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**RESEARCH**

## Relationship Between Skin Preparation With Post Sectio Caesarean Operating Wound In Achmad Mochtar Bukittinggi Hospital

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**Abstract**

**Background** : Surgical wound infection is a problem that is often found today in surgery. The Indonesian Ministry of Health reported that in 2011, 55.1% of surgical wound infections were found in government hospitals. This is in line with WHO data in 2010, where the sectio caesarean rate in Indonesia was recorded at 6%. Skin preparation can be used to prevent surgical wound infection by reducing the number of germs on the skin prior to incision.

**Objective** : To see the relationship between skin preparation and post sectio caesarea surgical wound infection at Achmad Mochtar Bukittinggi Hospital.

**Methods** : This study was an analytical study using a cross sectional study design by looking at the subject's medical records according to the time and place of the study. Samples were all medical records of mothers giving birth by sectio caesarea in the Obstetrics and Gynecology Section of Achmad Mochtar Bukittinggi Hospital in the period 1 January 2017 to 31 December 2017. Samples were taken from populations that met the inclusion and exclusion criteria. The sample was taken using simple random sampling technique which was taken from the medical records of Achmad Mochtar Hospital Bukittinggi. Statistical analysis to assess significance used the chi-square test.

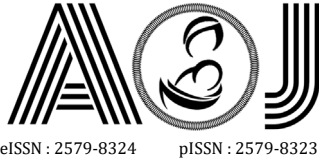
**Results** : The sectio caesarean group that carried out skin preparation without using chlorhexidine gluconate had the highest number (59.8%), with post sectio caesarean wound infection of 70.7%.

**Conclusion** : There was a significant relationship between skin preparation and post sectio caesarean surgical wound infection ( $p < 0.021$ ) at Achmad Mochtar Bukittinggi Hospital.

**Keywords:** Sectio caesarea, skin preparation, surgical wound infection

**INTRODUCTION**

Surgical wound infection is a problem that is often found today in surgery. The Ministry of Health of the Republic of Indonesia reported that as many as 55.1% of surgical wound infections were found in government hospitals in 2011. Research at Dr. Sardjito in 2013 showed that out of 154 patients who underwent cesarean section, it was found that 12 people (7.8%) had surgical wound infections and 142 people (92.2%) did not experience surgical wound infections. Most of the incidence of surgical wound infection was found on the third day of wound care in the inpatient room, namely 8 people (66.6%) and the rest was found on



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the 10th day at the time of control at the obstetrics and gynecology polyclinic. The forms of surgical wound infection that were found varied from pain and aches in the surgical wound, wet surgical wounds, discharge, blood, pus from the surgical wound, redness and swelling of the wound, and even open surgical wounds. Most of the surgical wound infections, namely 10 cases (83.3%) were identified as superficial incisions and a small proportion were included in the type of deep incision which required re-operation because of dehiscence.<sup>1</sup>

Sectio caesarean action shows an increasing trend from year to year. WHO (World Health Organization) reported that from 137 countries, it was found that there were 69 countries (50.4%) that had a delivery rate with sectio caesarea > 15%. Research conducted in Bangladesh, found that in 10 years there were 21,149 births and 70.5% of them through cesarean section. Cesarean section increased from 45.8% to 70.5% in 10 years, while spontaneous birth decreased from 54.1% to 29.4%. Sectio caesarea continues to increase in number in various countries, including Indonesia, with a sectio caesarean rate of 6%, based on data sources from WHO in 2010.<sup>1</sup>

Skin preparation is a form of preoperative therapy for exposure to the patient's skin in the operating room area. Preparations are made not only on the skin area to be incised, but on a larger area than the patient's skin, preparations are made when the patient is positioned on the operating table. The goal of skin preparation is to reduce the amount of germs on the patient's skin prior to incision. The most commonly used ingredients are chlorhexidine gluconate (CHG) and iodophors (povidone iodine [PVP-I]) in the form of alcohol-based solutions, which are effective against bacteria, fungi and viruses. Aqueous solutions, one of which is iodophors, are also often used in developing countries. Chlorhexidine and povidone iodine have been recommended by the National Institute for Health Clinical Excellence (NICE) Guideline for use as antiseptic skin preparations prior to incision. A systematic review on skin preparation for the prevention of post-caesarean infection concluded that there is insufficient evidence to evaluate the type, concentration and method of using antiseptic ingredients for skin preparation.<sup>2,3</sup>

## METHOD

This research is an analytical study with a cross sectional study design. This research was conducted by looking at the status of the subject's medical record according to the time and place of research. The research was conducted in the medical records of Achmad Mochtar Bukittinggi Hospital starting from January 1, 2017 to December 31, 2017.

The study population was all medical records of mothers giving birth by sectio caesarea in the Obstetrics and Gynecology Section of Achmad Mochtar Bukittinggi Hospital from 1 January 2017 to 31 December 2017.

The samples in the study were all populations that met the inclusion criteria; post sectio caesarean woman, post sectio caesarea with surgical wound infection and post sectio



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caesarea with surgical wound infection, and no exclusion criteria; Post sectio caesarean women with diabetes mellitus, complicating labor and complicating diseases, were taken by simple random sampling technique. The number of samples obtained using the Slovin formula

$$n = \frac{N}{1 + N(e)^2}$$

Information :

n = sample size

N = population size

E = percent allowance for inaccuracy due to sampling error

Secondary data were collected from medical records at the Medical Records Section of the Achmad Mochtar Bukittinggi Hospital with the independent variable skin preparation, the dependent variable for post sectio caesarean surgery wound infection. Data processing in this study used the SPSS (Statistical Package of Social Science) version 16.0 program. the analysis of the chi-square test was carried out.

## RESULTS

A study was conducted to determine the relationship between skin preparation and post sectio caesarean surgical wound infection in 82 study subjects from January 1, 2017 to December 31, 2017 at Achmad Mochtar Bukittinggi Hospital.

### Skin Preparation

**Table 1.** Frequency Distribution of Skin Preparation Using Chlorhexidine Gluconate and Povidone Iodine.

Skin Preparation	f	%
Using Chlorhexidine Gluconate	33	40,2
Without Using Chlorhexidine Gluconate	49	59,8
Total	82	100

In the table above, it can be seen that the majority of patients who did not do skin preparation (without chlorhexidine gluconate) were 49 people (59.8%).

### Post sectio caesarean surgery wound infection

**Table 2.** Frequency Distribution of Surgical Wound Infection.

Post sectio caesarean surgery wound infection	f	%
Yes	58	70,7
No	24	29,3
Total	82	100



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Based on surgical wound infection in post sectio caesarean patients, the table above shows that 58 people (70.7%) experienced post sectio caesarean surgery wound infection.

### Relationship between skin preparation and post sectio caesarean wound infection

The relationship between skin preparation and post sectio caesarean surgical wound infection by eliminating all contributing factors, namely obesity, complicating labor and complicating diseases can be seen in Table 3.

Table 3. Relationship between skin preparation and post sectio caesarean wound infection.

		Post sectio caesarean surgery wound infection		Total	p	OR
		Yes	No			
Skin Preparation	Using Chlorhexidine Gluconate	5	28	33	<0,021	5,316
	Without Using Chlorhexidine Gluconate	19	30	49		
Total		24	58	82		

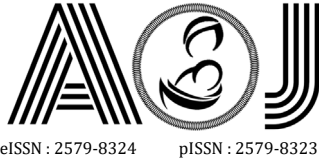
Based on Table 3 above, it shows that post sectio caesarean surgery wound infection most often occurs when skin preparation is not done (only povidone iodine), which is 19 cases. It appears that there is an association between skin preparation and post sectio caesarean surgical wound infection with OR = 5.316 ( $p < 0.021$ ).

## DISCUSSION

The research was conducted at the Obstetrics and Gynecology Department, Faculty of Medicine, Andalas University / Dr. M. Djamil Padang during the period January 1, 2017 to December 31, 2017 at the Achmad Mochtar Bukittinggi Hospital with 82 research subjects. This research is a descriptive analytic study using a cross sectional design by looking at the medical records of the subject according to the time and place of the study. Samples were all medical records of women giving birth by sectio caesarean who suffered from surgical wound infection, and saw their relationship with skin preparation.

### Skin Preparation

The results of the analysis regarding the distribution of skin preparation at Achmad Mochtar Bukittinggi Hospital show that more than half of the respondents (59.8%) did not have skin preparation (only povidone iodine) done on January 1, 2017 to June 31, 2017. This is not in line with the CDC (Center for Disease Control and Prevention) guidelines in 2017, which use alcohol-based antiseptic skin preparation during surgery, unless there is contra indication, according to the IA category. Simple education for patients to bathe with soap or use one of



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the antiseptic agents at night before surgery, according to category IB. Avoid using antimicrobial sealants immediately after skin preparation, consider using aqueous iodophor solution for irrigation of subcutaneous tissue or deeper intraoperatively and avoid washing the intraperitoneal area or subcutaneous tissue by non-sterile procedures, in accordance with category II.<sup>4</sup>

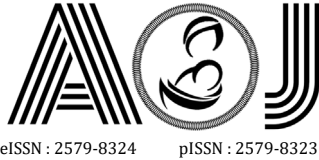
### **Post sectio caesarean surgery wound infection**

Based on this study, it was found that more than half of the respondents (70.7%) experienced post sectio caesarea surgical wound infection at Achmad Mochtar Bukittinggi Hospital. These results were obtained by eliminating all the factors that included the exclusion criteria, namely obesity, complicating labor and complicating diseases. This is in line with several studies by WHO (World Health Organization) in the Global Guidelines for the Prevention of Surgical Site Infection in 2016, where in 57 studies conducted both in developed and developing countries, several factors appear to have influenced the increase in the incidence of surgical wound infections, namely BMI. The high score results in poor results, according to the scoring of the US National Nosocomial Infections Surveillance (NNIS) risk index, for severe wounds, diabetes mellitus and long operating time. The European Center for Disease Control (ECDC) reports from the surgical wound infection monitoring agency in 2010 and 2011, from 20 monitoring networks in 15 European Union member states and one European Economic Area country using the same standards in the surgical wound infection prevention protocol. Hip prosthesis is the surgical procedure that most often causes surgical wound infection (33%). The highest incidence of patients with surgical wound infection was subsequently reported in colon surgery, with a rate of 9.5% (in every 100 operations), coronary artery bypass graft (3.5%), sectio caesarea (2.9%), cholecystectomy (1, 4%), laminectomy (0.8%) and knee prosthesis (0.75%).<sup>5</sup>

### **Relationship between skin preparation and post sectio caesarean wound infection**

Based on the results of data analysis using SPSS using the chi square test, a p-value of 0.021 was obtained which indicated that there was a significant relationship between the relationship between skin preparation and post sectio caesarea surgical wound infection at Achmad Mochtar Bukittinggi Hospital.

The results of this study are in line with Muhammad Syafari (2013), based on the results of the analysis carried out to analyze the effectiveness of skin disinfection skin preparation against the density of germ colonies on the skin of the sectio caesarean operation area in perioperative nursing services in the emergency operating room of the central surgical installation of RSD dr. Soebandi Jember. The laboratory results were then analyzed, determined quantitatively from the dependent variable, namely the results of the density level of the germ colony from the independent variable group (the treatment group and the



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control group), then by using the independent computerized T test system analysis, the p value = 0.004 was obtained, meaning that p value <0.05 indicates that the H1 hypothesis is accepted, that is, there is a difference in the effectiveness of skin preparation for disinfection of the skin against the density of germ colonies in the skin area of sectio caesarea surgery in the washing skin disinfection procedure with surgical scrub (7.5% povidone iodine), 70% alcohol. and povidone iodine 10% by washing the skin disinfection procedure with 4% chlorhexidine cetrimide, 70% alcohol and 10% povidone iodine in sectio caesarean surgery.<sup>6</sup>

From the research results of Marie A. Bashaw (2019) regarding “Perioperative Strategies for Surgical Site Infection Prevention”, where one of the literature describes a meta-analysis conducted by Lefebvre et al., Procedural skin preparation can significantly reduce the number of deep surgical wound infections. statistics. Subsequent studies have shown that antiseptic-based liquids, such as CHG in a 2% impregnated cloth or 4% solution, have been reported to be successful in decontaminating the skin against pathogens that cause surgical wound infection. In addition, pre-procedural baths with 2% CHG impregnated cloths increase chlorhexidine concentrations to inhibit and kill skin contaminants, such as S aureus. By using a thorough skin cleanser, the normal flora of the skin can be reduced, thereby reducing the risk of surgical wound infection. Another study compared the effectiveness of using chlorhexidine and povidone iodine as a skin preparation ingredient against sectio caesarean wound infection (Moh. Nailul Fahmi, et al in 2017) at Dr. Sardjito, it was found that the use of alcohol-chlorhexidine was not significantly different in reducing the risk of surgical wound infection on the third, seventh and cumulative days for 7 days compared to the use of alcohol-povidone iodine which has been frequently used in Indonesia. The hypothesis of this study states that cesarean section surgical wound infection in patients who received skin preparations with alcohol-chlorhexidine is lower than alcohol-povidone iodine.<sup>7,8</sup>

**CONCLUSION**

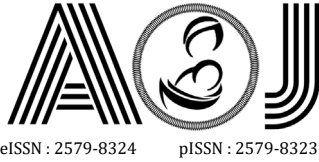
There is a significant relationship between skin preparation and post sectio caesarean surgical wound infection at Achmad Mochtar Bukittinggi Hospital.

**SUGGESTION**

Due to limited time and number of samples in this study, further research is needed by paying attention to the exclusion criteria in this study.

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