



The Effectiveness of Oxytocin and Marmet Massage on Increased Prolactin Hormone for Smooth Breastfeeding in Postpartum Mothers in Langsa City Health Office, Indonesia

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Abstract

BACKGROUND: One of the causes of the disruption to the achievement of exclusive breastfeeding is the decrease in milk production experienced by nursing mothers. It is believed that the prolactin hormone and the mother's perception of breast milk are inadequate. One effort to increase the prolactin hormone is by massaging techniques. This technique has been used by various people in the world for both medical treatment and health care.

AIM: The purpose of this study was to analyze the differences in the effectiveness of Oxytocin and Marble Massage on Prolactin Hormone levels for smooth breast milk in postpartum women in the working areas of Langsa City Health Centre.

METHODS: A quasi-experimental design method prospective cohort was used with no control group design. Giving oxytocin massage treatment and Mamet massage for prolactin hormone levels for smooth milk. The sample was selected of 32 postpartum mothers who were divided into two groups. The number of samples for each group was 16 postpartum mothers per group. Data analysis used the T-independent statistical test approach for bivariate analysis and multivariate analysis.

RESULTS: The results showed that the highest prolactin hormone level in the Massage method was 1178.0 ng/ml and the highest prolactin hormone level was 357.9 ng/ml, the highest was 357.9 ng/ml. The mean prolactin hormone level in the oxytocin massage group was 195.694 ng/ml and in the Mamet group was 538.195 ng/ml. The average level of the prolactin hormone by the oxytocin massage method was 195.6 ng/ml with Std. deviation 106.8 ng/ml while the average method for Mamet massage is 538.9 ng/ml with Std. deviation 269.6 ng/ml. The results of the statistical test Independent T-test obtained Prolactin Hormone Levels for the Smooth ASI value of $p = 0.000$, then it can be concluded that there are significant differences between the oxytocin and Mamet massage methods.

CONCLUSION: There is a significant difference between the oxytocin massage method and Mamet to increase levels of the hormone prolactin in postpartum mothers.

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Introduction

The Government of Indonesia has established regulations regarding exclusive breastfeeding in the Republic of Indonesia Government Regulation No. 33/2012. Achievement of breastfeeding, especially exclusive breastfeeding in Indonesia, is still very low. Based on data from the 2018 Basic Health Research, mothers who exclusively breastfeeding for 6 months were only 37.3% and had not reached the national target of 80%. One of the cities in Indonesia with exclusive low breastfeeding coverage is Langsa City, especially in Sungai Parit Health Center. Based on data from the Langsa City Health Office, there has been a decline in exclusive breastfeeding data from 2016 to 2018. In 2015, the coverage of babies who were given exclusive breastfeeding was 66%, in 2016, the coverage data of babies given exclusive breastfeeding were 63.02% and in 2018 the coverage data for infants given exclusive breastfeeding were 62% [1].

Breastfeeding is influenced by several important factors including knowledge of maternal nutrition [2]. Breastfeeding is influenced by two factors, namely, macro- and micro-level factors [3]. Micro-level factors include traditions that believe that breast milk is not enough for babies and there is a need for additional formula milk to make babies full. Macro-level factors are social media that provide publications related to good formula milk for babies, thereby changing the perception of mothers to provide formula milk for babies. Provision of food or other drinks besides breast milk allows the baby to be exposed to pathogens thereby increasing the risk of infection and adversely affecting nutritional status [4].

Infants who are not exclusively breastfed have a high risk of malnutrition. Factors of milk production and expenditure in the body are influenced by two hormones, namely, prolactin and oxytocin. Decreased baby suction also decreases the stimulation of the hormones prolactin and oxytocin [5], [6]. One effort

to increase the prolactin hormone was with massage techniques. Massage techniques have been used by various communities in the world for medicine and health [7], [8], [9]. Efforts to stimulate the hormone prolactin and oxytocin in mothers after childbirth can be done with oxytocin massage [10]. Oxytocin massage is a massage along the spine to the costae bone to stimulate the hormone prolactin and oxytocin after childbirth [11], [12].

This massage serves to increase the hormone oxytocin which can calm the mother so that milk automatically comes out. In this case, the researchers applied acupressure point for lactation and oxytocin massage techniques to provide cutaneous stimulation which was expected to increase patient comfort, stimulate oxytocin release resulting in increased milk production. How does the effectiveness of oxytocin and Mamet massage differ from the increase in the prolactin hormone for smooth milk in postpartum mothers in the Work Area of Langsa City Health Office?

Methods

The quasi-experimental design of a prospective cohort study with no control group design was used to analyze the data carried out at the Langsa City Health Center covering 5 Community Health Center units from July to December 2019. The population was all primigravida, postpartum mothers, in the 2019 Langsa City Health Office, while the sample was selected as many as 32 postpartum mothers who were divided into two groups. Data collection techniques were by interventions of oxytocin massage and Mamet massage and conducted laboratory tests assessing levels of the hormone prolactin. Data analysis used the T-independent test statistical approach for bivariate analysis and multivariate analysis.

Table 1: Characteristics of respondents by group of oxytocin massage methods and Mamet massage

Characteristics	Method group	
	Ocsitosin and Mamet massage n=32	
	f	%
Mother age		
20–35 years	31	96,9
>35 years	1	3,1
Mother weight		
48–55 kg	5	15,6
56–63 kg	18	56,3
64–71 kg	9	28,1
Age of pregnancies		
Normal: 36 s.d 40 weeks	32	100
Education		
Basic	18	56,3
High school	14	43,8
Occupation		
Employed	23	71,9
Unemployment	9	28,1
Family incomes		
Regional max wage	18	56,3
< Regional min wage	14	43,8
The weight of new born		
Normal weight new born 2.5 s.d 4 kg	32	100

Results

Univariate analysis

Univariate analysis is performed to see the frequency distribution of the independent variables on the dependent variable. The univariate analysis seen in the independent variable is the frequency distribution of the prolactin hormone levels for smooth milk by the oxytocin and Mamet massage methods.

Characteristics of respondents by age, dominated by mothers aged 20–35 years (96.9%), maternal body weight dominated by weight 56–63 kg (56.3%), gestational age 100% in normal pregnancies 36–40 weeks, majority mother's education with 56.3% basic education, majority of mothers work 71.9%, majority family income earning > regional max wage 56.3%, and total infant birth weight 100% with normal birth weight babies 2.5–4 kg (Table 1). Data on the levels of the hormone prolactin for smooth milk by oxytocin massage method and Mamet massage are in shown Table 2:

Table 2: Distribution of respondents by frequency of prolactin hormone levels for smooth breastfeeding with the oxytocin massage method and marble massage

Method Oxytocin massage			Method Marmet massage		
Unit	F %		Unit	F %	
29.8	ng/ml	1 (6.3)	160.9	ng/ml	1 (6.3)
36.8	ng/ml	1 (6.3)	203.4	ng/ml	1 (6.3)
38.0	ng/ml	1 (6.3)	328.5	ng/ml	1 (6.3)
98.5	ng/ml	1 (6.3)	338.6	ng/ml	1 (6.3)
149.7	ng/ml	1 (6.3)	358.8	ng/ml	1 (6.3)
167.3	ng/ml	1 (6.3)	359.8	ng/ml	1 (6.3)
176.3	ng/ml	1 (6.3)	453.9	ng/ml	1 (6.3)
195.7	ng/ml	1 (6.3)	462.5	ng/ml	1 (6.3)
203.5	ng/ml	1 (6.3)	493.7	ng/ml	1 (6.3)
211.5	ng/ml	1 (6.3)	568.5	ng/ml	1 (6.3)
249.5	ng/ml	1 (6.3)	589.8	ng/ml	1 (6.3)
265.2	ng/ml	1 (6.3)	657.9	ng/ml	1 (6.3)
293.1	ng/ml	1 (6.3)	783.0	ng/ml	1 (6.3)
301.6	ng/ml	1 (6.3)	827.0	ng/ml	1 (6.3)
356.7	ng/ml	1 (6.3)	858.5	ng/ml	1 (6.3)
357.9	ng/ml	1 (6.3)	1178.0	ng/ml	1 (6.3)

Respondents using oxytocin massage method with the highest prolactin hormone level were 357.9 ng/ml and the lowest prolactin hormone level was 29.8 ng/ml, while respondents with the method of massage of the Mamet the highest prolactin hormone level was 1178.0 ng/ml and the lowest prolactin hormone level was 160.9 ng/ml.

Table 3 shows that respondents with prolactin hormone levels with oxytocin massage method were 56.3%, showing that most respondents with normal prolactin hormone levels were 9.7–208.5 ng/ml and respondents using the Mamet massage method by 87.5%, indicating that the majority of respondents with high prolactin hormone levels >208.5 ng/ml

Table 3: Respondents distribution according to frequency of prolactin hormone oxytocin massage method and Mamet massage method

Prolactin hormone level	Method			
	Oxytocin massage		Massage Mamet	
	Frequency	%	Frequency	%
Normal (9.7–208.5 ng/ml)	9	6.3	2	12.5
High (> 208.5 ng/ml)	7	3.8	14	87.5

Bivariate analysis

After doing the characteristics of each variable in this study, the analysis continued at the bivariate level. To know the relationship (correlation) between the independent variable with the dependent variable we used bivariate analysis. Analysis of the data used to see the relationship between the independent and dependent variables with the use of the independent t-test. Independent test t-test is used to estimate the difference in the effectiveness of oxytocin and Mamet massage on prolactin hormone levels for smooth milk in postpartum mothers. Significant level ($\alpha = 0.05$) guidelines in accepting the hypothesis: If the value of $p < 0.05$ then H_0 is rejected, if the value of $p > 0.05$ then H_0 fails to be rejected. Before the independent t-test in this study, the parametric prerequisite test for normality and homogeneity was tested.

Normality test

A normality test is used to see whether the data are normally distributed or not. In this test, the Shapiro–Wilk test was used, the following results were obtained:

Table 4: Normality tests on respondents for prolactin hormone levels for smooth breast milk oxytocin and marble massage methods

Group	Pretest	Distribution
Prolactin hormone oxytocin massage method	0.423	Normal
Prolactin hormone levels in the Mamet massage method	0.426	Normal

The Shapiro–Wilk test results above show that all data on the prolactin hormone levels of the oxytocin and Mamet massage method for the smoothness of breast milk have a normal distribution with $p > 0.05$ (Table 4).

Homogeneity test

Homogeneity tests were also performed using the Levene Test to find out whether the data had the same variance or not (homogeneous).

Table 5 appears that all data have unequal variants (not homogeneous) as evidenced by the significant value or probability 0.006 ($p < 0.05$).

Table 5: Homogeneity test on respondents of prolactin hormone levels for smooth breastfeeding using oxytocin and Mamet massage methods in work areas of Langsa city health office

Group	Levene statistic	Sig.	Data
Prolactin hormone oxytocin and Mamet massage methods	8.933	0.006	No Homogen

Table 6 is known that the average oxytocin massage method is 195.6 ng/ml with Std. deviation

Table 6: Results of independent tests of prolactin hormone t-tests for smooth breastfeeding using oxytocin and Mamet massage methods in the work areas of Langsa city health office

Characteristics (variables)	Mean	Std. Deviation	Std. error mean	p-value	n
Prolactin hormone level					
Oxytocin massage method	195.694	106.8814	26.7204	0.000	32
Mamet massage method	538.925	269.5994	67.3999		

106.8 ng/ml. The average method for massage of guinea pigs is 538.9 ng/ml with Std. deviation 269.6 ng/ml. While the results of the independent t-test statistical test showed that the levels of the hormone prolactin for the smoothness of breast milk value of $p = 0.000$, it can be concluded that there are significant differences between the oxytocin and Mamet massage methods.

Discussion

Oxytocin and Mamet massage are massaging techniques aimed at stimulating the breast so that the breast comes out more optimally. The two steps are widely used by postpartum mothers to stimulate the outflow of breast milk. The results of the study note that there are differences in the effectiveness of oxytocin and Mamet massage on the levels of the hormone Prolactin for smooth milk in Postpartum Mothers in the health service of Langsa City. The Mamet massage method has an average of 538.9 ng/ml Std. deviation 269.6 ng/ml in the smoothness of breast milk, while the oxytocin massage method has an average of 195.6 ng/ml with Std. deviation 106.8 ng/ml smooth milk. Independent t-test statistical test results obtained levels of the hormone prolactin for smooth milk $p = 0.000$.

It can be concluded that there are significant differences between the oxytocin and Mamet massage methods. Respondents using oxytocin massage method with the highest prolactin hormone level were 357.9 ng/ml and the lowest prolactin hormone level was 29.8 ng/ml. While respondents with the method of massage of the highest prolactin hormone levels of 1178.0 ng/ml and the lowest levels of the hormone prolactin of 160.9 ng/ml. Mamet technique is more optimal in smooth milk. Mamet massage techniques are more effective than breast milk pumps [13]. Mamet massage is more effective in stimulating the pituitary and secreting the hormones prolactin and oxytocin early in breastfeeding. With the Mamet massage method, it will affect the vegetative nerves and subcutaneous tissue which can relax the tissues, thereby facilitating blood flow in the ductal system.

Mamet massage interventions are more effective in stimulating the anterior and posterior pituitary secreting the hormones prolactin and oxytocin early in breastfeeding. Oxytocin and prolactin stimulate milk production and milk production during breastfeeding [14]. In other studies, it was found that breast massage only causes the removal of breast milk that has been stored in breast milk and the release of prolactin does not associate with increased levels of oxytocin [15]. Lack of breast milk volume in the 1st day after birth can be caused by a lack of stimulation of the hormones prolactin and oxytocin which are very instrumental in the process of producing and releasing

milk. Under certain conditions, massage can be done to stimulate the oxytocin system, reduce pain and stress, and improve brain development [16].

The general condition experienced by postpartum mothers is due to a lack of experience and psychological changes that can affect the work of the hormones prolactin and oxytocin. Women generally stop inadequate milk production as their reason for early supplementation, which endangers the purpose of breastfeeding [17]. In addition, age and nutrition factors affect milk production. Psychological conditions also affect breastfeeding, such as stress, emotional instability, lack of family, or partner affecting milk production [4]. Other than that other causes are concerns that breastfeeding is not enough to meet the needs of infants, as well as changes in maternal attainment, especially for mothers who have had babies for the first time [18].

Conclusion

There are differences in the effectiveness of oxytocin and Mamet massage on the prolactin hormone levels for smooth milk. Mamet massage is more effective at increasing the smoothness of breast milk. The average level of the prolactin hormone, the oxytocin massage method was 195.6 ng/ml with Std. deviation 106.8 ng/ml while the average method of massage the Mamet is 538.9 ng/ml with Std. deviation 269.6 ng/ml. Independent t-test results obtained levels of the hormone prolactin hormone levels for a smooth breast milk $p = 0.000$.

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