 20-35 with a total of 12 respondents (75%) and had a higher education level with a total of 9 respondents (56.2%). Regarding parity, primiparous and multiparous categories showed the same number of 8 respondents (50%). Furthermore, most of respondents were housewives with a total of 11 respondents (68.7%).

In the control group, most of respondents in the intervention group were in the age range of 20-35 with a total of 12 respondents (75%) and had a higher education level with a total of 10 respondents (62.5%). Regarding parity, most of respondents were multiparous with a total of 10 respondents (62.5%). Furthermore, most of respondents were housewives with a total of 12 respondents (75%).

Table 2 presents the time for perineal wounds healing after the intervention.

Table 2 Frequency Distribution Regarding the Time for Perineal Wound Healing in the Intervention Group and the Control Group

Perineal Wound Healing	Sample Group			
	Intervention		Control	
	n	%	n	%
Fast	13	81.2	4	25
Slow	3	18.8	12	75

Based on table 2, it can be seen that most of postpartum women who were administered with free-range chicken eggs experienced a fast perineal wound healing of ≤ 7 days as many as 13 respondents (81.2%) and 3 respondents (18.8%) experienced a slow perineal wound healing of >7 days. On the other hand, most of postpartum women who were not administered with free-range chicken eggs (control) experienced a slow perineal wound healing of >7 days as many as 12 respondents (75%) and 4 respondents (25%) experienced fast perineal wound healing of ≤ 7 days.

Statistical test using the Fisher's Exact aims to determine the effect of free-range chicken eggs on perineal wound healing. The details are presented in table 3:

Table 3. Cross-Tabulation of Perineal Wound Healing among Postpartum Women in the Control and Intervention Groups

Wound healing process	Control		Intervention		Total		P-Value
	Σ	%	Σ	%	Σ	%	
Fast	4	12.5	13	40.6	17	53.1	0.002
Slow	12	37.5	3	9.4	15	46.9	

Based on Table 3, it can be seen that the result of the statistical test obtained the Fisher's Exact Test value of $0.002 < 0.05$ which indicated that there was an effect of the administration of free-range chicken eggs on perineal wound healing among postpartum women.

Discussion

Based on the data analysis, there was no difference in the characteristics of respondents between the intervention group and the control group. Such finding indicated that one of the requirements for conducting experimental research was fulfilled, since the basic data on the initial condition of the respondents or characteristics in both groups were homogeneous.

Based on the results of this study, the administration of free-range chicken eggs was found to be effective in healing perineal wounds among postpartum women in the work area of the Mabelopura CHC, Palu City with a Fisher's Exact Test value of $0.002 < 0.05$. Researchers assume that such finding is due to the administration of free-range chicken eggs which are rich in protein which affected the healing process of perineal wounds. Protein significantly influences the healing process of perineal wounds since the replacement of damaged tissue surely need protein for the process of new cells regeneration (Komala, 2021).

Theoretically, Wound healing is the process by which dead or damaged tissue is replaced in the body by regeneration with new, healthy tissue. The wound is said to be healed when the surfaces can reunite and the tissue strength returns to normal. There are two categories of wound healing: Tissue regeneration structurally and functionally to be restored as the initial condition, and replacement by connective tissue (Dewi, 2019).

Any delivery that causes a wound in the birth canal can be a route for commensal bacteria to enter and become infectious. This will increase the risk of postpartum Infection due to perineal suture from an episiotomy, spontaneous rupture, or trauma to the fetus. Improper perineal wound care coupled with the condition of the perineum, affected by lochia and moisture, dramatically support the growth of bacteria that can cause infection in the perineum (Ambarwati, 2010).

Postpartum perineal wound healing takes an average of 7 to 14 days. This time is long enough, as microbes can multiply within 48 hours (2 days) (Prawirohardjo, 2014). Pharmacologically, the treatment of perineal wounds uses povidone iodine. However, based on evidence, the continuous use of povidone iodine is no longer recommended since there will be resistance in the wound (Ambarwati, 2010).

Acceleration of perineal wound healing process can be performed in several ways, one of which is through improving nutrition by consuming calories and protein-rich foods. In wound healing, protein is a raw material for fibrin and collagen proteins, which stimulates angiogenesis, and promotes cell regeneration (Drewnowski A., 2010). Common protein sources include meat, dairy, bread, grains, eggs, fish, nuts, and seeds. One solution for postpartum women to speed up the healing of perineal wounds is to consume foods that come from animal protein, i.e. eggs from free-range chickens. Free-range chicken eggs are a cheap, available, economical animal protein and one of the most nutritious foods (Warsito, H., Rindiani, & Nurdyansyah, 2015).

Free-range chicken eggs can be consumed in various preparations such as boiled eggs. A study conducted by Trianingsih & Fadilah found that consumption of boiled eggs had an effect on perineal wound healing among postpartum women 1-7 days. The perineal wound healing time for women who consumed boiled eggs was up to 7 days, whereas the perineal wound healing process for women who did not consume boiled eggs lasted more than 7 days (Trianingsih & Fadilah, 2019). This statement reinforces that protein content plays a very important role in perineal wound healing (Azizah & Alifah, 2018). Other study also revealed that there was a significant effect of eggs consumption on the healing time of perineal wounds among postpartum women (Abdurahman et al., 2020).

Furthermore, a study conducted by Sitepu showed that the mean healing time for perineal wounds among postpartum women in the intervention group (with boiled eggs) was 5.4 days shorter than the mean healing time in the control group (without boiled eggs) of 10.6 days (Sitepu & Gultom, 2022). Boiled eggs contain choline which has the effect of repairing damaged cells in the body so as to easily form new and healthy tissue to replace damaged tissue. Protein is responsible as a substance for the building blocks of muscles, body tissues, but cannot be stored by the body. So, protein intake is needed every day for the wound healing (Indayani & Juliayanti, 2023).

Conclusions

The results of the study showed that there was a significant difference in the wound healing process between the intervention group and the control group. The intervention group that was administered with boiled free-range chicken eggs showed a relatively faster wound healing time of ≤ 7 days compared to the control group of >7 days. The statistical test result obtained a $p\text{-value}=0.002 < (0.05)$, meaning that the administration of free-range chicken eggs chicken eggs had an effect on perineal wound healing among postpartum women at Mabelopura CHC in Palu City. The study finding provides an alternative treatment for perineal wound healing among postpartum women by giving free-range chicken eggs for 7 days. The results of this study can also be used as a reference for healthcare professionals who provide education related to the use of daily food sources with nutritional content, especially protein-rich food. The limitation of this study was regarding control towards other factors that affect wound healing. This study only controlled those related to diabetes, and the researchers did not observe other factors such as water intake, hygiene, mobilization, etc.

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