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ORIGINAL RESEARCH

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BREAST MILK AS AN ALTERNATIVE FOR POSTPARTUM PERINEAL CARE

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ABSTRACT

Background: Perineal laceration during childbirth is very common among mothers; however, some of them may suffer from its complication if not treated properly.

Objective: To prove the effectiveness of breast milk as an alternative topical ingredient in the treatment of perineal wound in postpartum mothers.

Methods: This was a quasi-experimental study with non-equivalent control group posttest only design. There were 30 respondents selected in this study, with 15 assigned in an intervention group and a control group. Accidental sampling was used to select the samples with the criteria that the respondents had perineal laceration in level 1 and 2. Data were analyzed using Mann Whitney test.

Results: Effective wound healing process can be seen in the intervention group from 80% of poor category in 6-10 hours (1st period) of postpartum became 86.7% of good category in 7 days of postpartum (4th period). Different from the control group that showed the slow progress of wound healing, which was 86.7% of poor category in the 1st period to only 33.3% of good category in the 4th period. Mann Whitney test showed that there was a significant mean difference of the perineal wound healing process between the intervention group (11.23) and the control group (19.77) with p-value 0.002 (<0.05).

Conclusion: Breast milk was more effective than povidone iodine in the treatment of perineal wound. It is suggested to health workers, especially midwife to apply this intervention to accelerate the healing of perineal wound in midwifery care.

Keywords: breast milk, perineal wound, povidone iodine

INTRODUCTION

Perineal laceration is one of the birth trauma during childbirth per vaginam, and is spontaneously almost experienced by primigravida.¹ However, this laceration will have both short-term and long-term complications.¹ Webb et al² in a case study of postpartum perineal trauma management revealed that short-term complication is an infection, and long-term problems that can occur such as dyspareunia, urinary incontinence, pelvic organ prolapse, and psychosocial problems. Infections of the stitch wound may propagate in the bladder or the birth canal, resulting in the emergence of complications of infection. If it is neglected and not immediately get the right handling, it will be able to increase the pain even to death in postpartum mothers who still have weak condition.²

Based on data from Ministry of Health of Indonesia,³ Maternal Mortality Rate (MMR) in Indonesia from 1991 to 2007 decreased from 390 to 228 per 100,000 live births. However, in 2012, the Indonesia Demographic and Health Survey again recorded a significant increase in MMR from 228 to 359 maternal deaths per 100,000 live births.³ While based on the East Java Provincial Health Office, MMR in 2014 reached 93.52 per 100,000 live births. However, this number decreased compared to the number in 2013, which reached 97.39 per 100,000 live births.⁴ The causes of maternal deaths in 2014 were pre-eclampsia (31.04%), bleeding (25.57%), heart disease (12.35%), infection (6.17%), and others (24.87%).⁴

Based on preliminary study in four Independent Midwifery Practice in East Java Province of Kediri District Indonesia on June-July 2016, there were 54 spontaneous labor, of which the number of mothers who got perineum suture amounted to 36 mothers (66.67%). These data suggest that more than half of

mothers get perineal stitches, and need adequate perineal care in the puerperium to avoid perineal stitch wound infections, so maternal mortality and morbidity can be reduced. One treatment that can be used to reduce the occurrence of stitch infection is to properly perform perineal wound care.

Perineal wound care is routinely performed such as washing the perineal wound with povidone iodine antiseptic fluid.⁵ The perineal wound care with 10% povidone iodine is usually given 2 times daily in the bath with sterile gauze given antiseptic and then applied to the wound area.⁶ Many studies have been conducted to examine the effect of povidone iodine on the wound care, but some studies found that the use of povidone iodine is less effective than the use of natural antiseptic.⁷ However, to get the traditional medicinal plants today is more difficult. So, for this study, the alternative treatment was using breast milk. Previous studies on the use of breast milk in cord care has been widely practiced. It was found that the release of umbilical cord with topical breast milk will be faster than using dry cassa.^{8,9} However, little is known about the effect of breast milk on perineal wound care.

Literature said that the content of breast milk is a growth factor that is transforming growth factors of alpha and beta (TGF-a and TGF-B) and insulin-like growth factors 1 and 2 (IGF-1 and IGF - 2), which plays a role in a series of cellular and molecular processes of wound healing.¹⁰ In addition, it is also stated that breast milk contains molecules known as pro-resolving mediators (SPMs) that can cure the infection, reduce inflammation, pain, and heal wound.¹¹ Therefore, the purpose of this study was to prove the effectiveness of breast milk as an alternative topical ingredient in the treatment of perineal wound in postpartum mothers.

METHODS

Design

This was a quasi-experimental study with non-equivalent control group posttest only design. The research was conducted in the six independent midwifery practices in Kediri Regency Indonesia between December 2016 and January 2017.

Population and sample

The population of this study was postpartum mothers with perineal laceration. There were 30 respondents selected in this study, with 15 assigned in the intervention group and control group. Accidental sampling was used to select the samples with the criteria that the respondents had perineal laceration in level 1 and 2.

Intervention

The groups in this study were divided into two groups, namely: the intervention group who received perineal care by breast milk, and the control group received the 10% povidone iodine. Perineal care in both groups were performed by principle investigators and two midwives as research team to visit each respondent's home for a week. Perineal care was done twice per day. Breast milk was sufficiently from the mothers and placed in a clean spot then smeared with cotton on the perineal wound. While perineal wound in the control group was applied using cotton wetted by 10% povidone iodine. There was no restriction on mobilization for the respondents in both groups.

Measure

The REEDA scale (Redness, Edema, Ecchymosis, Discharge, Approximation) is a scale for grading the severity of perineal trauma associated with episiotomy or laceration associated with delivery. This tool was first developed by

Davidson¹² and re-examined by Carey.¹³ Assessment using REEDA scale was performed 4 times, namely: period I (6-10 hours postpartum), period II (20-24 hours postpartum), period III (40-48 hours postpartum), and period IV (7 days postpartum). For each assessed item, a score ranging from 0 to 3 can be assigned by the healthcare providers. A higher score indicates a greater level of tissue trauma.¹² The maximum value of 15 indicates the worst perineum-healing outcome.

Ethical consideration

The study has met the ethical requirements of the Health Research Ethics Committee (K.EP.K) of Health Polytechnic of Ministry of health (Poltekkes) of Semarang with No. 010 / KEPK / Poltekkes-Smg / EC / 2017. Study permission has also been submitted to and agreed by the six independent midwifery practice in Kediri Regency, Indonesia. Informed consent has been read and signed by all respondents in this study. All information regarding research objectives, voluntary participation, research procedures, research benefits, risks and inconvenience, compensation, confidentiality, clarification and willingness have been explained to all participants.

Data analysis

Data were analyzed using frequency distribution and Mann Whitney test.

RESULTS

The majority of characteristics of the respondents as shown in Table 1 was not in the risk age, having junior and senior high school background, good economic status, anemia, normal upper arm circumference, normal and overweight, no food abstinence, complete drug reception, and having the basting perineal stitch.

Table 1 Characteristics of the Respondents Based on Age, Education, Economic status, Anemia, Upper Arm Circumference, and BMI

Category	Group			
	Intervention (n=15)		Control (n=15)	
	F	%	F	%
<i>Age</i>				
At risk	0	0	0	0
Not at risk	15	100	15	100
<i>Education</i>				
Elementary	2	13.3	1	6.7
Junior high	5	33.3	8	53.3
Senior High	5	33.3	4	26.7
University	3	20.0	2	13.3
<i>Economic status</i>				
Low	2	13.3	2	13.3
Enough	13	86.7	13	86.7
<i>Anemia</i>				
Yes	13	86.7	13	86.7
No	2	13.3	2	13.3
<i>Upper arm circumference</i>				
Low	0	0	0	0
Normal	15	100	15	100
<i>BMI</i>				
Underweight	0	0	0	0
Normal weight	9	60.0	5	33.3
Overweight	4	26.7	8	53.3
Obese	2	13.3	2	13.3
<i>Food abstinence</i>				
Yes	0	0	1	6.7
No	15	100	14	93.3
<i>Types of Stitches</i>				
Disconnected stitch	2	13.3	1	6.7
Basting Stitch	13	86.7	14	93.3
<i>Drug reception</i>				
Incomplete	0	0	0	0
Complete	15	100	15	100

Table 2 Wound Healing Process in the Intervention and Control Group

Postpartum period	Category							
	Good		Mild		Poor		Total	
	F	%	F	%	F	%	F	%
<i>Intervention group</i>								
6-10 hours (1 st)	0	0	3	20	12	80	15	100
20-24 hours (2 nd)	0	0	11	73.3	4	26.7	15	100
40-48 hours (3 rd)	5	33.3	10	66.7	0	0	15	100
7 days (4 th)	13	86.7	2	13.3	0	0	15	100
<i>Control group</i>								
6-10 hours (1 st)	0	0	2	13.3	13	86.7	15	100
20-24 hours (2 nd)	0	0	6	40	9	60	15	100
40-48 hours (3 rd)	0	0	12	80	3	20	15	100
7 days (4 th)	5	33.3	10	66.7	0	0	15	100

Table 2 shows the perineal wound healing process between the intervention and control group. The faster wound healing

process can be seen in the intervention group from 80% of poor category in the first period became 86.7% of good

category in the fourth period. Different from the control group that showed the slow progress of wound healing, which

was 86.7% of poor category in the first period to only 33.3% of good category in the last period.

Table 3 Differences of Perineal Wound Healing Process in the Fourth Period (7 Days) in the Intervention and Control Group

Group	Category							
	Good		Mild		Poor		Total	
	Σ	%	Σ	%	Σ	%	Σ	%
Intervention	13	86.7	2	13.3	0	0	15	100
Control	5	33.3	10	66.7	0	0	15	100

As shown in Table 3, it can be seen that, between the intervention group and the control group, there were differences in the number of respondents with good category on the seventh day assessment. The intervention group on the seventh day was almost entirely in good category as

many as 13 respondents (86.7%), while in the control group almost half of the respondents (33.3%) were in the good category. However, in both groups there were no respondents with bad category of the wound healing.

Table 4 Wound Healing Process in the Intervention and Control Group (Mann Whitney test)

Group	n	Mean	Mann Whitney	p-value
Intervention	15	11.23	-3.038	0.002
Control	15	19.77		

Table 4 shows that there was a significant mean difference of the perineal wound healing process between the intervention group (11.23) and the control group (19.77) with p-value 0.002 (<0.05), which indicated that breast milk was more effective than povidone iodine in the treatment of perineal wound.

DISCUSSION

In the first period of postpartum, it was found that almost all respondents (80%) in the wound healing were still in poor category. Based on the opinion of Price et al¹⁴ said that the first period (6-10 hours postpartum) is an inflammatory phase resulting in vascular, hemostatic and cellular response. Signs of inflammation, perineal edema, swelling of the labia and normal redness are very common. Similar with the second period, which most of the respondents (73.3%) were still in the mild category because it was still in the inflammatory phase. However, the good

category of wound healing has been seen in the fourth period, which was 86.7%, like study said that on the seventh day of postpartum, wound healing process is into the phase of proliferation.¹⁵

Breast milk used for wound care has been known for a long time. Previous study found that colostrum or breast milk was used to treat the umbilical cord in infants, and it is considered as culture in Turkey.⁹ The result was indeed very good recommended for cord care because it can accelerate the release of the umbilical cord. However, this study showed the other benefit of breast milk that can be used for perineal wound care.

It was also found that breast milk contains anti-inflammatory molecules called pro-resolving mediators (SPMs) as bioactive substances contained in breast milk.¹¹ Its bio molecule is useful to heal wounds, especially in the recovery of injury.

In addition, according to the research results of Ginjala & Pakkanen,¹⁶ breast milk is the second source of a large class of growth factors, namely transforming growth factors of alpha and beta (TGF-A and TGF-B) and insulin-like growth factors 1 and 2 (IGF- 1 and IGF-2). TGF-A and TGF-B are involved in normal cell activity in embryonic development, cell proliferation and tissue repair.¹⁶

While the wound undergoes a healing process, these growth factors are critical in the process of granulation (inflammatory phase) and epithelization (proliferative phase).¹⁶ At the time of initial formation of the wound, the blood chips release a growth factor of PDGF and TGF-B that attract inflammatory cells, especially macrophages. So that within 2-3 days will stimulate the formation of collagen and macrophage along with angiogenesis factor (AGF) together speed up the wound healing process.¹⁶

In addition, breast milk epidemiologically and clinically contains ingredients that function to regulate the immune system, and contains the anti-inflammatory component and antioxidants such as vitamins A, C, E, catalase enzymes, glutathione peroxide, prostaglandins, and platelet activating factors. Breast milk is also very rich in white blood cells or leukocytes that have the ability to kill germs either directly or indirectly.¹⁷

The researcher assumed that, in the biomolecular process of perineal wound healing, there are certain phases that require the important role of growth factor. So, to accelerate the process, breast milk can be given, which proved to contain the second largest source of growth factor, anti-substance infections, anti-bacterial and other immunological substances that can be useful as natural antimicrobials for the protection of perineal wounds against infection.

Perineal conditions that are moist and wet because of the *lokhea* will be very easy to be a media for bacteria and it will be easily infected if not done proper treatment. If compared to the control group received treatment of 10% povidone iodine, study stated that povidone iodine has only 1% iodium, while breast milk is very rich in bioactive substances, antibodies, anti-inflammatory and leukocytes that play a role in suppressing the colonials of pathogenic microorganisms.¹⁸ Furthermore, Bago E¹⁹ said that iodine has antiseptic properties for gram positive and negative bacteria. But iodine is irritating and more toxic when entering the bloodstream. In use, the iodine should be diluted first, because when used in high concentrations can cause skin irritation. If the use of povidone iodine is excessive, then will hamper the process of wound granulation and the wound healing process becomes longer.¹⁹ Thus, it can be said that breast milk is more effective than topical povidone iodine to accelerate perineal wound healing.

Limitation of the study

The use of antibiotics and nutrient intake cannot be fully controlled that might be considered as the limitation of this study.

CONCLUSION

Based on the findings of this study, it could be said that breast milk is more effective than povidone iodine in the perineal wound healing process. Therefore, it is suggested for health workers, especially midwife to apply this intervention to accelerate the healing of perineal wound in midwifery care.

Declaration of Conflicting Interest

None declared.

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Authorship Contribution

Authors equally contributed in this study.

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