



Oxytocin Stimulation Massage (PSO) Is Effective in Overcoming the Anxiety of Breastfeeding Mothers and Promoting Milk Production

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Abstract. Breastfeeding is a natural process in the mother's reproductive cycle that needs to be maintained for its quality and continuity for 2 years since the baby is born. Postpartum psychological changes and feelings of not being able to breastfeed properly encourage an increase in adrenaline production which follows maternal anxiety and increases adrenaline so that it suppresses the activity of oxytocin and prolactin to produce breast milk. The purpose of this study was to determine the effect of oxytocin stimulating massage (PSO) on reducing maternal anxiety and smooth milk production. The research design used a quasi-experimental without control. The sample is 27 people, using a random sampling technique. The research was conducted in the working area of the Cihideung Public Health Center, Tasikmalaya, Indonesia. The results showed that there was a significant difference in the average anxiety score of breastfeeding mothers between before and after PSO therapy ($r = 0.0001$ ($r < 0.05$)) and there was a significant difference in the average percentage of smooth milk production in breastfeeding mothers between before and after PSO therapy ($r = 0.0001$ ($r < 0.05$)).

Keywords: Postpartum psychological · PSO Therapy · breastfeeding mothers

1 Introduction

A pregnant woman until postpartum experiences a surge in hormones in her body. One of the increased hormones in the body is the hormone oxytocin. Oxytocin hormone is located in the hypothalamus in the brain. This hormone helps stimulate the uterus to contract during childbirth. In addition, the hormone oxytocin also helps stimulate the production of breast milk (ASI) after childbirth.

Lactation is a complex process that is influenced not only by breast tissue and the endocrine system but also by genetics, psychology, and the environment. Maternal fear and anxiety can cause physiological stress and also lead to adrenaline production. Adrenaline affects lactation by suppressing oxytocin secretion. The thing that inhibits the hormone oxytocin in the mother is stress. Stress can come from an overly tired body, fighting with a partner, a fussy baby, and too many thoughts. The inhibited oxytocin hormone can affect breast milk production as well. The mother's mood is the basis for

the introduction of formula feeding and the cessation of breastfeeding. If the mother's mood is not good or experiencing stress, then the mother tends to give formula milk and stop breastfeeding her baby [1].

Oxytocin plays an important role in successful lactation. Depression or anxiety greatly affects the success of lactation [1]. The hormone oxytocin can increase of course when the mother's psychological condition is in good condition. When the mother feels happy, calm, safe, and comfortable, then this also affects the production of breast milk that is getting smoother. A harmonious relationship with a partner also makes these hormones increase. Mothers can ask for also help from their husbands to do massage to stimulate oxytocin [2].

The coverage of infants under 6 months who are exclusively breastfed in Indonesia is 66.1%. Meanwhile, the coverage of infants under 6 months who are exclusively breastfed in West Java is 54.5% [3]. One of the ways to increase the coverage of exclusive breastfeeding is to reduce maternal stress so that it can increase the smoothness of breastfeeding.

There are many pharmacological and non-pharmacological therapies to increase the smoothness of the mother's milk and reduce stress on the mother. Non-pharmacological therapy is preferred because it has minimal side effects. One of the non-pharmacological therapies is oxytocin stimulation massage (PSO), relaxation therapy, and others. Relaxation therapy during breastfeeding can benefit mothers by reducing maternal stress or increasing breast milk volume [4]. Oxytocin massage is one way to overcome insufficient milk production. This massage serves to increase the hormone oxytocin which can calm the mother so that milk is produced and released a lot [5–8].

The purpose of this study was to determine the effect of oxytocin stimulating massage on reducing maternal anxiety and smooth milk production.

2 Research Methods

The research method used a quasi-experimental without a control group. The number of samples is 27 people, with a sampling technique with random sampling. The study was conducted at the Cihideung Public Health Center, Tasikmalaya, Indonesia. The instruments used in this study were the observation sheet for breastfeeding smoothness (in the guidelines for exclusive breastfeeding from the Indonesian Ministry of Health) and HARS to measure maternal anxiety. Data were analyzed by univariate and bivariate. Before the research was conducted, the researcher submitted an ethical review to the Health Research Ethics Commission of the Health Poltekkes Ministry of Health Tasikmalaya and had received an ethical review with no 2021/KEPK/PE/VI/00138.

3 Result

3.1 Univariate Analysis

The description of anxiety scores in nursing mothers can be seen in Table 3. The anxiety of nursing mothers before being given PSO therapy gives an average score of 16.85 points, while after being given PSO therapy the anxiety scores average an average of 9.67 points (Table 1 and 2).

Table 1. Characteristics of Respondents Breastfeeding Mothers with PSO intervention

Variable	Frequency	Percentage
Education Level		
Junior high school	14	51.9%
Senior high school	10	37.0%
college	3	11.1%
Contact with health workers		
Integrated service post/community Health centers	10	37.0%
Private Clinic	17	63,0%
Source of Information		
None	8	29.6%
Family	5	18.5%
Social Media	14	51.9%

Table 2. Average Age of Respondents Breastfeeding Mother with PSO Treatment

Variable	Mean/Md	SD	Min–Max
Age (years)	25.00	5.48	20–42

Table 3. Average Score Anxiety Breastfeeding before and after therapy PSO

variable	mean	SD	Min–Max
anxiety scores before treatment PSO	16.85	7.31	10–32
Anxiety Score after therapy PSO	9,67	3,46	4–20

(n = 27)

Table 4. Average Percentage of Smoothness of Breastfeeding Mothers Breastfeeding before and after PSO therapy

Variable	Mean/Median	SD	Min–Max
Percentage of Smoothness of Breastfeeding before PSO therapy	61.07	21.23	30–89
Percentage of Smoothness of breast milk after PSO therapy	97.00	10, 67	50–100

(n = 27)

Table 5. The difference in the average anxiety score of breastfeeding mothers between before and after PSO therapy

Variables	Average Anxiety Score	SD	difference	<i>p</i> -value
Anxiety Score before PSO therapy	16.85	7,31	7,18	0,0001
Anxiety score after PSO therapy	9,67	3,46		

(n = 27)

Table 6. The average difference in the percentage of smooth breastfeeding between before and after PSO therapy

Variable	Average (%) Smoothness of breastfeeding in Average	SD	difference	<i>p</i> -value
Percentage of smoothness of breast milk before PSO therapy	61.07	21.23	35.93	0.0001
Percentage Smoothness of breastfeeding after PSO therapy	97.00	10.67		

(n = 27)

An illustration of the percentage of smooth breastfeeding in breastfeeding mothers can be seen in Table 4. The percentage of smooth breastfeeding of breastfeeding mothers before being given PSO therapy gives an average value of 61.07%, while after PSO therapy the percentage of smooth breastfeeding is average an average of 97%.

Table 7. Correlation of anxiety with variable smoothness of breast milk in nursing mothers after therapy PSO

Variable	average	SD	r-count	ρ -Value
Score Anxiety	9.67	3.46	-0.555	0.003
Percentage of smooth breastfeeding	97.00	10.67		

(n = 27)

3.2 Bivariate Analysis

The results of data analysis showed that the average anxiety score of breastfeeding mothers decreased by 7,18 points after receiving PSO therapy. Based on the results of oftest *paired t* (Test-T pairs) obtained significance value $\rho = 0.0001$ ($\rho < 0.05$), mean H_0 is rejected or there is a significant difference in the average score of anxiety among nursing mothers before and after therapy PSO (Table 5).

The results of data analysis showed that the average percentage of smoothness of breast milk in breastfeeding mothers increased by 35.93% after receiving PSO therapy. Based on the results of oftest *paired t* (Test-T pairs) obtained significance value $\rho = 0.0001$ ($\rho < 0.05$), mean H_0 is rejected or there is a significant difference in the average percentage of the smoothness of breast milk in nursing mothers between before and after PSO therapy (Table 6).

Spearman correlation test results obtained r count of 0.555 while the value of r table at = 5% with n = 27 is 0.381 then r count > r table. Then from the significant value (ρ) of 0.003. The conclusion is the correlation between anxiety scores and the percentage of smooth breastfeeding is significant. Spearman correlation value of -0.555 indicates a negative correlation with moderate correlation strength (Table 7).

Effect Size with *Cohen's d*:

Table 8. The effect size of anxiety scores on breastfeeding mothers before and after PSO therapy

Variables	Mean	Sd	Sd Combined	difference	Effect Size <i>Cohen'd</i>
Anxiety Score before PSO therapy	16.85	7.31	5.72	7,18	1.26
Anxiety score after PSO therapy	9.67	3.46			

(n = 27)

Table 9. Effect size smoothness percentage of breast milk in nursing mothers before and after therapy PSO

Variable	average	Sd	Sd Combined	Mean Difference	Effect Size <i>Cohen's d</i>
Percentage Smoothness breastfeeding before PSO therapy	61.07%	21.23	16.81	35.93%	2.13
Percentage of smooth breastfeeding after PSO therapy	97.00%	10.67			

(n = 27)

The results of the calculation of the effect size of *Cohen's d* can be seen in Table 8, which is obtained a value of 1.26 where this value is greater than 0.8. Based on the reference value of Cohen's d, it can be concluded that the value of 1.26 has a very large effect size.

The results of the calculation of the effect size *Cohen's d* can be seen in Table 9, which is obtained a value of 2.13 where this value is greater than 0.8. Based on the reference value of Cohen's d, it can be concluded that the value of 2.13 has a very large effect size.

4 Discussion

Breast milk is the best nutrition for babies but many factors influence mothers to experience failure in breastfeeding, including sore nipples, wrong practices, social environment influences, pain, fatigue, and the perception of insufficient breast milk [9–12]. Another cause of failure to breastfeed is due to maternal anxiety. Anxiety disorders are the most common psychological disorders worldwide resulting in great demand for adequate and cost-effective treatment. Anxiety is associated with less emotional regulation of threatening stimuli [13]. Anxiety in breastfeeding mothers can be related to physiological and psychological changes after childbirth due to hormonal changes and physical conditions, changes in roles and responsibilities in the family with the presence of new members, reduced time for self, financial changes, and changes in social interaction time. Common concerns that usually occur are about the adequacy of infant nutrition, baby's weight, baby's safety, ability to meet baby's needs.

Breastfeeding is influenced by two main hormones, namely prolactin, and oxytocin. The hormone prolactin is produced by the pituitary gland, which is located in the brain, which affects various physiological functions of the body. The more often the baby breastfeeds, the frequency of this hormone is also increasing. While the hormone oxytocin is needed to facilitate the milk that has been produced [2]. In the breastfeeding

process, there are two important processes, namely the process of forming milk (*the milk production reflex*) and the process of releasing milk (*let down reflex*), both of which are influenced by hormones regulated by the hypothalamus [14]. As with other hormone settings, the hypothalamus will work according to the brain's commands and work according to the mother's emotions. Psychological conditions, maternal emotions, anxiety levels, and maternal moods affect the smooth flow of breast milk [15, 16].

During lactation, there are two reflex mechanisms in the mother, namely the prolactin reflex and the oxytocin reflex, which play a role in milk production and milk production and uterine involution (especially during the puerperium). Anxiety is related to an increase in the adrenaline hormone which can suppress the activity of the lactation hormone, especially oxytocin which functions in the ejection of breast milk. Oxytocin is a key hormone in breastfeeding. Postpartum mothers who breastfeed can induce the release of oxytocin which is immediate and short-lasting (20 min). The number of oxytocin pulses during early breastfeeding was associated with greater milk production and longer lactation duration and was reduced by stress. Breastfeeding-induced release of oxytocin is associated with increased prolactin levels; decreased levels of ACTH and cortisol (stress hormone) and somatostatin (gastrointestinal hormone); increased socialization; and reduced anxiety, suggesting that oxytocin induces physiological and psychological adaptations in the mother [17].

Oxytocin has been shown to reduce amygdala activity and be the underlying mechanism for stress reduction [18]. Babies who suck well stimulate the release of oxytocin more efficiently, as expressed by a high variance of oxytocin, which leads to a better stimulation of milk production. A non-pharmacological way to increase breast milk production is by oxytocin stimulation massage. The SPEOS (Stimulation of Endorphin, Oxytocin, and Suggestive) method is an alternative intervention to increase milk production and accelerate milk release by increasing the action of prolactin and oxytocin [19, 20].

5 Conclusion

Oxytocin stimulation massage is effective in reducing anxiety in mothers and increasing the smooth production of breast milk.

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