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Factors Related to Healing Process of *Sectio caesarea* Surgical Wound

Juldin D. E Balla ✉, Rafael Paun, and Ina Debora Ratu Ludji

Universitas Nusa Cendana, Kupang.

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Abstract

Sectio caesarea surgical wound is a disorder in the incontinence of cells due to surgery performed to remove the fetus and *placenta* by opening the abdominal wall for certain indications. The aim of the study was to analyze and make a modeling of the relationship of factors in healing the sectio caesarea surgical wounds. This research is an analytic observational study with *cross-sectional* design. The sample in this study were 42 mothers with post *sectio caesarea* surgery at Prof. DR. W.Z. Johannes Kupang Public Hospital. Sampling was performed by *simple random sampling*. Data analysis was carried out in a bivariate and multivariate analysis. The results of the bivariate analysis found that the variables that give risk to wound healing were age (p = 0.041; RP = 3.4), *discharge planning* (p = 0.004; RP = 4.75), *personal hygiene* (p = 0.003; RP = 0.18), nutritional status (p = 0.013; RP = 0.15). Multivariate analysis found three variables that consistently provide risks to wound healing, namely discharge planning (p = -2.078; RP = 829 95% CI), *personal hygiene* (p = -1.852; RP = 1.039 95% CI), nutritional status (p = -2,374; RP = 1,023 95% CI). Probability model for healing the surgical wound at Prof. Dr. W.Z. Johannes, namely *personal hygiene*, nutritional status, *discharge planning* are factors related to wound healing.

Abstrak

Luka operasi sectio caesarea adalah gangguan dalam inkontuinitas sel akibat dari pembedahan yang dilakukan untuk mengeluarkan janin dan placenta dengan membuka dinding perut atas indikasi tertentu. Tujuan penelitian untuk menganalisis dan membuat pemodelan hubungan faktor pada penyembuhan luka operasi sectio caesarea. Penelitian ini merupakan studi observasional analitik dengan desain cross sectional. Sampel pada penelitian ini sebanyak 42 ibu post operasi sectio caesarea di RSUD Prof. DR. W.Z. Johannes Kupang. Pengambilan sampel secara simple random sampling. Analisis data dilakukan secara bivariat dan multivariat. Hasil analisis bivariat menemukan variabel yang memberikan risiko terhadap penyembuhan luka adalah umur (p=0,041; RP=3,4), discharge planning (p=0,004; RP=4,75), personal hygiene (p=0,003; RP=0,18), status gizi (p=0,013; RP=0,15). Analisis multivariat menemukan tiga variabel yang konsisten memberikan risiko terhadap penyembuhan luka yaitu discharge planning (p= -2.078; RP=829 95% CI), personal hygiene (p= -1.852; RP= 1,039 95% CI), status gizi (p= -2.374; RP=1,023 95% CI). Model probabilitas penyembuhan luka operasi di RSUD Prof. Dr. W.Z. Johannes yaitu personal hygiene, status gizi, discharge planning merupakan faktor yang berhubungan dengan penyembuhan luka.

✉ Corespondence Address:
JL. Adisucipto, Penfui-Kupang, Klp. Lima, Kupang
E-mail: elvianajuldin@yahoo.co.id

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INTRODUCTION

The number of infections in Indonesia is one of the causes of maternal death. The mortality rate caused by post sectio caesarea infection in 2013 reached 7.3%. The main complications are bleeding, infection and thromboembolism. Maternal mortality is most common in sectio caesarea delivery compared to vaginal delivery. The results of RISKESDAS (*Riset Kesehatan Dasar* or Basic Health Research) 2013 showed birth by sectio caesarea surgery in Indonesia was 9.8%. The wound healing process is one of the most complex human physiological processes. A wound is defined as being exposed to loss of skin. When the disorder occurs in the epidermis (outer layer), adjacent cells will migrate and multiply, and the wound heals naturally without the need for special care. The first principle in wound healing is controlling infection because infection can inhibit the healing process of the wound so that the rate of morbidity and mortality increases. The process of wound healing surgery is very dependent on several factors, namely early mobilization, patient characteristics, presence or absence of illness, health education by health workers contained in the Discharge planning, nutrition, patient behavior, especially in conducting personal hygiene, and workload. Education is very important to do with discharge planning (Asmuji & Indriyani, 2016). To accelerate wound healing, adequate nutrition is needed, according to Puspitasari's research (2011) which states that there is a significant relationship between personal hygiene and wound healing, followed by nutritional status (consumption) with a probability value of 0.004 and DM disease with a probability value of 0.007. Old surgical wound healing is also commonly known as surgical wound infection, this is an infection that often occurs in post surgery patients.

The aim of this study was to analyze the factors in the post sectio caesarea surgery related to the healing process of surgical wounds at the obstetric clinic of Prof. Dr. W.Z. Johannes Kupang Public Hospital.

METHOD

This type of research is an observational analytic study using a quantitative approach, with a cross-sectional design. The population of this study was all mothers who gave birth to the sectio caesarea at the obstetric clinic of Prof. Dr. W.Z. Johannes Kupang Public Hospital in 2017. The sampling technique in this study used a simple random sampling technique where the subjects were taken randomly, the number of respondents was 42 people.

Research location at Obstetric Clinic of Prof. Dr. W.Z. Johannes Kupang Public Hospital in November-December 2017. The study variables consisted of independent variables in the form of patient characteristics (age, education, occupation), personal hygiene, co-morbidities of discharge planning, nutritional status, and workload. Dependent variable on the form of surgical wound healing.

Primary data collection through questionnaires and interviews while secondary data on register book. Data analysis used univariate analysis, bivariate analysis with chi-square and multivariate analysis with logistic regression.

RESULTS AND DISCUSSION

The most respondents were in the age range <35 years, as many as 29 people (69.0%) while respondents in the age range> 35 years were 11 people

Table 1. General Distribution of Respondent Characteristics with Surgical Wound Healing in Post Sectio Caesarea at Obstetric Clinic of Prof. Dr. W.Z. Johannes Kupang Public Hospital in 2017

Characteristic of Respondent	Total (n=42)	Percentage (%)
Age :		
≥ 35 years old	13	31.0
< 35 years old	29	69.0
Education:		
University	11	26.2
High School/Vocational School	20	47.6
Elementary/Junior High School	11	26.2
Work :		
Not working	29	69.0
Work	13	31.0

(31.0%). Respondents with a high school / vocational high school education level were 20 people (47.6%) while the remaining respondents were elementary school and junior high school / university education, which were 11 people (26.2%) respectively. According to the respondent's work, the most respondents' work are those who did not work as many as 29 people (69.0%), while the respondents who work were 13 people (31.0%). This can be seen in Table 1.

The results of the bivariate analysis found that the variables that give risk to wound healing were age (p = 0.041; RP = 3.4), discharge planning (p = 0.004; RP = 4.75), personal hygiene (p = 0.003; RP = 0, 18), nutritional status (p = 0.013; RP = 0.15). This can be seen in Table 2.

Table 2 shows that most respondents were in the age range <35 years, as many as 29 people

Table 2. Relationship between Variables with Surgical Wound Healing in Mothers with Sectio Caesarea at Obstetric Clinic of Prof. DR. W. Z. Yohannes Kupang Public Hospital in 2017

Variable	Surgical Wound Healing				Total		RP	*p-value*
	Not recover		Recover					
	F	%	F	%	F	%		
Age								
≥ 35 years old	11	26.2	2	4.8	13	31	1.75	0.041
<35 years old	14	33.3	15	35.7	29	69		
Total	25	59.5	17	40.5	42	100		
Education								
High School/Vocational School	6	14.2	5	12	11	26.2		
University	12	28.6	8	19	20	47.6	-	0.908
Elementary/Junior High School	7	16.7	4	9.5	11	26.2		
Total	25	59.5	17	40.5	42	100		
Work								
Not Working	19	45.2	10	23.8	29	69	-	0.237
Work	6	14.3	7	16.7	13	31		
Total	25	59.5	17	40.5	42	100		
Personal Hygiene								
Bad	15	35.7	2	4.8	17	40.5	2.2	0.003
Good	10	23.8	15	35.7	25	59.5		
Total	25	59.5	17	40.5	42	100		
Comorbidity								
Exist	10	23.8	7	16.7	17	40.5	-	0.939
Not Exist	15	35.7	10	23.8	25	59.5		
Total	25	59.5	17	40.5	42	100		
Nutritional Status								
BMI < 18 and > 25	11	26.2	1	2.4	12	28.6	1.97	0.013
Normal if BMI (18-25)	14	33.3	16	38.1	30	71.4		
Total	25	59.5	17	40.5	42	100		
Workload								
Heavy	5	11.9	4	9.5	9	21.4	-	1.00
Light	20	47.6	13	31	33	78.6		
Total	25	59.5	17	40.5	42	100		

(69.0%) with good wound healing (51.7%) while respondents in the age range> 35 years were 13 people (31.0%) with a long wound healing of 84.6%. The results of statistical tests showed a significant relationship between age and surgical wound healing in sectio caesarea (p = 0.041; RP 1.75), where age has a risk of the long wound healing. This is in line with research conducted by Prasetya (2013) that people with age <35 do more sectio cesarea surgery. This research is in line with research conducted by Damayanti (2014) which stated that there was a significant effect between age on surgical wound healing in sectio caesarea in mothers with a value (p = 0.002). According to psychological theory, age can be classified as young adults, old adults, and old. The age of young adults is from 20-40 years old, 41-65 years old for old adults and old is over 65 years. Age can increase or decrease susceptibility to certain diseases. In general, quality of life decreases with increasing age. Post-surgical wound healing will be faster in people with young age because the body is still able to regenerate cells quickly compared to older people.

Table 2 shows that most respondents with education level of university as many as 20 people (47.6%) with long wound healing of 12 people (60%), while the rest were respondents with high school/ vocational education of 26.2% with long wound healing of 6 people (54.5%) and elementary-junior high school, each of which was 11 people (26.2%) with long wound healing of 7 people (63.6%). Statistical test results showed no significant relationship between education with surgical wound healing on caesarean section (p = 0.908). This research is not in line with Susilo's research (2015) which stated that education is very influential on the healing of sectio caesarea surgical wounds. Maternal education is an effort of persuasion or learning to the community so that the community will take actions (practices) to maintain and improve their health. The higher education someone is more able to receive information from outside that can be used to improve health. The more education one gets, the more mature one is, it is easy to receive and understand a positive information. In general, education covers the entire process of the individual's life from the born to die, in the form of the interaction of individuals with their environment, both formal and informal. Educational processes and activities basically involve individual and group behavior problems. Susilo (2015) in his research said that, in patients who have a higher education will have a broader knowledge also allows patients to control themselves in overcoming the problems faced, have high self-confidence, experience and have a precise estimate of how to overcome events, easy to understand about what is recommended by health workers, and can reduce anxiety so that it can help the individual in making decisions. In this study, respondents in each education level group had a balanced amount between the group that was cured and the group that had not recovered. This shows that in this study, the level of education did not play a role in post sectio caesarea wound healing

Table 2 shows the most respondents who did not work were 29 people (69.0%) with the long healing wound as many as 19 people (65.5%) while the respondents who worked were 13 people (31.0%) with long wound healing of 6 people (46.2%). Statistical test results showed that there was no significant relationship between work with healing of sectio caesarea surgical wounds (p = 0.237). Work is an activity of someone for other people or agencies, offices, or companies to earn income, namely wages or salaries in the form of money or goods in order to fulfill daily needs. Work and income factors greatly affect one's health, low income will be related to the use of health services and prevention. This is because part of life is spent in a place of work with a variety of different environments. Work is a risk factor for health (Amelia, 2014).

Personal Hygiene

Table 3 shows that respondents who had good personal hygiene were 25 people (59.5%) with long wound healing of 10 people (40%), while respondents who had less personal hygiene were 17 people (40.5%) with long wound healing of 15 people (88.2%). The results of the statistical test, p-value was 0.003 which is smaller than α 0.05, so personal hygiene had a significant relationship with the healing of sectio caesarea surgical wound with Rp 2.2 where personal hygiene had a risk of wound healing.

The result of this study is in line with Puspitasari's (2011) study which stated that there was a significant influence between personal hygiene on mothers on healing of sectio caesarea surgical wounds. Personal Hygiene is an act of maintaining one's cleanliness and health for physical and psychological well-being. The measurement of a person's cleanliness or appearance in meeting personal hygiene needs is different from a sick person, because there is a disruption in meeting needs. Someone is said to have good personal hygiene if, the person can maintain the cleanliness of the body which includes the cleanliness of the skin, teeth and mouth, hair, eyes, nose, ears, feet and nails, genitalia, as well as cleanliness and neatness of clothing. This is in contrast to the research of Perangin angin which stated that there was no relationship between personal hygiene and wound healing. According to Rismawati's research (2014) there was a relationship between personal hygiene and infectious diseases.

Comorbidity

Table 3 shows that respondents who had comorbidities were 17 people (40.5%) with long wound healing of 10 people (58.8%), while respondents who did not have comorbidities were 25 people (59.5%) with a long wound healing of 15 people (60%). The results of statistical test, p-value was 0.939 which is greater than α 0.05, so the comorbid disease had no significant relationship with the healing of sectio caesarea surgical wounds with Rp 0.96 where the comorbid disease had protective properties against wound healing. As stated in Vianti's study(2015) that comorbiditiy is factor that influences the incidence of post sectio caesarea infection, this is in line with this study which showed that people who have comorbidities will need longer healing.

The result of this study is not in line with Nurani's research (2015) which stated that comorbidities had a significant effect on the healing of sectio caesarea surgical wounds with p = 0.038 and p = 0.000 (p <0.05). Comorbidity is a condition in which patients who are going to undergo cutaneous treatment are sick but have other diseases that increase the risk of short-term and long-term complications or in other words other diseases that accompany primary disease.

Discharge Planning

Table 3 shows that the most respondents who got good discharge planning as many as 26 people (61.9%) with long wound healing of 11 people (42.3%), while respondents who received bad discharge planning were 16 people (38.1 %) with long wound healing of 14 people (87.5%). The results of statistical tests with p-value was 0.004 which is smaller than α 0.05, so there is a significant discharge planning relationship with sectio caesarea surgery wound healing, with Rp. 2.07 where discharge planning had a risk of long wound healing.

Discharge planing is a component of an ongoing care system as a plan for returning patients and providing information to patients and families when leaving a healthcare unit, so that patients and families know about what things need to be performed and avoided in relation to the patient's condition. The purpose of discharge planing is to improve the continuity of care, improve the quality of care and maximize the benefits of health care sources (Per-angin, Isnaniah, & Rizani; 2016).

Discharge planing can reduce the length of day of treatment, prevent recurrence, improve the development of the patient's health condition and reduce the burden of care on the family. In the mother's post sectio caesarea, before the mother was declared she can go home by the doctor/since the mother entered the hospital, the health worker was obliged to provide health education until the patient returned home, including personal hygiene, environmental hygiene, nutrition, rest and sleep, workload, medication schedule, control schedule, who can be contacted if undesirable things happen (Darmawati & Septiningtyas, 2015).

Nutritional Status

Table 3 shows that respondents had normal nutritional status (18-25) as many as 30 people (71.4%) with long wound healing of 14 people (46.7%), while respondents who have BMI <18 and> 25 of 12 people (28.6%) with long wound healing of 11 people (91.7%). The result of statistical test p-value was 0.013 which is smaller than α 0.05, so nutritional status had a significant relationship with the healing of sectio caesarea surgical wounds, with Rp. 1.97 where nutritional status had a risk of wound healing.

The result of this study is in line with Vallejo's (2017) study which stated that there was a significant influence between nutritional status and sectio caesarea surgical wound healing. Nutritional status is a measure of a person's body condition that can be seen from the food consumed and the use of nutrients in the body. Nutritional status is the state of the body as a result of food consumption and use of nutrients or balance between consumption, absorption of nutrients, and use in the body. Nutritional status in this study uses measurements of Body Mass Index as an indicator to determine one's nutritional status. Nutritional status is differentiated into Good, poor, bad nutrition status. Nutritional status comes from the word status and nutrition, the status is defined as a sign or appearance caused by a situation, while nutrition is the result of the process of organisms in using food ingredients through the process of digestion, absorption, transportation, metabolism, and disposal for maintenance of life. So nutritional status is a physiological sign or appearance caused by the balance of nutritional intake and its use by organisms that can be measured by one measurement, namely BMI (Body Mass Index).

Workload

Table 3 shows that respondents who had a heavy workload were 9 people (21.4%) who experienced long wound healing were 5 people (55.6%), while respondents who had a light workload were 33 people (78.6 %) with long wound healing of 20 people (60.6%). The result of statistical test p-value was 1.00 which is greater than α 0.05, so that the workload had no significant relationship with the healing of sectio caesarea surgical wound with RP 0.91 where the workload is protective against wound healing.

Workload is a burden of physical, mental, social activities received by someone who must be completed within a certain time according to physical abilities, as well as the limitations of the worker who receives the burden. Workload is a number of activities that must be completed by a person or group of people, over a period of time under normal circumstances. Workload can be distinguished by excessive workload and too little or less workload.

Limitations found by researchers in this study is the existence of information bias due to the limitations of respondents to remember with certainty in detail the variables asked regarding the healing of sectio caesarea surgical wounds. But to anticipate it, researchers also took some secondary data in the relevant agencies.

Multivariate Analysis Results

The results of the analysis of table 4 (Variables in The Equation) can know the constant value and coefficient value for each variable (a) in column B, the variable p-value in the column Sig. and variable values in the Exp (B) column and the Lower and Upper values. So that we can find out 3 important things, namely:

The risk factors that are consistently related significantly to the healing of sectio caesarea surgical wounds

Risk factors that are consistently associated significantly simultaneously with sectio caesarea surgical wound healing are variables that have p <0.05 in multivariate analysis, namely Discharge planning (p = 0.004), personal hygiene (p = 0.003) and nutritional status (= 0.007). While the variables that are not consistently significant when they are not exist when analyzed.

The most influential (dominant) independent variable on the healing of sectio caesarea surgical wounds

The variable that has the highest value of exp B is the most influential variable in surgical wound healing. So that based on Table 3 it can be seen that the personal hygiene variable is the most influential variable on the healing of sectio caesarea surgical wounds with exp B of 0.157, discharge planning of 0.125 and nutritional status with exp B of 0.093.

Logistic regression model on the healing of sectio caesarea surgical wounds

Based on Table 4 in the Variables in The Equation, it can be seen that the constant (α) is 3.710. If X_1 is the value of the discharge planning variable, the result of the logistic regression statistical test that p value was 0.041 which is smaller than α 0.05, so there was a significant relationship with the healing of sectio caesarea surgical wound. The variable exp.B = 0.125 showed that respondents who did not get discharge planning had a risk of 0.125 greater than those who received discharge planning, or vice versa if they got discharge planning 8 times (1/0.125), there will be fast wound healing. If X_2 is the value of the personal hygiene variable in the statistical logistic regression test, p value was 0.003 which is smaller than α 0.005, there was a significant relationship with the healing of surgical wound sectio caesarea. Variable exp B = 0.157 showed that the respondents who did not do personal hygiene had 6.4 times long wound healing or if doing personal hygiene well 6.4 times (1 / 0.157) had fast wound healing. If the nutritional status variable in the statistical regression logistic test showed p-value was 0.013 which is smaller than α 0.05 so there was a significant relationship with healing of sectio caesarea surgical wound. Variable exp B = 0.093 showed that respondents with nutritional status (BMI <18 and> 25) had long wound healing of 0.093 times, on the contrary, if respondents had normal BMI (18-25) would experience better wound healing by 10.7 times (1 / 0.093) compared to abnormal BMI. So that if the general constants (α) and variable coefficients (β) are included in the equation then the general model or formula the probability of healing the sectio casearea surgical wound is as follows:

ln () = 3.710+(0.125) (X_1) + (0.157) (X_2) + (0.093) (X_3)

p =

p = 1+ 2.7 (3.710 + 0,0005 +0.0004 + 0.000651)

p= 1+ 2,7 (3.711622) = 10.021374

p= 1+ 10.0213794 = 11.0213794

p= 1
11.0213794

P= 0.09007321 : 100= 90%

Table 4. Variables in The Equation (Final Result of Logistic Regression)

				Exp(B)	95.0% C.I.for EXP(B)	
		B	Sig.	Lower	Upper	
Step 3[a]	Discharge planning	-2.078	031	.125	019	829
	Personal_Hygiene	-1.852	055	.157	024	1.039
	Status gizi	-2.374	052	.093	008	1.023
	Constanta	1.311	023	3.710		

Interpretation of the probability of the relationship between discharge planning, personal hygiene and nutritional status together / simultaneously to heal sectio caesarea surgical wounds by 90%.

CONCLUSION

Risk factors that significantly influence the healing of sectio caesarea surgical wounds are discharge planning (p = 0.004), personal hygiene (p = 0.003), and nutritional status (0.013).

The probability or probable model for healing of sectio caseara surgical wound is formed from the interaction of discharge planning, personal hygiene, and nutritional status variables that influence simultaneously with the exp B value of discharge planning at (0.125) personal hygiene (0.157), and nutritional status (0.093). The interpretation of these three models simultaneously had a relationship with surgical wound healing of 90%.

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