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The Effectiveness of Woolwich Massage on The Smooth Flow of Breast Milk in Postpartum Mothers in the Kampung Melayu Sub-District, Bengkulu City

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Abstract

Background: Smooth breast milk flow is an important factor in successful breastfeeding during the postpartum period, but in the early days after delivery, some postpartum mothers experience difficulty in breast milk flow due to a lack of breast stimulation and inhibition of the oxytocin reflex. One non-pharmacological effort that can be done to increase the smoothness of breast milk flow is Woolwich Massage, a breast massage technique that aims to stimulate the milk ejection reflex. **Purpose:** of this study was to determine the effect of Woolwich Massage on the smoothness of breast milk flow and the differences between the intervention group and the control group in postpartum mothers in PMB in the Kampung Melayu District, Bengkulu City. The quasi-experimental design. **Method:** with a post-test only approach with a control group in 30 postpartum mothers who were divided into an intervention group and a control group. The intervention group received Woolwich Massage for 3 consecutive days, while the control group received no intervention. The smoothness of breast milk flow was measured on the 7th day using an observation sheet. Data were analyzed using the Mann–Whitney test. **Results** of the study showed that the mean rank value for smoothness of breast milk release in the intervention group was 19.33, higher than the control group's 11.67, with a p-value = 0.013 ($p < 0.05$), indicating a significant difference between the two groups. **Conclusion:** This study is that Woolwich Massage has a significant effect on the smoothness of breast milk release in postpartum mothers and is proven to be more effective than without intervention and can be considered as one of the non-pharmacological interventions in midwifery services, especially in postpartum maternal care, to help improve the smoothness of breast milk release.

Keywords: Woolwich Massage, Breast Milk Production, Postpartum Mothers, Lactation Massage

Introduction

Breast milk (ASI) is a biological fluid naturally produced by the mother's mammary glands and is the first, primary, and most complete source of nutrition for babies. Breast milk contains all the nutrients needed to support a baby's growth and development, especially in the first six months of life [3]. Breastfeeding has been shown to reduce infant morbidity, optimize growth, and support cognitive development. For mothers, breastfeeding provides benefits such as regulating pregnancy spacing, reducing the risk of breast and ovarian cancer, and strengthening the emotional bond between mother and baby [19].

During the postpartum period, breastfeeding mothers often experience breast disorders related to the difficulty of milk flow, such as breast engorgement, breast engorgement, and mastitis. Mastitis is reported to occur in approximately 3–20% of postpartum mothers, especially in the first 12 weeks postpartum [14]. Globally, 33.5% of mothers experience breast problems related to breastfeeding [2]. In Indonesia, 10–20% of postpartum mothers experience breast engorgement, 23% experience breast engorgement, and 7% experience mastitis [1]. These findings indicate that the smooth flow of breast milk remains a significant issue during the postpartum period.

Inadequate breast milk production contributes to the low success rate of exclusive breastfeeding. In 2023, exclusive breastfeeding coverage in Indonesia will still be between 71–74%, below the national target of 80%. In Bengkulu Province, exclusive breastfeeding coverage is recorded at 65%, so more optimal efforts are needed to improve breastfeeding success, particularly during the postpartum period [4].

Physiologically, the smooth flow of breast milk is influenced by the balance of the hormones prolactin and oxytocin. Prolactin plays a role in milk production, while oxytocin triggers myoepithelial cell contractions, enabling the milk ejection reflex (let-down reflex). Disruption of the regulation of these two hormones can result in insufficient milk flow, even when milk production is sufficient.[10,11]

Various physiological and psychological factors can affect the smooth flow of breast milk. Medical conditions such as infection, preeclampsia, gestational diabetes, obesity, and physical stress can inhibit the let-down reflex. Psychological factors such as anxiety, depression, and postpartum fatigue also play a role in reducing the smooth flow of breast milk. Furthermore, inadequate maternal nutritional intake can affect the

quality and quantity of breast milk [11,21,16].

Efforts to overcome the difficulty of producing breast milk can be done through a safe and economical non-pharmacological approach, one of which is Woolwich Massage. This technique is performed by massaging the lactiferous sinus area approximately 1–1.5 cm outside the areola for 10–15 minutes. This stimulation stimulates the breast sensory nerves that are transmitted to the hypothalamus and anterior pituitary, thereby increasing the secretion of the hormones prolactin and oxytocin and improving milk production. Woolwich Massage is reported to increase the smoothness and secretion of breast milk and reduce the risk of breast inflammation, including mastitis [17,13].

Previous studies have shown that Woolwich Massage is effective in improving lactation outcomes[5]. [9,15] reported that Woolwich massage, either alone or in combination with oxytocin massage, has a positive effect on breast milk production. However, most of these studies focused more on breast milk volume or production, while aspects of smooth breast milk release related to the breast milk ejection reflex have not been widely studied. In addition, differences in the duration and frequency of interventions and the limitations of objective measurement tools indicate a research gap that needs to be followed up[13,12].

In Indonesia, the application of complementary therapies such as Woolwich Massage in primary health care is still limited and has not yet become part of routine postpartum care. In several Independent Midwife Practices (PMB) in the Kampung Melayu District, Bengkulu City, this technique has not been widely implemented even though it is considered safe, simple, and can be taught to families independently at home. This approach aligns with the principles of holistic midwifery care, which emphasizes balancing the physical and emotional aspects of the mother [7].

Based on the description, this study aims to analyze the effectiveness of Woolwich Massage on the smooth flow of breast milk in postpartum mothers as a complementary therapy that is safe, easy to apply, and relevant in midwifery care practices.

Method

Method should be structured as follows:

1. Research design

This study was a quantitative, quasi-experimental study using a post-test-only approach with a control group. This design was used to assess the effectiveness of Woolwich Massage on smooth milk flow in postpartum mothers by comparing the intervention group with a control group without intervention.

2. Settings and samples

The study was conducted at the Independent Midwife Practice (PMB) in Kampung Melayu District, Bengkulu City in 2025. The population of this study was all primiparous postpartum mothers who gave birth and underwent postpartum care at the PMB in that area during the study period. The sampling technique used was purposive sampling, with a sample of 30 postpartum mothers divided into two groups, namely the intervention group (n = 15) and the control group (n = 15). Inclusion criteria included postpartum mothers on day 1 to day 7 postpartum, mothers in good health, willing to be respondents by signing an informed consent form, giving birth normally, and being primiparous. Exclusion criteria included postpartum mothers with severe postpartum complications, mothers with severe breast disorders requiring special medical treatment, babies receiving formula milk, and mothers who were unwilling to participate in the entire series of studies. The independent variable in this study was Woolwich Massage, while the dependent variable was the smoothness of breast milk production in postpartum mothers.

3. Measurement and data collection

The Woolwich Massage intervention was performed using a circular massage technique using both thumbs on the lactiferous sinus area, approximately 1–1.5 cm outside the areola, for 10–15 minutes. The intervention was administered by researchers or health workers trained in accordance with standard operating procedures. The research instrument used in this study was an observation sheet for smooth breast milk release. The instrument was developed by the researchers based on clinical indicators of smooth breast milk release sourced from obstetric literature and relevant previous research results. These indicators included signs in the mother and baby that clinically reflect a smooth or less smooth breast milk release process, so this instrument was deemed appropriate for the research objectives.

4. Data analysis;

Data analysis in this study was conducted using the Statistical Package for the Social Sciences (SPSS 26). The data obtained were first edited, coded, and entered to ensure completeness and consistency. Univariate analysis was performed to determine the average score for breast milk production in the intervention and control groups. Bivariate analysis was performed to determine the difference in breast milk production between the intervention and control groups using the Mann–Whitney test, with a statistical significance level set at $p < 0.05$.

Results

Univariate Analysis

The univariate analysis in this study aims to see the average distribution of breast milk expenditure in the intervention group and the control group.

Table 1
Average distribution of smoothness score of breast milk production

Group	n	Mean	Elementary School	Median	Min	Max
Intervention	15	5.13	0.74	5.00	4	6
control	15	4.27	0.96	4.00	3	6

OnTable 1 shows that the average score of smooth breast milk release in the intervention group was 5.13 with a standard deviation of 0.74, a median of 5, a minimum value of 4, and a maximum of 6. Meanwhile, in the control group, the average score of smooth breast milk release was 4.27 with a standard deviation of 0.96, a median of 4, a minimum value of 3, and a maximum of 6. These results indicate that descriptively, the score of smooth breast milk release in the intervention group was higher than in the control group after the post-test measurement.

Bivariate Analysis

Table 2
Normality Test of ASI Fluency Score

Variable	Group	n	*p-value*	Information
Breast milk flow score	Intervention	15	0.006	Abnormal
Breast milk flow score	Control	15	0.037	Abnormal

Caption: Shapiro-Wilk Test

Based on Table 2, the results of the normality test of the breastfeeding fluency score data in the intervention group and the control group using the Shapiro–Wilk test show that the p-value in both groups is <0.05. The p-value in the intervention group is 0.006 and in the control group is 0.037. Thus, it can be concluded that the breastfeeding fluency score data in both groups is not normally distributed, so the bivariate analysis was continued using a non-parametric statistical test, the Mann–Whitney U Test to determine the difference in breastfeeding fluency scores between the intervention group and the control group.

Table 3
Mann-Whitney Test: The Effect of Woolwich Massage on Breast Milk Production

Group	n	Mean Rank	Sum Of Rank	*P-Value*
Intervention	15	**19.33**	**290.00**	0.013
Control	15	**11.67**	**175.00**	
Total	**30**			

Caption: Mann-Whitney test

Based on Table 3, the Mann–Whitney test results show a p-value of 0.013 ($p < 0.05$), which means there is a statistical difference between the intervention group and the control group. The mean rank value in the intervention group (19.33) is higher than the control group (11.67), so it can be concluded that the provision of Woolwich Massage has an effect on increasing the smoothness of breast milk production in postpartum mothers. Thus, the alternative hypothesis (H_1) is accepted and the null hypothesis (H_0) is rejected.

Discussion

Smoothness of breast milk production in the Intervention and Control Groups

The results showed that the average score for smooth milk flow in the intervention group was higher than in the control group. Based on post-test measurements on day 7, the intervention group had an average score for smooth milk flow of 5.13, compared to 4.27 in the control group.Meanwhile, the results of the Mann-Whitney statistical test strengthen this finding with a p-value of 0.013 ($p < 0.05$), which means there is a statistically significant difference between the two groups. The mean rank value in the intervention group (19.33) which is higher than the control group (11.67) confirms that the provision of Woolwich Massage has a significant effect on increasing the smoothness of breast milk production in postpartum mothers.

Theoretically, the smooth flow of breast milk in the intervention group can be explained through the working mechanism of Woolwich Massage, which is a massage performed on the lactiferous sinus area approximately 1–1.5 cm above the areola mammae with the aim of releasing breast milk collected in the lactiferous sinus. Stimulation in this area will stimulate nerve cells in the breast, then the stimulus is transmitted to the hypothalamus and responded to by the anterior pituitary to increase the release of prolactin and oxytocin hormones. The hormone prolactin plays a role in breast milk production, while the hormone oxytocin causes contraction of myoepithelial cells around the alveoli so that breast milk is pushed out through the lactiferous ducts. This mechanism supports the occurrence of an optimal let-down reflex, so that breast milk release becomes smoother in postpartum mothers who receive the Woolwich Massage intervention [9,13].

The results of this study are in line with Farida's research [5] whichstated that giving Woolwich Massage to postpartum mothers can significantly increase the smoothness of breast milk production. The study explains that breast massage helps stimulate the oxytocin reflex, especially in the early days of the postpartum period.In addition, research [22] also supports the results of this study by showing that the average breast milk production in the group of postpartum mothers who received Woolwich massage was higher than the control group, with a statistically significant difference ($p = 0.002 < 0.05$). These results confirm that Woolwich massage has a positive effect on increasing breast milk production and release in the early postpartum period. Similar findings were also reported by [17], which stated that the combination of Woolwich massage and rolling massage (back) had an effect on breast milk sufficiency in postpartum mothers. In addition, other studies showed a difference in the smoothness of breast milk release between postpartum mothers who received Woolwich massage and oxytocin massage on days 1 to 3 of the postpartum period, with a p-value of 0.015. These results indicate that Woolwich massage is an effective intervention in supporting the smoothness of breast milk release in postpartum mothers.

According to the researchers' assumptions, the results of this study, consistent with previous research, indicate that Woolwich Massage can accelerate physiological adaptation to lactation in postpartum mothers, especially primiparas, who generally still experience inhibited milk ejection reflexes in the early stages of breastfeeding. Direct

breast stimulation and the relaxing effect of massage are the main factors contributing to increased smooth milk flow in the intervention group.

Based on the results of this study, researchers recommend that Woolwich Massage be implemented as a complementary midwifery care intervention for postpartum mothers to help facilitate breast milk production. This intervention is especially recommended for primiparous postpartum mothers who often experience difficulties with breast milk production in the early postpartum period. Furthermore, healthcare professionals are expected to provide appropriate education and support regarding lactation massage to support successful breastfeeding.

Limitation

This study has several limitations that need to be considered. During the study, the researchers were unable to optimally control external factors that could potentially influence the smooth flow of breast milk, such as maternal stress levels and the possible consumption of herbal medicines or supplements to stimulate breast milk production during the study period. This limitation is related to the post-test-only study design, so that comprehensive monitoring of these factors could not be carried out. Furthermore, this study is limited by the timing of the intervention and measurements. The Woolwich Massage intervention was administered on days 1 to 3 of the postpartum period, while the measurement of the smooth flow of breast milk was conducted on day 7. Therefore, this study cannot describe changes in the smooth flow of breast milk on a daily basis but only describes the final condition after the intervention. Nevertheless, the measurement on day 7 remains relevant to assess the continued effect of Woolwich Massage on the smooth flow of breast milk in postpartum mothers. Furthermore, the research location was limited to the PMB area of Kampung Melayu District, Bengkulu City, meaning that the results of this study cannot be generalized widely to the postpartum mother population in other areas which have different social, cultural, and health service characteristics.

Conclusion

Based on the results of research on the effect of Woolwich Massage on the smoothness of breast milk production in postpartum mothers in the PMB area of Kampung Melayu District, Bengkulu City, it can be concluded that the score of breast milk production in postpartum mothers who received Woolwich Massage intervention

got a better average score compared to postpartum mothers who did not receive intervention. This is indicated by the higher score of smoothness of breast milk production in the intervention group based on the results of the post-test measurement on the 7th day, the provision of Woolwich Massage has an effect on the smoothness of breast milk production in postpartum mothers in the PMB area of Kampung Melayu District, Bengkulu City, There is a significant difference between the smoothness of breast milk production in the intervention group and the control group based on the results of the Mann-Whitney test showing a p value = 0.013 ($p < 0.05$), which means there is an effect of Woolwich Massage on increasing the smoothness of breast milk production.

Ethical Considerations

This research was conducted in accordance with the ethical principles of health research involving humans. Prior to the study, ethical approval was obtained from the authorized Health Research Ethics Committee under the ethics approval letter number [No.025/e-KEPK/FIKES/XII/2025]. Furthermore, research permits were also obtained from relevant parties in the research area.

The ethical principles of research applied in this study include the principles of beneficence, respect for human rights, and justice. The principle of beneficence is realized by ensuring that this research provides benefits to respondents and to the development of health science, particularly in the field of obstetrics. Respondents received direct benefits in the form of increased comfort and smooth milk production through the provision of Woolwich Massage, which was carried out gently, safely, and without side effects. The intervention provided has undergone an ethical review to ensure that the actions taken are free from harm (non-maleficence), are not exploitative, and have greater benefits than potential risks that may arise.

The principle of respecting respondents' rights was implemented by granting respondents full freedom to decide whether to participate in the research after receiving a complete explanation of the research's objectives, procedures, benefits, and potential risks. Respondents' consent was obtained through signing an informed consent form. Researchers also guaranteed the confidentiality of respondents' identities and data throughout the collection, processing, and reporting of research results. All data obtained was used solely for scientific purposes and was not disseminated to third

parties without permission.The principle of justice was applied by treating all respondents fairly and equally without distinction of ethnicity, race, religion, socioeconomic status, or educational background. Every respondent who met the inclusion criteria had an equal opportunity to participate in the research and received equal treatment in accordance with the research design. The researchers also ensured that the privacy and dignity of respondents were respected and maintained throughout the entire research process.

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Conflict of Interest

The author declares that there is no conflict of interest in the implementation and publication of this research.

Author contribution

The authors are responsible for the research design, data collection, data analysis and interpretation, and manuscript preparation and revision. All authors have read and approved the final version of the manuscript.

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