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Effect of Boiled Egg White Consumption on Healing of Sewing Wounds in Postpartum Mothers Post Sectio Caesarea

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Abstract: Sectio Caesarea is a type of delivery that is continuously increasing in the current era, both for medical reasons and baby factors, however, the surgical procedure for SC delivery can cause several complications, one of which is Surgical Wound Infection (ILO), when the body experiences injuries. large, the body needs a lot of protein, the protein most easily found by people is eggs, one egg contains 6-8 grams of protein, because of this, boiled eggs are recommended for consumption during post-cesarean section operations. The aim of this study was to determine the effect of giving boiled egg whites on post-caesarean wound healing. Methodology of this research uses quantitative with a true experiment two groups pre and post test with control, the sample in this study is 20 interventions and 20 controls, univariate analysis in this study uses a frequency distribution while bivariate analysis uses Wilcoxon. Result pre-test of the intervention and control groups, it was found that all respondents had wounds less than 100%, however, during the post-test, most respondents had poor wound healing results of 55% in the control group, and the majority of respondents had good wound healing results of 90%. in the intervention group after being given boiled egg whites. After carrying out the analysis, a p-value of 0.000 was obtained for the intervention and control groups. Concluded that boiled eggs have an influence on healing caesarean section wounds. This research can provide information regarding the effect of egg whites on the healing process of post-cesarean section wounds.

Keywords: Boiled egg; Sectio caesarea; White egg

Introduction

Sectio Caesarea is a type of childbirth that continues to increase in the current era, either due to medical reasons in infant factors such as the occurrence of abnormalities in the baby's position (breech, latitude, obliq), gemely, fetal hypoxia, large baby, other reasons are maternal factors such as eclampsia, history of Sectio Caesarea, Cephalous Pelvic Disproportion (CPD), or emergency conditions such as premature rupture of the membranes, bleeding, induction failure, closed birth canal and uterine rupture, and other reasons due to the wishes of the patient or family (Viandika & Septiasari, 2020).

The incidence of Sectio Caesarea (SC) in the world is 22.5%. According to (WHO, 2016), on average, about 10-25% /1000 births in the world are in one country. Meanwhile, in Indonesia in the 2016 survey showed 9.8% and increased in 2018 to 17.6% of the total number of births. Increased incidence of cesarean section due to the development of indications and the decrease in risk and mortality (Zaqiyah, 2022). Data in West Java Province shows that cesarean section delivery reaches 15.5% due to medical indications, there are also non-medical indications such as social indications where mothers deliberately ask for surgical delivery even without the right medical reason. Sectio caesarea is an alternative option without medical considerations (Dewi & Batubara, 2019).

The incidence rate of surgical wound infections in 2023 is around 4% of the number of 1536 post-sc patients in one year at B.K HOSPITAL Surgical procedures in SC childbirth can cause several complications, one of which is Surgical Wound Infection (ILO). Post-SC the mother will experience injuries, if not properly treated the wound will cause infection at the wound site, as explained in the data in June 2024 at B.K Hospital, infection in post-SC mothers occurs in 2-3% of 128 post-

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SC mothers every month, which means 2-3% per 128 mothers experience infection in post-SC wounds, and at the time of taking the study within 2 weeks, it was found that 1 patient had surgical wounds, which means 1-2% per 64 mothers had infection in post SC wounds. In 2 weeks during June-July, 64 SC patients were found in 2 weeks, therefore the population of this study amounted to 64 people. Surgical wound infection is part of the main problem in wound healing that can increase morbidity and mortality, surgical wound infection seen from the determinant of its occurrence is nutritional status (Kartikasari & Apriningrum, 2020).

Post-sectio caesarean wounds will undergo a wound healing process like wounds in the body (Ningrum et al., 2019; Purwanti et al., 2022). The wound healing process has several healing phases. The wound healing mechanism undergoes the process of inflammation, preliferation, (epithelialization), and maturation (remodellling). Wound healing in the inflammatory phase occurs up to 5 days after surgery, the duration can be rapid if there is no infection (Warniati et al., 2019).

The needs of post-SC mothers who have postoperative incision wounds on the abdominal and uterine walls are different from postpartum mothers who give birth with normal delivery. A significant difference is more wound recovery compared to vaginal delivery. The wound healing process in post-sectio caesarea mothers has several physiological stages, namely the inflammatory phase with a duration of 0-3 days, the destruction phase with a duration of 1-6 days, the proliferation phase with a duration of 3-24 days and the epithelialization phase (Martutik & Marjiyanto, 2014). Egg whites contain very high protein, protein quality, digestibility value and digestibility of eggs are the best among other food ingredients. Its digestible value is 100% compared to meat which is only 81%. Egg whites contain 95% albumin which functions for wound healing. Egg white protein is very easy to digest, absorb and use by the body for the growth and development of body tissues (Puspitasari et al., 2023).

With these various wound healing processes, post-sectio caesarean mothers need to pay attention to various factors that affect wound healing so that complications do not occur in the mother. As explained in the results of the study, several factors can affect the healing of post-SC wounds, including nutrients. In addition, the healing of post-SC stitch wounds is influenced by several local factors consisting of age, nutrition, sepsis, steroids, and medications, besides that it is also influenced by mobilization and lifestyle, pharmacological therapy to prevent infection and accelerate wound healing that has been done so far, namely the administration of antibiotics. In the process of healing post-SC wounds, in addition to antibiotics, postpartum mothers also need quality nutrition, nutritious, enough protein and calories. The food consumed should contain vegetables, fruits, especially high in protein. A very important food substance in the wound healing process is high in protein, this plays a role in forming new tissues, high protein is very good for consumption by postpartum mothers to accelerate SC wound healing (Manuaba, 2017).

Every mother who has stitches has a higher level of nutritional needs, especially protein, because with sufficient protein intake, the body will produce new tissue. As explained in the study (Sihotang & Yulianti, 2018), The factors that affect the healing process of post-SC wounds are anemia, early mobilization. Other studies also explain factors related to post-caesarean wound healing, factors related to premature mobilization, anemia, age and obesity (Warniati et al., 2019). The nutritional needs of postpartum mothers and post-SC mothers must be met properly, if they are not met, they will experience complications. Nutritional disorders, especially in the lack of protein intake in post-SC mothers, are problems that arise, both postpartum mothers in hospitalized and outpatient hospitals. High protein is one of the diets in postpartum mothers post-SC, which can affect the healing process of post-SC wounds Good protein, found in many animals such as fish, meat, and eggs (Subekti, 2024).

As the results of other studies explained, mothers who consumed boiled egg whites experienced normal wound healing (100%) compared to those who did not consume boiled egg whites. Eggs are an animal protein that is cheap, economical, easy to find and one of the most nutrient-dense consumptions. The nutritional content of one egg contains > 90% Ca and Fe, one egg contains 9 essential amino acids and 6 grams of quality protein. Good nutrition is a nutrient that supports healing or inhibits or can even prevent nutritional abnormalities such as malnutrition. Protein is a mineral that is useful as a substance that builds body tissues, muscles and bones, but cannot be stored by the body, so to heal wounds requires sufficient protein intake every day (Puspitasari et al., 2023).

In the results of the study Huang & Ahn (2019) in an egg there are 3 parts of the egg that are very useful, namely the egg white shell and the yolk. For the shell itself, the composition is only 11% while for the egg whites the composition is about 75%, for the yolk the composition is 32%, then the composition is the most is egg whites with the content in the egg whites is protein which contains complete amino acids, so that eggs are good food for stitch wounds. In this study, egg whites were proven to accelerate wounds because there was a peptide content from egg whites that was hydrolysed to accelerate wound healing. In another study, it was explained that the recommended good content is to consume 4 eggs per day with the content of 1 egg 6-8 grams of protein because protein tissue accounts for 30%

of the protein turnover of the whole body. Eggs are one of the standard proteins compared to other protein sources which are the cheapest so eggs are one of the most expensive proteins in the world (Mardalena & Suyani, 2016).

This egg white is safe to consume by postpartum mothers who have surgical suture wounds because the effects of this protein are very helpful in the reformation of damaged tissue cells (Anggraini et al., 2022). Boiled egg whites contain choline which has the effect of repairing damaged body cells so that new and healthy tissue will be easier to form to replace damaged tissue. Therefore, proteins are referred to as building elements or substances. One of them is the protein contained in eggs for wound healing after SC surgery, it is caused by the content of amino acids in eggs. A person who has a stitch wound really needs enough protein intake so that the stitch wound dries quickly and heals. Evidently, the composition of egg whites is about 57% rich in protein compared to other parts of the egg (Puspitasari et al., 2023). There has been limited research specifically examining the effect of boiled egg consumption on the acceleration of wound healing after a cesarean section. Therefore, this study was conducted to further explore whether consuming boiled eggs can provide real benefits in speeding up the recovery process of surgical wounds in post cesarean mothers, potentially serving as a simple yet effective nutritional recommendation for postoperative care.

Method

This study used an experimental method with a two-group pretest–posttest control group design, which aims to objectively test the effect of a treatment on the variables being studied. This design allows researchers to compare the conditions of respondents before and after treatment, in both the intervention and control groups. The presence of a control group is expected to minimize bias and increase the internal validity of the research results.

The population in this study consisted of all subjects who met the inclusion and exclusion criteria established by the researcher. The research sample consisted of 40 respondents selected using quota sampling, a technique based on a predetermined number of respondents. After the sample selection process, respondents were divided into two groups: an intervention group of 20 people and a control group of 20 people, with relatively comparable characteristics.

The intervention group received treatment according to the designed research procedures, while the control group received no treatment or only standard care. Before treatment was administered, all respondents in both groups underwent an initial measurement (pretest) to determine their baseline condition. After the treatment had been administered for a specified period of time, a repeat measurement (posttest) was administered to observe changes in each group.

The instrument used in this study was the REEDA score, a measurement tool for assessing the wound healing process. The assessment was based on five indicators: redness, edema, ecchymosis, wound discharge, and approximation. Each indicator was systematically assessed to obtain a total score reflecting the level of wound healing in the respondents.

Data obtained from the pretest and posttest measurements were then analyzed to determine differences in results between the intervention and control groups. Data analysis was performed by comparing changes in REEDA scores in each group to determine the effectiveness of the treatment. The results of this analysis are expected to provide a clear picture of the intervention's effect on the wound healing process and serve as a basis for drawing research conclusions.

Result and Discussion

Result

Table 1. Results of Pre-Stitch Wounds in the Control Group

Categories	Frequency	Percentage (%)
Good	0.00	0.00
Less	20.00	100.00
Bad	0.00	0.00
Total	20.00	100.00

In Table 1, it can be seen that 100% of the control group respondents all had less injury results.

Table 2. Results of Pre-Stitch Wounds in the Intervention Group

Categories	Frequency	Percentage (%)
Good	0.00	0.00
Less	20.00	100.00
Bad	0.00	0.00
Total	20.00	100.00

In Table 2, it can be seen that 100% of the participants in the intervention group all had less injury outcomes.

Table 3. Results of Stitches After the Control Group

Categories	Frequency	Percentage (%)
Good	8.00	40.00
Less	11.00	55.00
Bad	1.00	5.00
Total	20.00	100.00

In Table 3, it can be seen that more than half of the control group respondents had less wound healing of 55%.

Table 4. Results of Stitch Wounds After the Intervention Group

Categories		Frequency
Good	18.00	90.00
Less	2.00	10.00
Bad	0.00	0.00
Total	20.00	100.00

In Table 4 it can be seen that most of the respondents had a good cure of 90%.

Table 5. Effect of Egg Boiling on Wound Healing Results

Group		Mean	*p-value*
Intervention	Before	0.00	0.00
	After	1.50	
Control	Before	0.00	0.00
	After	6.50	

In Table 5, it can be seen that in the intervention group respondents there was a mean increase of 9.50 with a p-value of 0.000 which can be concluded that there is an effect of giving egg white decoction on the healing of post-SC stitches, in the control group there is an increase of 10.50 with a p-value of 0.000 which can be concluded that there is an effect if the client is not given intervention in the form of giving boiled egg whites.

Discussion

The results showed that 100% of the control group respondents had less injuries. The results were the same as the intervention group where all respondents had less wound healing. According to this theory, all wounds are reddish in the Inflammatory Phase (duration 0-3 days) Damaged tissue and dead cells release histamine and other mediators, which can cause vase dilation of the surrounding blood vessels that are still intact and increased blood supply to the area, thus causing red and warm. The permeability of blood capillaries is increased and protein-rich fluid flows into the interstitial causing local edema.

In the results of previous researchers, the wound healing process is divided into 4 main phases, when the patient is treated at the hospital, the patient is in the Inflammatory Phase (duration 0-3 days), where damaged tissue and dead cells release histamine and other mediators, so that it can cause vase dilation of the surrounding blood vessels that are still intact and increase blood supply to the area. thus causing red and warm. The permeability of blood capillaries is increased and protein-rich fluid flows into the interstitial causing local edema.

The researchers' assumption of the cause of the wound is lacking, from all respondents is that it is normal that it is still in the process of healing wounds on days 1-3 that on average there is redness and oedema around the incision wound in all patients, after a comparison between the results of the assessment obtained on the first day of dressing change there is redness, therefore there is no difference between the theory and the existing field facts. In table 2, it can be seen that 100% of the participants in the intervention group all had less injury outcomes. Therefore, it can be concluded that the respondents have a category of wound healing that is lacking at all. When the patient is treated at the hospital, the patient is in the Inflammatory Phase (duration 0-3 days), signs of inflammation, namely pain in the wound, redness, swelling, there is little exudate, a little smell, the skin around the wound feels warm (Manuaba, 2017).

According to the theory, the Modern Dressing wound care method can be used in the wound healing process with the presence of moisture in the wound can trigger faster tissue growth and the risk of infection is low. Meanwhile, for modern dressing techniques, the wound treatment becomes moist, the wound area does not become dry, the gauze does not experience stickiness in the wound. In Modern dressing research, Wound Care accelerates wound healing with the principle of maintaining wound moisture by using materials such as hydrogels. The dressing can be applied for 3-5 days so that it does not often cause trauma and pain at the time of changing the dressing, an absorbent dressing material such as foam is chosen, while on wounds that begin to grow, granulation is given a gel to create a moist atmosphere that will help accelerate wound healing (Bangu et al., 2021).

The researcher assumes that one of the factors that causes this is wound contamination where adequate dressing techniques, if they are too small, allow bacterial invasion and contamination, if they are too tight can reduce the supply of oxygen. Because the standard operating procedures for wound dressing given to patients have used modern dresing, where the advantage of modern dresing is that the wound healing process is faster, where B.K Hospital has applied modern dresing in wound dressing. Various wound care techniques are often discussed, one of which is about modern dressing wounds. In addition, after comparing the results of the assessment obtained on the first day of the bandage change, there was redness, therefore there was no difference between the theory and the existing field facts. Table 3 shows that more than half of the control group respondents had 55% less wound healing, almost half of the respondents had 40% better wound healing, and only a small percentage of the respondents had 5% less severe wound healing. In addition to egg whites, early mobilization is very beneficial in the wound healing process, one of which is preventing the potential for thrombosis and thromboembolism, the potential for decreased functional ability, infection and so on (Sihotang & Yulianti, 2018).

According to the theory of many factors that cause wounds to become bad, one of the factors focused on in

this study is nutrition, where in the control group no nutrients were given in the form of boiled egg whites in the intervention. The results of the study showed that there were 15 (100%) respondents of post sectio caesarea patients who experienced wounds that did not heal caused by not being given egg nutrition treatment to post sectio caesarea patients.

In addition to egg whites, early mobilization is very beneficial in the wound healing process, one of which is preventing the potential for thrombosis and thromboembolism, the potential for decreased functional ability, infection and so on. The results of the study were obtained by post sectio caesarea mothers who did not consume steamed egg whites had the criteria for healing good wounds for 2 respondents, moderate wounds for 5 respondents and bad wounds for 3 respondents (Zaqiyah, 2022).

The results of the study obtained that sectio caesarean patients who did not consume snakehead fish extract and boiled eggs at the Sumbawa Regional General Hospital obtained results that were in the category of "Not Good" as many as 13 people (86.7%) (Mardalena & Suyani, 2016). The results of the study concluded that early mobilization is a form of way to maintain and prevent the occurrence of other health problems in the postpartum period and to increase self-independence, improve health, slow down disease processes, especially degenerative diseases and for actualization (Warniati et al., 2019).

In the results of the study, wounds were found for the control group there were wet wounds as many as 1 person, where after an interview with 1 person they said wound healing in 1 week complained of pain and wetness in the surgical wound area, when asked about how to treat wounds at home, patients said they did not know what foods to eat so that the wound healing process was good, The patient only said to eat what was important often, and the patient was more concerned with eating katuk leaf vegetables to increase his breast milk and did not know what foods should contain what could heal the wound well, and the mother said that he did not mobilize because of the pain felt by the client and ended up not mobilizing properly.

In the results of the study after day 7, the wound phase experienced by the patient is the Proliferation phase (duration 3-24 days), which is characterized by fibroblasts multiplying and forming networks for migrating cells. Fibroblasts perform the synthesis of collagen and mucopolysaccharides. The characteristic of the proliferation phase is characterized by exudate and fibroblasts such as crusts on the wound, the healing phase is characterized by the presence of new tissue that is formed so that the wound shrinks and heals. The researcher's assumption after conducting a study using REEDA is that there is still wound healing that is not in accordance with the existing theory, one of the factors that causes this is due to the lack of consumption of balanced nutritional foods and high protein, lack of mobilization and personal hygiene, where after the researcher conducted the study, the results were obtained that in the control group there was still redness and edema, However, the wound looks dry.

Table 4 shows that most of the respondents had good wound healing of 90% and a small number of respondents had wound healing of less than 10%. One of the factors that causes good wound healing is the health education that is carried out. Health education affects the knowledge of postpartum mothers in caring for post sc wounds, when postpartum mothers have knowledge related to how to treat sc wounds they will take care of themselves at home well, and the wound healing process will take place quickly. According to research, it is concluded that health education affects the knowledge of postpartum mothers in caring for post-sc wounds, when postpartum mothers have knowledge related to how to treat postpartum wounds, they will take care of themselves at home well, and the wound healing process will take place quickly (Sukurni, 2023).

One of the factors that causes good wound healing is that the patient has compliantly consumed boiled egg whites that have been given for 7 days and under monitoring via telenursing smart phones in patients post sc intervention group. In addition to nutritional factors, the knowledge factor also plays an important role in maintaining wound healing, where the SOP at B.K Hospital when post sc patients will be discharged they carry out health education to provide education first to increase their knowledge in treating wounds.

In addition to health education factors, the main factors such as nutrition are important factors for wound healing. One egg contains 6-8 grams of protein, in this study the researcher requires respondents to consume 4 eggs every day and consumed one egg in the morning, one egg in the afternoon, one egg in the afternoon, and one egg at night, where in total the respondents consume 24-32 grams of eggs a day, which is equivalent to 30% of the daily needs of a person with an injury, and 75% obtained from other foods. The body experiences an increased protein requirement during injury, which is used for inflammatory processes, immunity and tissue granulation development. The main protein that is synthesized during the wound healing phase is collagen. The strength of collagen determines the strength of the wound skin after healing. Protein supplies a minimum of 30% per day to the rest of the body to speed up the healing of surgical wounds. Protein deficiency can affect wound healing, lack of preoperative protein intake, significantly delays postoperative wound healing. Low serum albumin levels will decrease oxygen diffusion and limit the ability of neutrophics to kill bacteria. In this regard, low oxygen at the capillary level limits the

proliferation of healthy granulated tissue (Puspitasari et al., 2023).

The study on respondents who consumed eggs, both 4 eggs per day and 6 eggs per day, the majority of respondents recovered within the 4th to 6th day by 80%, namely 8 respondents. Meanwhile, in the span of 1-3 days, there was only 1 respondent who experienced very good wound healing. The study on post-sectio caesarean mothers who consumed steamed egg whites had good wound healing criteria of 9 respondents and moderate wound healing criteria of 1 respondent (Zaqiyah, 2022). Wound healing in sectio caesarean patients who consumed snakehead fish extract and rebusz eggs at the Sumbawa Regional General Hospital obtained results that were in the "good" category as many as 13 people (86.7%) (Mardalena & Suyani, 2016).

The assessment was carried out on the 7th day of the mother's check-up, on the 7th day the body experienced a proliferation phase (duration 3-24 days), which was characterized by fibroblasts multiplying and forming nets for migrating cells. Fibroblasts perform the synthesis of collagen and mucopolysaccharides. The characteristics of the proliferation phase are characterized by exudate and fibroblasts such as dry wounds on the wound, the healing phase is characterized by the presence of new tissue that is formed so that the wound shrinks and heals.

The assumption of the study after the researcher conducted an assessment of the wound results looked dry, there were no signs such as edema and redness, then it can be said that the findings and theories are different. The results of the study showed that in the intervention group there was a mean increase of 1.50 with a p-value of 0.000 which could be concluded that there was an effect of giving egg boils on the healing of stitches, in the control group there was an increase of 6.50 with a p-value of 0.000 which can be concluded that there is an effect if the client is not given intervention in the form of giving wounds.

After conducting the analysis, it was found that there was a difference in the increase in the average mean score, namely for the intervention group of 1.50 and the control group of 6.50, if calculated there was a difference of 5 points, which can be concluded that the administration of boiled egg whites has an effect on the healing of post sc wounds, because it is seen from the difference in the mean value in the intervention and control groups, where the average value of healing of intervention wounds is smaller. Wounds are a condition where the continuity of body tissues is interrupted which can cause disruption of bodily functions and result in disruption of daily activities (Martutik & Marjiyanto, 2014). Sectio cesarean is a method of delivering a fetus by making an incision in the uterine wall through the front of the abdomen to deliver the fetus from inside the womb (Simões & Stilwell, 2021). When injury occurs, the need for protein increases because it is necessary for inflammatory, immune processes and the development of granulated tissues. The main protein that is synthesized during the wound healing phase is collagen. The strength of collagen determines the strength of the wound skin after healing. Proteins supply amino acids needed for tissue repair and regeneration.

The components of whole eggs are 66% water and 34% dry matter which is composed of 12% protein, 10% fat, 1% carbohydrates and 11% albumin. In one whole egg there are 6-8 grams of protein, so if a person consumes 4 eggs every day, it will be enough to get about 24-32 grams of protein, because protein tissue accounts for 30% of the protein turnover throughout the body. Eggs are one of the standard proteins compared to other protein sources that are the cheapest so eggs are one of the recommendations that can be given to post SC mothers to speed up wound healing (Mardalena & Suyani, 2016). There was therefore a difference between the intervention group and the control group in the average wound healing. The average time required for a post-sectio patient. Caesarean section patients who consumed eggs with 4 eggs averaged 4.6 days, while the time it took for post sectio caesarea patients to heal wounds in the control group that did not consume boiled eggs was 9 days. The p-value results obtained in the independent t-test analysis test in the control and intervention groups, obtained p-value = 0.002 which means that there is an effect of egg consumption on the healing of post-sectio caesarean wounds.

The Chi Square Test's statistical analysis test showed that the value of p 0.000 <0.05 then H0 was rejected and H1 was accepted. Thus, it can be concluded that there is an effect of steamed egg white consumption on the healing of post sectio caesarean suture wounds at the Ibu Bertha Maternity House, Pasuruan City (Zaqiyah, 2022). The T test (One Sample T-test) with a significant error rate of 95%, it is known that there is an effect of the effectiveness of giving boiled eggs and snakehead fish on the healing of post-caesarean wounds at the Sumbawa Regional General Hospital ($p<0.001$; $T= 14.66$) (Mardalena & Suyani, 2016) Post SC mothers after being given boiled egg whites for a week as many as 4 grains experienced an acceleration of wound healing with a REEDA score on day 1 which was 8 and gradually improved to 7 on day 2, 4 on day 3 and 4, 2 on day 5 and 0 on day 6 which means that the wound has begun to dry on day 6 (Bangu et al., 2021). The wound healing process following a cesarean section (C-section) is a crucial phase in the postpartum recovery of mothers. Poor healing of surgical sutures may increase the risk of infection, prolonged pain, delayed mobility, and hinder the mother's ability to care for her newborn. Therefore, nutritional interventions that support wound healing

are essential. One potential food with healing properties is boiled egg white.

Boiled egg white is rich in albumin, a type of high-quality protein that plays a critical role in tissue regeneration (Wongnen et al., 2023). Albumin contributes to collagen synthesis, fibroblast proliferation, and edema reduction in wound areas (Indayani & Juliyanti, 2023; Wang et al., 2023). The high protein content in egg white supports the body during the inflammatory, proliferative, and epithelialization phases of wound healing. Several studies suggest that adequate protein intake especially from animal sources like egg white is positively correlated with increased serum albumin levels, which directly influences the speed and quality of wound healing. Routine consumption of boiled egg whites by postpartum mothers after C-section may accelerate tissue repair and reduce the risk of wound dehiscence or surgical site infections (Daina & Zoete, 2016; Indayani & Juliyanti, 2023).

In terms of practicality, boiled egg whites are not only affordable and accessible, but also easy to prepare and consume, making them a suitable nutritional intervention, particularly in low-resource settings. This provides a cost-effective approach to support maternal recovery post-surgery. However, it is important to ensure that egg whites are properly cooked to avoid the risk of bacterial contamination such as *Salmonella*. Additionally, protein intake should be tailored to the individual's condition and balanced with other essential nutrients to achieve optimal healing outcomes (Wongnen et al., 2023; Zhu et al., 2024).

Conclusion

Boiled eggs have an influence on the healing of sectio caesarean surgery wounds. It is recommended that women recovering from a cesarean section incorporate boiled eggs into their diet as a source of high-quality protein and essential nutrients, such as vitamins A, B12, and zinc, which are known to support wound healing and boost the immune system. However, it is important to consume them in moderation and as part of a balanced diet. Patients should consult healthcare professionals or nutritionists to determine the appropriate portion size, especially if they have specific dietary restrictions or health conditions such as high cholesterol or egg allergies. Additionally, nutritional support should be complemented by proper medical care and follow-up to ensure optimal recovery. It is recommended that women recovering from a cesarean section incorporate boiled eggs into their diet as a source of high-quality protein and essential nutrients, such as vitamins A, B12, and zinc, which are known to support wound healing and boost the immune system. However, it is important to consume them in moderation and as part of a balanced diet. Patients should consult healthcare professionals or nutritionists to determine the appropriate portion size, especially if they have specific dietary restrictions or health conditions such as high cholesterol or egg allergies. Additionally, nutritional support should be complemented by proper medical care and follow-up to ensure optimal recovery.

The recommended egg for the wound healing process is chicken eggs compared to other chickens because the egg protein used by domestic chicken eggs is one of the popular animal protein food sources and is in great demand by the public. Almost all people can consume chicken eggs to meet the needs of animal protein, because chicken eggs are relatively cheap and easy to obtain, Eggs that have high protein levels are free-range chicken eggs, as in the explanation of research on the determination of protein levels in poultry eggs, it shows that free-range chicken eggs have higher protein levels than other egg samples, namely purebred chickens, duck eggs and quail eggs. Giving eggs that have a high protein content will affect the healing of post SC wounds in postpartum mothers. So that if in the wound healing process, the mother consumes eggs regularly in larger quantities than usual, it can increase the wound healing time. As explained in the study, postpartum mothers who consumed boiled eggs entirely (100%) experienced normal wound healing and those who did not consume boiled egg whites almost half (36.4%) experienced a delay in wound healing. One of the key factors influencing the wound healing process is nutritional status, particularly the intake of adequate protein. Protein plays an essential role in tissue repair, immune function, and the formation of new cells. Among various protein sources, egg white is considered a high-quality, low-fat option rich in albumin, which is vital for wound healing. Albumin assists in collagen formation, maintaining osmotic pressure, and supporting the regenerative processes of damaged tissues. In postpartum mothers who have undergone C-section, maintaining adequate levels of albumin may accelerate the healing of surgical wounds and reduce the risk of complications.

In many communities, especially in developing countries, access to expensive protein supplements or specialized nutrition is limited. However, boiled egg white is an affordable, accessible, and culturally acceptable source of protein that can be easily incorporated into the diet of postpartum women. Despite its potential benefits, the role of boiled egg white consumption in enhancing post-cesarean wound healing has not been widely explored. This raises the need for further investigation into its effectiveness as a simple and practical dietary intervention to improve maternal outcomes (Turnip et al., 2022).

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