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THE EFFECT OF COMBINED MARMET AND OXYTOCIN MASSAGE TO COLOSTRUM PRODUCTION AMONG SECTION CAESAREAN MOTHER

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ABSTRACT

Background: Barriers to breastfeeding occurred on postpartum mother after section caesarean due to postoperative pain can inhibit nerve posterior pituitary gland that produces the hormone oxytocin that plays a role in the process of lactation. Marmet technique is one safe way that can be done to stimulate the breast to produce more milk, whilst oxytocin massage is conducted along the vertebrae to costae fifth, sixth and an attempt to stimulate the hormones prolactin and oxytocin after delivery.
Aims: The objective of this study was to analyze the effect of marmet and oxytocin massage combination in improving colostrum production.
Methods: The population in this study was a postpartum mother after 2 hours delivery. A total of 18 postpartum mothers were involved, divided into 9 treatments and 9 controls. Observations included viewing data on time measurements and the amount of colostrum secreted through the breast of the post-partum mother (instrument = syringe and spoon) and for measuring the oxytocin massage of the researcher using the oxytocin massage guide.
Result: The average time of postpartum mothers in the intervention groups to produce colostrum after Marmet and massage techniques combined oxytocin (treatment group) was of 5.86 hours whilst mothers who do not receive any treatment able to produce after 5.89 hours. Statistical test results in getting P value = 0939, p value ie p> α (0.05), indicating there is no effect of the combination of massage techniques Marmet and oxytocin on colostrum production among post section caesarea mothers.
Conclusions: Providing education for mothers and families is needed in order to support the production of colostrum sooner after birth.

Keywords: Technical Marmet, Massage Oxytocin, Colostrum, Sectio Caesarean mother

INTRODUCTION

Mother's breast milk is the most ideal for babies as it contains all the nutrients needed in a number and proper consideration. Mother's milk is ideal for growth and development of children, improving health, preventing diseases, and reducing healthcare and meal costs [1]. Colostrum is a liquid with a strong yellowish color that comes out of the breasts in the first few hours of life which contains rich secretory immunoglobulin A [2], which contains antibodies to protect infants from a variety of infectious diseases, especially diarrhea [3]. *Sectio caesarea* is an act committed with intention to deliver the baby through an incision in the wall of the uterus to preserve the lives of mothers and babies in case of abnormal delivery. Delivery this way may possesses breastfeeding problem to mother and baby.

Mothers who undergo *Sectio caesarea* surgery may not produce their own breast milk within the first 24 hours - sometimes it can take up to 48 hours – postpartum. However, it is recommended that the baby is attached to the mother's breast to help stimulate the discharge of first milk. Physiological delay in colostrum expenditure in the mother *Sectio caesarea* due to the onset of *postpartum* pain can inhibit the instrumental oxytocin hormone production in the process [4].

Infant Mortality Rate (IMR) is an important indicator to determine the adequacy of the provision of colostrum in the newborn. In Indonesia, government support for exclusive breastfeeding has made various efforts such as the National Movement for Increase Use of Mother's Milk (GNPP-ASI), Mother's Milk Concerned Citizens Movement and Government's Decree on Mother's Milk (PP-ASI). However, in reality only 4% of babies are breastfed in the first hour of birth and 8% of infants receiving exclusive breastfeeding. This is well below the government's 80% target on exclusive breastfeeding since the year 2000.

IDHS in 2007 reported that IMR in Indonesia is 34 per 1,000 live births. Despite the continued decline, IMR in Indonesia is still far higher than other ASEAN member countries. For comparison, the IMR in Singapore is 3 per 1,000 live births, in Brunei is 8 per 1,000, in Malaysia is 10 per 1,000, in Vietnam is 18 per 1,000, and in Thailand is 20 per 1,000[10]. With 42%, the proportion of mortality in infants aged 0-11 months is the highest because of diarrhea[10]. According to UNICEF, the average exclusive coverage of the world is 38%. Based on demographic and health survey of Indonesia in 1997 and 2003, it is known that the rate of exclusive breastfeeding dropped from 49% to 39%, while the use of infant formula increased threefold.

Impediment in colostrum production among mothers who gave birth with *sectio caesarea* occur for several reasons. In addition to the levels of the prolactin and oxytocin hormones, the pain that arises after the withdrawal of pain-reliever drugs effect used during the *sectio caesarea* can cause the mother to postpone for breastfeeding and cause delays in colostrum production. The post-operative pain that interferes with the working mother can inhibit the *posterior pituitary gland* that produces the oxytocin hormone that plays a role in the process of lactation.

RISKESDAS report in 2010 showed an increase in exclusive breastfeeding for infants aged <6 months. The analysis showed the total number of infants aged 0-6 months who received exclusive breastfeeding as much as 1,348,532, while as many as 1,134,952 babies were not exclusively breastfed. In East Java province, 102,960 babies are not breastfed exclusively. WHO estimates that the number of labor by *sectio caesarea* is approximately 10% to 15% of all births in the developing world, including 20% for United Kingdom, and up to 21% for United States and Canada in 2003. Based on a preliminary study of initial data obtained from Islamic Navy Hospital Surabaya, occurrence of *sectio caesarea* is as many as 275 cases in 2014 and in the last 3 months of 2015, there were 58 cases of maternal childbirth by *sectio caesarea* [5].

Interventions that can be done to help increasing production of maternal colostrum among *sectio caesarea* mothers is with Marmet and oxytocin massage techniques. Marmet technique is performed manually and helps breastfeeding milk ejection reflex. Oxytocin massaging action is conducted along the vertebrae to fifth and sixth costae, in an attempt to stimulate the prolactin and oxytocin post-delivery. The success of this technique depends on a combination of massage and the mother's own breastmilk production. This technique is effective and low-risk. The workings of oxytocin massage in influencing expenditure of colostrum is to provide stimulus to the vertebra to costae 5-6, thereby increasing the posterior pituitary stimulation to release the oxytocin. Subsequently, the oxytocin stimulates contractions in myoepithelial cells for spraying breastmilk [6, 7].

This impulse is then proceed to the *hypothalamus* through the spinal cord. So, the *hypothalamus* will reduce cost factor that inhibits the secretion of prolactin and otherwise stimulate spending factors that trigger the secretion of prolactin. The prolactin will further stimulate the anterior pituitary and the cells of the alveoli which function is to produce milk. Colostrum excretion on maternal *sectio caesarea* will

be faster, so that the mother is able to give colostrum as soon as possible in the newborn. From that sense, the researchers chose to give a combination of Marmet and massage techniques to better assess the effectiveness of oxytocin timing and amount on maternal colostrum excretion *postpartum sectio caesarea* [8].

METHODS

The research is a *quasi-experimental* research design with post-test only approach. This study is looking at the variable results at the same time, with both the treatment group and the control group after treatment is given only in the treatment group [9]. Also, this study observed the timing and amount of excretion on maternal colostrum after the respondents were treated (posttest) with Marmet and massage techniques oxytocin.

The variable independent in this study is Marmet and oxytocin massage techniques while the dependent variable is the timing and amount of colostrum excretion on maternal *postpartum sectio caesarea.* The population in this study were 22 *postpartum* women in their first 12 hours pre-production of colostrum who underwent *sectio caesarea* at Islamic Hospital Surabaya in April-May 2015. Sample selection method used in this research is consecutive sampling. The sampling inclusion criteria were *postpartum sectio caesarea* mothers who have neither received the marmet techniques nor oxytocin massage therapy; whereas the exclusion criteria is the *postpartum sectio caesarea* mother who already produced colostrum, mother who underwent examination using radioactive substances, and HIV-positive mother who has not received antiretroviral therapy. The total sample of 18 respondents were chosen based on the inclusion and exclusion criteria. During the 47-day study, the researchers obtained a sample of nine treatments and nine control, with the total sample size was 18 primigravida and 42 multigravida. The sample criteria are as follows:

A. The case / treatment group, i.e. postpartum primigravida mother who was provided oxytocin massage
B. The control group, i.e. the postpartum primigravida mother who was not treated with oxytocin massage

Data is collected using observation sheets, checklist, and Marmet and oxytocin massage guidance list. The observed objectives include the timing and amount of colostrum excreted through the breast *post-sectio caesarea* (instrument = syringe and spoon) and combination of manual Marmet and oxytocin massage techniques. The data analysis used data normality test by using Kolmogorov-Smirnov test. Because the data is normally distributed, the data analysis used independent t-test. If the p-value from independent t-test is $p < \alpha$ (0.05), H_0 will be rejected, which means that there is the effect of Marmet and oxytocin massage combination to the time and amount of colostrum secretion in postpartum sectio caesarea mother.

RESULTS

The results of this study are presented in the form of univariate and bivariate analysis can be seen in the following table:

Univariate Analysis

Table 1. Frequency Distribution Spending time maternal colostrum *postpartum sectio caesarea* in the treatment group and the control group

Long time expenditure Colostrum	Marmet And Oxytocin massage Combination				Total	
	Treatment		Control			
	N	%	N	%	N	%
4 hours	1	11.1	0	0	1	1.6
4.05 hours	0	0	1	11.1	1	1.5

Long time expenditure Colostrum	Marmet And Oxytocin massage Combination				Total	
	Treatment		Control			
	N	%	N	%	N	%
5 h	1	11.1	1	11,1	2	11.1
6 hours	5	55.6	2	22.2	7	38.9
6.05 hours	0	0	1	11.1	1	5.6
6.15 hours	0	0	2	22 2	2	11.1
6.35 hours	0	0	1	11.1	1	5.6
6.45 hours	1	11.1	0	0	1	5.6
7.30 hours	1	11.1	1	11,1	2	11.1
Total	**9**	**100**	**9**	**100**	**18**	**100**

Table 1 shows that the majority of the time spending on maternal colostrum *postpartum sectio caesarea (*for both the treatment and control group is 6 hours with 7 (38.9%) of the total sample.

Table 2. Frequency Distribution of total expenditures maternal colostrum *postpartum section caesarean* in the treatment group and the control group

Total Colostrum issued	Marmet And Oxytocin massage Combination				Total	
	Treatment		Control			
	N	%	N	%	N	%
0 cc	1	11.1	4	44.4	5	27.8
0.01cc	0	0	1	11.1	1	5, 6
0.05 cc	0	0	3	33.3	3	16.7
0.10 cc	0	0	1	11.1	1	5.6
1 cc	1	11.1	0	0	1	5.6
2cc	2	22.2	0	0	2	11.1
5 cc	2	22.2	0	0	2	11.1
10 cc	2	22.2	0	0	2	11.1
13 cc	1	11.1	0	0	1	5.6
Total	**9**	**100**	**9**	**100**	**18**	**100**

The table 2 shows that most *postpartum sectio caesarea* mothers who received a combination of Marmet and oxytocin massage techniques produced the colostrum as much as 2 cc, 5 cc and 10 cc.

Table 3. Distribution effect of combination technical Marmet and oxytocin massage of time colostrum expenditures in postpartum sectio caesarea mothers

Time required for expenditure of colostrum	Mean	SD	SE	P Value	N
Treatment	5.8611	0.91644	0.30548	0.939	9
Controls	5.899	0.90569	0.30190		9

Table 3 showed that the average time taken by the treatment group to secrete colostrum after provision of combined Marmet and oxytocin massage techniques is 5.86 hours with a standard deviation of 0.92. Meanwhile, the average time taken for those did not receive the combined Marmet and oxytocin massage techniques (the control group) is 5.89 hours with a standard deviation of 0.91. Statistical test results in p value = 0.939. As the p value is > α (0.05), the number indicates that there is no effect of the between the combination Marmet and oxytocin massage techniques and colostrum secretion time in *postpartum sectio caesarea* mothers.

Table 4. Distribution Effect of combination of Marmet and oxytocin massage technique and total colostrum secreted by postpartum *sectio caesarea* mothers

Amount of colostrum Secreted by postpartum *sectio caesarea*	Mean	SD	SE	P Value	N
Treatment	5.3333	4.63681	1.5456	0.009	9
Control	0.0289	0.03551	0.01184		9

Result showed that the mean amount of colostrum produced by the mothers who received the combination of Marmet and oxytocin massage techniques (treatment group) is 5,333cc with a standard deviation of 4.6368. On the other hand, the mean of those who did not receive the combined massage techniques (the control group) is 0,0289cc with standard deviation of 0.03551. Statistical test results obtained p value = 0.009. As p value <α (0.05), therefore H_0 is rejected, indicating that there is an effect of the combination of massage techniques to total production of colostrum in *postpartum sectio caesarea* mothers.

DISCUSSION

Effect of combination techniques of Marmet and oxytocin massage and production time of colostrum in postpartum sectio caesarea mothers

From the results of the study it was found that the average time required by the postpartum mother to release colostrum by combining the Marmet and oxytocin massage technique (Treatment) is 5.86 hours with the standard deviation value of 0.92; in contrast to the average length of time by those who did not perform the combination technique (Control) of 5.89 hours with a standard deviation of 0.91. Statistical test obtained p-value = 0.939, which means that there is no effect of combining the massage techniques and the colostrum secretion time on postpartum sectio caesarea mothers in Islamic Hospital Surabaya[10].

Delivery with *sectio caesarea* will inhibit the formation of milk production. General anesthesia performed during *sectio caesarea* surgery paralyzes the central nervous system as a whole. Therefore, women who undergo anesthetic procedures are experiencing difficulties in breastfeeding because the nervous system will not stimulate the posterior pituitary which delays the production of prolactin hormone. [4, 14, 15]. However, breastfeeding as often as possible after the *sectio caesarean* procedures will minimize these problems.

Effect of combination techniques of Marmet and oxytocin massage and total production of colostrum in postpartum sectio caesarea mothers

From the results, the average amount of colostrum produced by the postpartum mothers who received the combination of Marmet and oxytocin massage techniques (treatment) is 5,333 cc with a standard deviation value of 4.6368. On the contrary, the average amount of colostrum produced by those who did not receive the combination techniques (control) is 0.0289 cc with a standard deviation value of 0.03551. Statistical test results obtained p value = 0.009, means that at alpha 5% there is an effect of combining the Marmet and oxytocin massage techniques to the postpartum *sectio caesarea* mothers' total production of colostrum.

Marmet technique can help lock breastmilk production reflex *(let down reflex)*, which is effective in the first few days of breastfeeding because of thick colostrum consistency and mature milk is produced. Marmet technique developed a method of massage to stimulate breastfeeding reflexes. The success of Mamet technique is attributed to the combination of massage and hormone secretion method. Meanwhile, oxytocin massage is a way to help speed up production of breastmilk or colostrum through massage stimulation on both sides of the spine - from the neck towards the shoulder blade bone continued to costae under both the breast postpartum [18, 19].

The combined techniques of Marmet and oxytocin massage will provide stimulation to the spinal cord, medulla oblongata neurotransmitter that send messages to the hypothalamus. Thereby, the posterior pituitary will secrete oxytocin hormone which causes the breasts to produce milk. Massaging around the spine area will also relieve stress and tension and facilitate the oxytocin hormone to produce milk. Furthermore, nipple suction by the baby immediately after birth will also assist breastmilk production [20, 21].

The production of breastmilk and breastfeeding process smoothness require stimulation on the breast muscles to the breast glands for necessary contraction in the process of lactation. Stimulation to the breast muscles can be done with the provision of Marmet and oxytocin massage techniques [22]. Based on this study, it was found that all respondents produced sufficient quantity of colostrum. To increase breastmilk production, stimulation exerts on the breast muscles by providing a combination of Marmet and massage techniques can stimulate oxytocin reflex drainage or *let down* reflex [8, 23].

CONCLUSIONS

There is an effect of combining the Marmet and oxytocin massage techniques to the total colostrum production in postpartum sectio caesarea mothers. It is therefore suggested that every health worker or midwife who encounter cases such as lack of colostrum production should provide counseling to the mothers on the massage techniques combination and on early provision of breastmilk to the baby.

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