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ORIGINAL RESEARCH

ENHANCEMENT OF BREAST MILK PRODUCTION THROUGH THE COMBINATION OF OXYTOCIN MASSAGE AND LAVENDER AROMATHERAPY IN POSTPARTUM MOTHERS

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ABSTRACT

Breast milk is the best food for infants as it can fulfill the baby's nutritional needs comprehensively. Breast milk production can increase and decrease, and one of the factors is stimulation of the mammary glands, especially during the first week of lactation. This stimulation can be enhanced through oxytocin massage and lavender aromatherapy, as they stimulate the oxytocin hormone. Objective: To determine the effect of oxytocin massage and lavender aromatherapy on breast milk production in postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara. The research design is a quasi-experimental Pre-test Post-test Design With Control Group. The population of the study is all postpartum mothers who gave birth at Klinik Pratama Triana Nur 2 Sangatta Utara. The sampling technique is consecutive sampling, with a total of 34 participants, 17 in the experimental group and 17 in the control group. The observation of breast milk production is the measurement tool. Data analysis techniques involve the Wilcoxon test and Mann Whitney test. There is a difference in the smoothness of breastfeeding before and after the combination of oxytocin massage and aromatherapy with a p-value of 0.000. There is a difference in breastfeeding smoothness before and after without the combination of oxytocin massage and lavender aromatherapy with a p-value of 0.008. There is an influence of the combination of oxytocin massage and lavender aromatherapy on the improvement of breastfeeding smoothness in postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara with a p-value of 0.003. Discussion: Oxytocin massage and lavender aromatherapy trigger the oxytocin and prolactin hormones to stimulate production due to their relaxation effects. The combination of oxytocin massage and lavender aromatherapy can increase breast milk production.

Keywords

Oxytocin Massage, Lavender Aromatherapy, Breast Milk Production

INTRODUCTION

Breast milk is the primary nourishment for infants, greatly needed due to its proper balance of proteins, fats, sugars, and calcium. Breast milk also contains antibodies that protect infants from illnesses during the breastfeeding period. Breast milk provides all the energy and nutrients

necessary for infants during the first few months of life and continues to do so for around six months, supplying over half of their nutritional needs during the second six months, and about one-third during the second year of life (WHO, 2018). Efforts to enhance breast milk production can be made through oxytocin massage (WHO, 2018). Oxytocin massage can alleviate engorgement, unclog milk ducts, stimulate oxytocin hormone release, and maintain milk production when both mother and baby are unwell (Kemenkes RI, 2021). Oxytocin reflex can be stimulated by manually expressing and pumping breast milk for 10-20 minutes before breastfeeding.

A study conducted by Delima et al. (2016) titled 'The Influence of Oxytocin Massage on Increased Breast Milk Production in Breastfeeding Mothers at Puskesmas Plus Mandiangin' showed that there is an effect of oxytocin massage in enhancing breast milk production in breastfeeding mothers at Puskesmas Plus Mandiangin, Bukittinggi 2016, with a p-value of 0.000. Similarly, research conducted by Sulaeman (2009) titled 'The Effect of Oxytocin Massage on Primiparous Postpartum Mothers in the Working Area of Puskesmas se - Kota Mataram' demonstrated a significant influence of oxytocin massage on primiparous postpartum mothers.

The use of lavender essential oil aromatherapy can assist mothers in relaxation and comfort, potentially leading to increased breast milk production. Lavender is a widely used essential oil in clinical health, especially for addressing psychosomatic issues in gynecology (Danuatmaja & Meilasari, 2019). The main active components in lavender oil responsible for its anti-anxiety (relaxation) effects are linalool and linalyl acetate (Jamilah, 2015 cited in Trisetiyaningsih & Wulansari, 2018).

A study conducted at the Obstetrics and Gynecology Unit in Iran, titled 'Effect of Lavender Scent Inhalation on Prevention of Stress, Anxiety and Depression in the Postpartum Period,' involved a sample of 140 respondents (intervention group and control group). Data analysis included Mann Whitney test, analysis of variance using ANOVA, and post hoc tests. The results indicated that the average stress, anxiety, and depression scores at the 2-week mark, as well as at the 1-month and 3-month marks after childbirth, were significantly lower in the intervention group compared to the control group (Kianpour et al., 2019).

Based on observations at Klinik Pratama Triana Nur 2 Sangatta Utara, 60% of mothers encountered breastfeeding production issues, preventing them from providing breast milk after childbirth. A preliminary study through interviews conducted at Klinik Pratama Triana Nur 2 Sangatta Utara involved 10 postpartum mothers in November 2022, from the 20th to the 23rd. Among these, five mothers reported delayed or insufficient breast milk production. As a result of this, the infants were restless due to insufficient breast milk supply. Given this context, the researcher is intrigued by the potential impact of the Combination of Oxytocin Massage and Lavender Aromatherapy on Enhancing Breast Milk Production in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

METHOD

This study employs a quantitative research approach with a Pre-test Post-test Design With Control Group. The population for this study comprises all postpartum mothers who gave birth at Klinik Pratama Triana Nur 2 Sangatta Utara. The sampling technique utilized is accidental sampling, with a sample size of 34 individuals who

meet the inclusion and exclusion criteria. Data collection techniques in this study involve the Standard Operating Procedure (SOP) for the combination of oxytocin massage and lavender aromatherapy, as well as an observation sheet employing a questionnaire to measure the smoothness of breast milk production. The dependent variable is breast milk production, while the independent variables are oxytocin massage and lavender aromatherapy. Data are analyzed through univariate analysis to describe the breast milk production in the group receiving the combination of oxytocin massage and lavender aromatherapy, as well as the control group, presented in the form of frequency distribution. Furthermore, bivariate analysis is conducted to observe the differences in the smoothness of breast milk production between the group receiving oxytocin massage and lavender aromatherapy and the control group, utilizing the Mann Whitney test.

RESULTS

Table 1. Characteristics Based on Respondent Characteristics Experimental Group at Klinik Pratama Triana Nur 2 Sangatta Utara

Variable	Cathegory	Frequency	Percent (%)
Age	< 20 years	3	16,7
	20-35 years	10	58,8
	35 years	4	27,8
Education	Middle School	5	27,8
	High School	9	55,5
	Academy	3	16,7
Occupation	Housewife	9	55,5
	PNS/ABRI	3	16,7
	Private Sector	2	11,1
	Employee	3	16,7
Parity	Entrepreneur	6	33,3
	Primiparous	9	55,5
	Multiparous	2	11,1
	Grandemulti		
Total		**17**	**100**

Source: Primary Data

Based on the data in Table 1 above, it can be observed that the majority of respondents are pregnant women in the third trimester aged between 20-35 years, totaling 10 individuals (58.8%). The highest educational background is high school (SMA) attended by 9 individuals (55.5%). The occupation is predominantly housewives (IRT) with a total of 9 individuals (55.5%). A significant portion of the respondents are multiparous, also totaling 9 individuals (55.5%).

Table 2. Breast Milk Smoothness Before and After in the Experimental Group among Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

Breast Milk Smoothness	Before		After	
	f	(%)	f	(%)
Not Smooth	17	100,0	0	0
Smooth	0	0	17	100,0
Total	17	100,0	17	100,0

Source: Primary Data

Based on Table 2, it can be observed that before receiving the combination of oxytocin massage and lavender aromatherapy, all respondents, a total of 17 individuals (100%), had unsmooth breast milk production. After receiving the combination of oxytocin massage and lavender aromatherapy, all respondents, again a total of 17 individuals (100%), had smooth breast milk production.

Table 3. Breast Milk Smoothness Before and After Without Being Given the Combination of Oxytocin Massage and Lavender Aromatherapy in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

Breast Milk Smoothness	Before		After	
	f	(%)	f	(%)
Not Smooth	17	100,0	0	0
Smooth	0	0	17	100,0
Total	17	100,0	17	100,0

Source: Primary Data

Based on the table 3 above, it can be observed that before without the combination of oxytocin massage and lavender aromatherapy, all respondents, totaling 17 individuals (100%), had

unsmooth breast milk production. After without being given the combination of oxytocin massage and lavender aromatherapy, a significant portion of the respondents, 10 individuals (58.8%), still had unsmooth breast milk production.

Table 4. Difference in Breast Milk Smoothness Before and After Administering the Combination of Oxytocin Massage and Lavender Aromatherapy in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

Breast milk production	Mean	n	Mean Rank	Sum Of Rank	P value
Breast Milk Smoothness Before and After	Negatif Rank	0	0,00	0,00	0,000
	Positif Rank	17	9,0	153,00	
	Ties	0			
	Total	17			

Source: Primary Data

The analysis results indicate a p-value of 0.000 < α 0.05. This can be concluded that there is a significant difference in breast milk smoothness before and after administering the combination of oxytocin massage and lavender aromatherapy to postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara.

Tabel 5. Difference in Breast Milk Smoothness Before and After Without Administering the Combination of Oxytocin Massage and Lavender Aromatherapy in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

Breast milk production	Mean	n	Mean Rank	Sum Of Rank	P value
Breast Milk Smoothness Before and After	Negatif Rank	0	0	0,00	0,008
	Positif Rank	7	4,00	28,00	
	Ties	10			
	Total	17			

Source: Primary Data

The analysis results indicate a p-value of 0.008 < α 0.05. This can be concluded that there is a significant difference in breast milk smoothness before and after without administering the combination of oxytocin massage and lavender aromatherapy in postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara.

Tabel 6. The Influence of Administering the Combination of Oxytocin Massage and Lavender Aromatherapy on Breast Milk Smoothness in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara.

	Perlakuan	n	Mean Rank	Sum Of Rank	P value
Breast Milk Smoothnes s	Combination of Oxytocin Massage and Lavender Aromatherap y	17	22,50	382,50	0,003
	Without Combination of Oxytocin Massage and Lavender Aromatherap y Negatif Rank	17	12,50	212,50	
	Total	17			

Source: Primary Data

The analysis results indicate a p-value of 0.003 < α 0.05. Therefore, it can be concluded that there is an influence of the combination of oxytocin massage and lavender aromatherapy on breast milk smoothness in postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara. The research results demonstrate that breast milk smoothness in the group receiving the combination of oxytocin massage and lavender aromatherapy is better compared to postpartum mothers who are not given the combination of oxytocin massage and lavender aromatherapy.

DISCUSSION

Breast Milk Smoothness Before and After in the Experimental Group

The research results show that before the combination of oxytocin massage and lavender aromatherapy, all respondents had unsmooth breast milk production with scores < 5. After receiving the combination of oxytocin massage and lavender aromatherapy, the breast milk became smooth. The research results indicate that in the group given the combination of oxytocin massage and lavender aromatherapy, before the intervention, the breast milk was unsmooth. After being given the combination of oxytocin massage and lavender aromatherapy, the breast milk became smooth. Based on this research, it is shown that before receiving the combination of oxytocin massage and lavender aromatherapy on the 4th day postpartum, the breast milk smoothness of mothers was low, resulting in unsmooth breast milk. Following the intervention involving the combination of oxytocin massage and lavender aromatherapy for one week, there was an improvement in breast milk smoothness, evident from the fulfillment of signs of smooth breast milk, comprising eight items.

According to the researcher, insufficient breast milk smoothness in postpartum mothers is often due to a lack of effort to increase breast milk production. Mothers tend to resort to supplementary foods if they perceive their breast milk as insufficient to meet their baby's needs. When babies become fussy after nursing, mothers often believe that their breast milk is inadequate and subsequently opt to supplement with additional food or formula to meet the baby's needs.

Breast Milk Smoothness Before and After in the Control Group

The research results show that before the combination of oxytocin massage and lavender aromatherapy, all respondents had unsmooth breast milk production with scores < 5. After 7 days, in the group not given the combination of oxytocin massage and lavender aromatherapy, 31.6% of respondents had smooth breast milk, while 68.4% still had unsmooth breast milk. The research results indicate that in the group not given the combination of oxytocin massage and lavender aromatherapy, before the intervention, the breast milk was unsmooth. After being given the combination of oxytocin massage and lavender aromatherapy, only a small portion had smooth breast milk. Breast milk smoothness in postpartum mothers is a natural phenomenon due to the process of lactation during the postpartum period. Lactation involves the hormones prolactin and oxytocin. Hormone levels change during this period; for instance, the sudden decrease in progesterone, estrogen, and human placental lactogen (HPL) levels upon childbirth and placenta expulsion is accompanied by sustained high levels of prolactin, leading to excessive breast milk production in a phase known as lactogenesis II. During this phase, breast stimulation triggers an increase in prolactin levels in the blood. Prolactin stimulates cells within the alveoli to produce breast milk, and it's also present in breast milk itself. Prolactin levels in breast milk are higher when there's more milk production, especially between 2 a.m. and 6 a.m. However, prolactin levels decline when breasts feel full.

Difference Before and After in the Experimental Group

The research results show a significant difference before and after the combination of oxytocin massage and lavender aromatherapy in terms of breast milk smoothness among postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara with a p-value of 0.000. This explains that the combination of oxytocin massage and

lavender aromatherapy can enhance breast milk smoothness. This is demonstrated by the increase in breast milk smoothness before and after the intervention. Before the intervention, all respondents had unsmooth breast milk, but after being given the combination of oxytocin massage and lavender aromatherapy, all respondents had smooth breast milk. Research indicates that oxytocin massage influences breast milk production. This is aligned with Widyani's theory (2015), which asserts that oxytocin stimulates smooth muscle contractions to squeeze milk out from alveoli, lobes, and ducts, then released through the nipple. One alternative action to enhance breast milk production is oxytocin massage (Lestari, 2017). Oxytocin massage also stimulates the let-down reflex in infants, provides comfort to mothers, reduces breast engorgement, alleviates blocked milk ducts, stimulates oxytocin release, and sustains milk production during maternal and infant illnesses (Delima et al., 2016).

The study by Asih, Yusari (2018) demonstrates the influence of oxytocin massage on breast milk production in BPM Lia Maria Sukarame Bandar Lampung. The analysis yielded an odds ratio (OR) of 11.667 (1.227-110.953), indicating that postpartum mothers who received oxytocin massage had a 11.667 times higher chance of sufficient breast milk production compared to those who did not receive such massage.

Difference Before and After in the Control Group

The research results show a significant difference before and after without the combination of oxytocin massage and lavender aromatherapy in terms of breast milk smoothness among postpartum mothers, with a p-value of 0.008. This indicates that without the combination of oxytocin massage and lavender aromatherapy, breast milk smoothness improved. This can be seen from the increase in breast milk smoothness before and after the intervention. Although the improvement is categorized as unsmooth, there was an increase in smooth breast milk, with 7 individuals having smooth breast milk. During postpartum, laktogenesis II takes place, characterized by a sudden decrease in progesterone, estrogen, and human placental lactogen (HPL) levels, while prolactin levels remain high, leading to excessive milk production. During this phase, breast stimulation triggers the release of prolactin, which stimulates alveolar cells to produce milk. Prolactin levels in breast milk are higher when there's more milk production. The optimal time for prolactin release is between 2 a.m. and 6 a.m., but prolactin levels decrease when breasts are full.

Influence of the Combination of Oxytocin Massage and Lavender Aromatherapy on Breast Milk Smoothness in Postpartum Mothers at Klinik Pratama Triana Nur 2 Sangatta Utara

The research results indicate an influence of the Combination of Oxytocin Massage and Lavender Aromatherapy on breast milk smoothness among postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara, with a p-value of 0.003. This signifies that the combination of oxytocin massage and lavender aromatherapy can significantly enhance breast milk smoothness. The enhancement is more pronounced compared to postpartum mothers who did not receive the combination of oxytocin massage and lavender aromatherapy. The difference in breast milk smoothness before and after the intervention demonstrates a notable increase in smoothness in the group that received the combination, compared to the group without the combination. These research findings align with Purnama's study (2013) on 50 post-Caesarean section mothers in

Banyumas, which emphasizes the significant effect of oxytocin massage and lavender aromatherapy. Purnama (2018) utilized infant urine weight as an indicator of breast milk production, whereas this study utilized six indicators of breast milk production from both mothers and babies.

A study conducted at the Obstetrics and Gynecology Unit in Iran, titled "Effect of Lavender Scent Inhalation on Prevention of Stress, Anxiety, and Depression in the Postpartum Period," involved 140 respondents (intervention and control groups). Data were analyzed using Mann Whitney, ANOVA, and post hoc tests. The research results indicate that stress, anxiety, and depression scores were significantly lower in the intervention group compared to the control group at the 2-week mark as well as at 1 and 3 months postpartum (Kianpour et al., 2019). Overall, the research findings demonstrate that oxytocin massage is more effective than without it, and even though the combination of oxytocin massage and lavender aromatherapy also significantly influences breast milk production, this is due to the natural processes of breastfeeding and maternal diet.

CONCLUSIONS

Based on the analysis using the Mann-Whitney test, a p-value of $0.003 \leq \alpha$ (0.05) was obtained. Therefore, it can be concluded that there is an influence of the combination of oxytocin massage and lavender aromatherapy on the improvement of breast milk smoothness in postpartum mothers at Klinik Pratama Triana Nur 2 Sangatta Utara.

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