

THE EFFECTIVENESS OF HIGH PROTEIN NUTRIENT TO THE POST SECTIO CAESAREA HEALING PROCESS

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ABSTRACT

The prevalence of cesarean section (SC) continues to increase along with the quality of technical facilities improvement. Failure to recover the surgical wounds after cesarean section is one of the possible SC complications that should be taken seriously. Proper nutrition greatly affect to wound healing. This study aims to found the effectiveness of high protein nutrients intake for post SC wound healing process at dr. Zainoel Abidin Hospital Banda Aceh. Design: This study is an experimental research with post test for intervention and control group design and using purposive sampling with the observation format as the measuring instrument. A total of 30 mother with post sectio caesarea participated in this study. There was a significant difference between post-SC wound healing in the intervention group (46.7%) compare to the control group (6.7%) (0.000). The mean of wound healing in the proliferation phase in the intervention group was faster than the control group respectively (10.47; 7.93). The hospital should provide information and evaluate high protein intake especially in post-SC patients during the treatment time, so that the patient is able to apply the information until they are going back home.

Key words: High protein nutrients, eggs, wound healing, sectio caesarea.

Introduction

The prevalence of *Sectio Caesarea* (SC) in the world continues to increase. WHO recommends that the delivery process by caesarean section should be less than 10-15% in every country (Vadeboncoeur, 2011). However, the global prevalence of SC in 2014 is 16 percent, which means still slightly above the recommendation level (Spencer, 2014). Nulliparous women provide 31.2% of all pregnant women who did caesarean section for delivery process (El-Ardat, Izetbegovic, Djulabic, & Hozic, 2014). The Asia's prevalence of cesarean section in 2012 is estimated at 15.9% (Goonewardene, Manawadu, & Priyaranjana, 2012). Unfortunately, these numbers are still very far from the target number of SC that recommended by WHO.

According to Riskesdas in 2013, nationally, Indonesia has 9.8 percents of caesarean births and Aceh has 9.6 percents (Kemenkes RI, 2013). Jakarta has the highest percentage which is 19,9%, while Southeast Sulawesi has the lowest number (3,3%).

The increase of caesarean section's number as one of the favourite surgical actions is thought to be due to improved of technics and surgery facilities, the improvement of asepsis techniques, improved post-operative comfortment, and length of stay in hospital is getting shorter. In addition, maternal and perinatal morbidity and mortality can be significantly decreased. The higher prevalence of SC is also influenced by many factors including medical indications that require the mother to face a cesarean delivery (Roeshadi, 2005). A survey conducted by WHO in 2008 that

done in 373 service facilities in 24 countries found that the SC practice that performed without any medical indications may increase the risk of maternal death and bad outcomes for newborns compared with spontaneous delivery (Neuman *et al.*, 2014). In addition, women who preferred SC as her delivery process have the underlying reasons, such as to reduce labor pain and minimize the risk of fetal distress during labor process (Dursun *et al.*, 2011).

Caesarean section surgery is one of the ten most common major operations in the world (El-Ardat *et al.*, 2014). In the process of SC, there are two priorities that must to be achieved: mother and baby. However, a good wound care is an act that should not be forgotten. When the mother performs a caesarean section, then she will have higher risk of wound healing problems (Mahmoud & Ghani, 2013).

Women who did a caesarean section had 5 until 20 times greater risk of getting an infection than vaginal delivery. Therefore, the process of post SC wound care becomes the absolute action that must be done properly to prevent infection (Mahmoud & Ghani, 2013). Basically, the healing principles and traits of these wounds are similar to another wounds, depending on the location, severity, and extent of injury. The ability of cells and tissues to regenerate or return to normal structures through cell growth also affects to the wound healing (Potter, 2006).

In the wound healing process, the presence of oxygen plays an important role. Oxygen involved in biological processes including cell proliferation, angiogenesis, and protein synthesis, which is necessary for functional restoration and tissue integrity. The sufficient oxygenation of the wound can trigger a healing response and affect to the outcomes of another treatment modalities (Castilla, Liu, & Velazquez, 2012).

Wound healing also requires proper

nutrition to speed up that process, because the physiology of wound healing is affected by the availability of carbohydrates, proteins, fats, vitamins (especially vitamins A, C, and E), and some minerals such as zinc and iron (Tonni & Wali, 2013). Vitamins A and C are needed to synthesize the collagen. In addition, carbohydrates in the form of glucose also become one of the basic ingredients of collagen forming. Collagen is a protein formed by amino acids that derived from proteins intake (Greyling, 2010).

Protein is an essential micronutrient that plays an important role for maintenance and repair the tissue, and also wound tissue depletion by reducing the formation of fibroblasts and the development of collagen. Adequate protein intake will optimize the rate of wound healing (Ord, 2007). Similarly, lack of protein intake will affect to the wound healing process by inhibit the fibroblastic response, the formation of new blood vessels, and the synthesis of collagen (Greyling, 2010).

A study conducted by Rastegar, Azarpira, & Azarpira in 2011 found that egg yolks topical administration to treat burns had a positive effect on wound healing. The wound size was also significantly smaller than the other group that given 1% silver sulfadiazine (SSD) and control group on days 14 and 30 (Rastegar, Azarpira, Amiri, & Azarpira, 2011). From that study we can concluded that eggs as one of the food sources of protein has positive correlation with the wound healing process.

One of the health problems in the post partum period that can hamper the wound healing process is the existence of certain traditional value that apply in the community. Previous research conducted in Laos reported that diet restriction in post partum mothers led to a nutritional disorder experienced by women of childbearing age and children. The tradition of activity and

dietary restriction also applies in the Eastern Amazon, impacting the difficulty of postpartum mothers to meet the need of nutrition when their need increases of energy (Barenes *et al.*, 2009). Food is an important cultural category. The function of abstinence and the necessity to consume certain types of food show similarities or differences in various places in Indonesia, including dietary restrictions for the mother during the puerperium. The purpose of this study was to identify the effectiveness of high protein nutrition to the post *sectio caesarea* wound healing process in the intervention and control group at dr. Zainoel Abidin Hospital Banda Aceh.

Methods

The type of research that used in this study is an experiment study with observational method that follows the health status towards the future based on the time sequence. The experimental research used post test for intervention and control groups. The intervention group received treatment (X) and followed by observation (O1). The results of this observation were compared with the observation results in the control group who did not receive the program or intervention.

The population of this study were all mothers who did caesarean section at RSUDZA Banda Aceh, in June until August 2015. The sampling technique used in this study was non-probability sampling or non-random sample. Sampling method is done by purposive sampling that is based on a certain consideration made by the researchers itself. The considerations is made based on the characteristics and properties of the population that has been known before. The samples' number in this study were 30 respondents with 15 respondents for the intervention group and 15 respondents for the control group.

The inclusion criteria to choose the sample were: *sectio caesarea* mothers with two days postpartum, mothers who want to consume 6 eggs per day, mothers lived in Banda Aceh and Aceh Besar area, and mothers who want to be observed on the 7th day of research. The exclusion criteria were: mothers who have egg allergies and mothers who abstain from eating eggs. Data collection tool in this study was an observation format that contains of intervention format about high protein intake for post *sectio caesarea* mothers that is given 6 eggs per day. In addition, the format of observation to post *sectio caesarea* wound healing in the control group were measured at 7th day.

The data collection process is started by asking the respondent's consent to engage in this study. Furthermore, the researcher asked the respondent's signature on the informed consent letter. On the 2nd through the 6th day of study, the researchers intervened the post SC mothers in the intervention group and filled out the intervention format that available as a research requirement. On the 2nd until 3rd day (done in the hospital), the researcher gave the eggs that have been boiled for 10 minutes as much as 6 eggs for the intervention group in the morning and reminded to be eaten.

In the afternoon, researchers check the remaining eggs and remind the respondents again to consume the eggs. The researchers stay beside the respondents to make sure that the respondents consumes the white eggs. On the 4th until 6th day (home visit), the researcher who previously provided the eggs and brought them to the respondent's home and reminded again to eat the eggs as much as 6 items via telephone each morning. In the afternoon, the researchers and respondents made sure how much eggs that left as an evidence that the respondent eat 6 white eggs per day.

On the 7th day, the researchers observed the post SC wound healing on the intervention and control group at the midwifery department in RSUDZA and filled out the available observation formats. In this study, the effectiveness of high protein nutrition in post *sectio caesarea* mother to the wound healing process use statistical test with Independent T-Test. The normality test that used in this study is Shapiro-Wilk Test. The Shapiro-Wilk Test used at 95% level of confidence ($\alpha = 0,05$). This research has been through the ethical test at the Nursing Faculty, Syiah Kuala University with number 1511076.

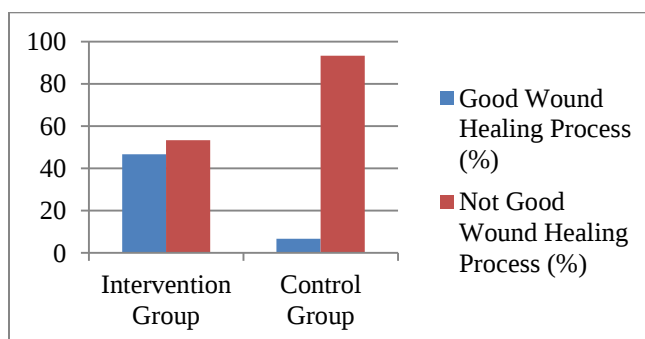
Results

Table 1 showed that the age of the majority mother was at no risk (≥ 20 and ≤ 35 years) which are 13 mothers (86.7%) in the intervention group and 11 mothers (73.3%) in the control group. The education level of the majority mothers is at the secondary educational level, which are 9 mothers (60.0%) in the intervention group and 9 mothers (60.0%) in the control group and the majority of the non-working mothers in the intervention group was 11 mothers (73.3%) and control group was 10 mothers (60.0%).

Table 1. Demography's Characteristics of Post *Sectio Caesarea* Mother at General Hospital dr. Zainoel Abidin Banda Aceh

No	Data	Groups		Total
		Intervention (%)	Control (%)	
1	Age			
	Risk (<20 & > 35 years old)	13.3	26.7	20.0
	No Risk (≥ 20 & ≤ 35 years old)	86.7	73.3	80.0
2	Educational Level			
	Low	0	6.7	3.3
	Medium	60.0	60.0	60.0
	High	40.0	33.4	36.7
3	Occupation			
	Work	26.7	33.3	30.0
	Not Work	73.3	66.7	70.0
Total		100.0	100.0	100.0

Graphic 1. Distribution of Post *Sectio Caesarea* Wound Healing Process (Proliferation Phase) at General Hospital dr. Zainoel Abidin Banda Aceh



Based on graphic 1, it can be concluded that from 15 respondents in the post-SC wound healing intervention group, the healing process was good as many as 7

mothers (46.7%) and not good as many as 8 mothers (53.3%), while the control group has good wound healing process at 1 mother (6.7%) and not good at 14 mothers (73.3%).

Table 2. Normality Test of High Protein Nutrition to the Post *Seccio Caesarea* Healing Process at General Hospital dr. Zainoel Abidin Banda Aceh

Shapiro-Wilk		
Phase	Df	Sig
Proliferation Phase	30	,219

Source: Primary Data (processed on 2015)

Based on table 2 it can be concluded that the data is normally distributed because the $p\text{-value} \geq \alpha$ with $p\text{-value}$ (sig) was ,219. After that, the researchers doing the data homogeneity test to see the variance or

similarity of the data between the intervention and the control group before given any intervention in the intervention group.

Table 3 The Homogeneity Test of High Protein Nutrition on Post *Seccio Caesarea* Healing Process at General Hospital dr. Zainoel Abidin Banda Aceh

Proliferation Phase	Levene Statistic	Sig.
Based on Mean	,002	,969

Source: Primary Data (processed on 2015)

Table 3 showed that the homogeneity test resulted by Levene's test method. The Levene value is indicated on the line of

based mean values, which is ,002 with $p\text{-value}$,969 (> 0.05), which means the data was homogeny.

Table 4. The Average of Post *Seccio Caesarea* Healing Process at General Hospital dr. Zainoel Abidin Banda Aceh

Phase	Groups	Mean	Standar Deviation	t	Sig (2- tailed)	n
Proliferation	Intervention	10,467	1,060	6,235	,000	15
	Control	7,933	1,162			15

Source: Primary Data (processed on 2015)

Based on table 4, it can be concluded that the average of wound healing process was 10,467 (STD= 1,060) and 7,933 (STD= 1.162) in the intervention and control group,

respectively. There was statistically difference of the proliferative wound healing mean value in the intervention and control group (mean = 2.534 with the

standard deviation was 0.102). The statistical test resulted that the p-value was 0,000, indicates that the number was less than 0,05. From that result we can concluded that the null hypothesis (H_0) was rejected, indicated that there was a significant difference of post *sectio caesarea* wound healing process in the intervention and control group in the proliferation phase.

Discussion

Wound healing process can be affected by several factors such as oxygen, infection, age, stress, accompanying illness, lifestyle, medicines consumed, and nutrients (Guo & DiPietro, 2010). Nutrition fulfillment becomes a very important factor in wound healing process. When the connective tissue was damage, nutrients become the basic ingredients in the process of protein synthesis and collagen. The formation of these two elements is strongly influenced by the supply of nutrients such as amino acids. Vitamins and minerals are also needed for enzymatic reactions in the construction of connective tissue (Tonni & Wali, 2013). Poor nutrition status contributes to the development of wounds. There was some evidence that showed the wound healing will be very bad if the patients did not consume foods that contains of good nutritions (Ord, 2007).

Protein is an essential element that plays important roles in the maintenance and repair of body tissues. The reduction of protein levels will lead to decrease the development of collagen and slow the wound healing process. Giving the protein should be accompanied by adequate intake of calories, because if the energy needs are not met, the body will use protein as the source of energy and not for wound healing process (Tonni & Wali, 2013). The minimum protein to be consumed by adults is in the range of 1-1.5 grams/kg/day.

However, an depth calculation based on weight should be done (Greyling, 2010). The sources of that protein includes eggs, milk, meat, nuts and seeds (Barbul & Arnold, 2006).

Consuming a low protein intake in the short term can lead to delay the wound healing. This statement supported by a study that done by Yunsook in 2003 with the title "The Role of Nutrition During the Early Inflammatory Stage of Cutaneous Wound Healing" which showed that poor nutritional status in post surgical patients correlates positively with length of stay in the hospitals. This is because the healing process is inhibited and the risk of infection is high in these patients (Yunsook, 2003).

When the data was collected, the researchers tried to dig the respondent's perception about the eggs that will be given. Seven of fifteen respondents in the control group said that they did not want to eat eggs because they were afraid of itching. This is according to the study by Lee & Brann, 2015, which got a result that there are still many mothers with post SC who did dietary restrictions because they are culturally influenced. They tended to look for parents to ask what they should and should not do during the postpartum period. Similarly, in Indonesia, food restriction on post-partum mothers still happened because it considers that some foods can adversely affect their health (Haryati, 2015).

Another study conducted at Dayak Sanggau found that post-partum mothers had food tabulations of meat, eggs, fish, cold vegetables such as water gourd, cucumber, wuluh, and spiced vegetables (Suprabowo, 2006). This is very contradictory with the principle of wound healing process that normally needs the intake of proper nutrition, especially high protein, vitamins and minerals. Haryati (2015) also revealed the results that postpartum mothers have some dietary restrictions such as fish and

eggs because they believed that foods can made they feel itch around the stitches. They knew about the abstinence from their parents (Haryati, 2015).

The results of this study is supported by a study conducted in Bogor that compare eating habits in many areas. Most of people in Bogor have a habit that they have frequent meals twice a day with side dishes. The most food that they consumed was tofu and tempe (four times a week), but the fish and eggs are only eaten occasionally, while meat is rarely consumed. The good thing is they consume a variety of vegetables every day (Khomsan, Anwar, Sukandar, Riyadi, & Mudjajanto, 2006).

There was many evidences that suggest to consume enough protein to make the wounds will heal optimally. Eggs become one of the natural protein sources in the food. One egg provides more than 6 grams of protein. White egg contain more than half (4 of 6 grams) of protein in eggs. The function of white egg is as an antimicrobial barrier and provides a lot of protein (Szalay, 2015). Each mother should consume high protein nutrients (eggs) to speed up the wound healing, prevent infection and eliminate the stigma of abstinence from food to post-*sectio cesarean* mothers. The researchers concluded that adequate intake of high protein nutrients (eggs) associated with the post *sectio caesarea* wound healing process which is supported by post *sectio caesarea* healing process in the intervention and control group.

Conclusions and Recommendation

Based on this study, we got the result that there was statistically differences of post *sectio caesarea* wound healing process on intervention and control group at Rumah Sakit Umum Daerah dr. Zainoel Abidin Banda Aceh with p-value, 000. The average

was 10.467 and 7.933 in the intervention and control group respectively (the difference mean value was 2.534). The researchers suggest for health workers to provide good knowledge to give the best health education and discharge planning about the adequate nutrition for wound healing. The researchers hoped that these steps could change the perception of post-*sectio caesarea* women about dietary restriction without discrimination. Increasing the knowledge about high protein nutrients was also effective for post *sectio caesarea* wound healing. For the further research, the research methods should be add more time, funds, and sample quantities, as well as more representative research methods and designs can be undertaken.

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