



The Effectiveness of Oxytocin Hormone Massage in Increasing Breast Milk Production

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Abstrac The aim of this study was to assess the impact of oxytocin massage on breast milk production in postpartum mothers. This research employed a quasi-experimental approach, specifically utilizing a pretest-posttest control group design. The study population consisted of all normal postpartum mothers receiving care at a Midwifery Independent Practice located in Kesugihan District, Cilacap Regency. A total of 30 participants were selected through purposive sampling. Data were analyzed using the Wilcoxon test to determine statistical significance. Prior to the intervention, the average breast milk production was measured at 22.82 cc/ml. Following the administration of oxytocin massage using fennel oil, the average milk volume significantly increased to 87.58 cc/ml. These results indicate that oxytocin massage is an effective intervention for enhancing breast milk production in postpartum mothers.

Keywords: Breastfeeding Mothers; Exclusive Breastfeeding; Oxytocin Massage

1. INTRODUCTION

Breast milk is an ideal nutrient for babies because it contains nutrients that best suit their growth and development needs, and contains various protective substances that are able to fight disease (Indrayani et al., 2023). The first two years of a child's life are a very crucial period, because during this period the development of the brain and organs of the body takes place very rapidly. Optimal nutrition during this period can reduce morbidity and mortality, reduce the risk of chronic diseases in the future, and support children's physical and mental development. Optimal breastfeeding, especially in children aged 0 to 23 months, has been proven to save more than 820,000 lives of children under the age of five every year (Ngestiningrum & Setiyani, 2022). Therefore, WHO and UNICEF recommend initiating early breastfeeding within one hour of birth, exclusive breastfeeding for the first six months, and continuing breastfeeding until the age of two years or more, accompanied by nutritious complementary foods that are tailored to the child's needs (Fehr et al., 2020).

Until now, exclusive breastfeeding is still a world problem. In 2020 in the European Continent exclusive breastfeeding coverage was 20%. Exclusive breastfeeding coverage in Latin America and the Caribbean is 32%, Central Africa is 25%, East Asia is 30%, South Asia is 47%, and developing countries is 46%. This is due to the factor of working parents who cannot exclusively breastfeed and tend to give formula milk to their babies. From this data, it can be concluded that in several continents such as Europe, America, Africa, Asia and in developing countries, the global target of exclusive breastfeeding of 50% has not been achieved

(Indayani & Juliyanti, 2023). Nationally, the coverage of babies who received exclusive breastfeeding in Indonesia in 2020 amounted to 67.74%. This figure has reached the 2020 Strategic Plan target of 50% (Ministry of Health of the Republic of Indonesia, 2021, p.59). The coverage of exclusive breastfeeding for babies aged 0-6 months in Central Java in 2020 was 69.46% (Central Java Health Office, 2021). Meanwhile, in Semarang City itself in 2020, exclusive breastfeeding coverage was 55.4% (WHO, 2021).

Regular breastfeeding can help a good survival for the baby. Newborns should drink breast milk at least once every 2-3 hours. Antibodies contained in colostrum can prevent viruses and make babies strong (Pakilaran et al., 2022). In the breastfeeding process, there is the hormone prolactin and the hormone oxytocin which affect milk production. These two hormones can help promote breast milk production so that it is enough to complete the nutrients needed by the baby. However, there are still some working mothers who do not give exclusive breastfeeding on the grounds that their breast milk does not come out or only comes out a little so that it does not meet the nutritional needs of their babies (Low et al., 2022). Oxytocin massage is one of the effective non-pharmacological methods to increase breast milk production in postpartum mothers. This technique involves gently massaging the mother's back area, especially along the spine to the area around the shoulder blades, which aims to stimulate the hormone oxytocin. This hormone is very important in the breastfeeding process because it plays a role in the let-down reflex, where the contraction of the muscles around the breast alveolus helps push milk out through the milk duct. In addition, oxytocin also has a calming effect, which helps mothers feel more relaxed and comfortable during breastfeeding. The mother's calm psychological condition will further support smooth and optimal breast milk production (Baranowska et al., 2019).

Oxytocin massage also has additional benefits in addition to increasing milk production. Mothers who received massage therapy reported a decrease in stress and fatigue levels, as well as an improvement in sleep quality (Aprilina & Lestari, 2022). This relaxation effect is very important because stress is one of the main factors that can inhibit the release of breast milk. Therefore, oxytocin massage also plays a role in creating emotional conditions that support the lactation process (Farida et al., 2021). In practice, oxytocin massage is usually performed by health workers such as midwives, nurses, or lactation therapists who have received special training. However, mothers can also be taught to perform this technique independently or with the help of a partner at home, as part of self-care and efforts to increase milk production naturally (Sri Wahyuningsih et al., 2022).

Although oxytocin massage has many benefits, it is also important to compare it to other methods such as Oketani massage, which is also known to stimulate breast milk production. Some studies suggest that Oketani massage may provide higher results in terms of increased breast milk volume compared to oxytocin massage. In terms of clinical implementation, oxytocin massage can be part of maternal and child health services in first-level health facilities and hospitals. Health workers can provide education and training on this technique to pregnant women before childbirth, so that after giving birth they are ready to apply it. Education also needs to be provided to family members, especially couples, so that they can provide maximum support in the breastfeeding process (Hendriyani et al., 2019). Good social and emotional support has been shown to accelerate the success of exclusive breastfeeding and strengthen the relationship between mother and baby. The results of a study show that techniques that are done correctly and done regularly will give maximum results. Therefore, training for health workers and education for breastfeeding mothers is essential in ensuring that oxytocin massage is done appropriately. Not only as a short-term intervention, oxytocin massage can also be used as part of a healthy lifestyle for breastfeeding mothers, helping to maintain emotional stability and supporting overall physical health (Rinasa & Silvy Irdianty, 2023).

Oxytocin massage is one of the effective and safe methods to increase breast milk production naturally in postpartum mothers (Hadianti & Sriwenda, 2019). Stimulating the hormone oxytocin which plays a key role in the process of milk excretion, this massage provides a double benefit: it facilitates lactation and provides a relaxing effect on the mother (Anbarasi et al., 2023). Cooperation between health workers, families, and the mother herself is needed to ensure that this technique can be applied optimally (Pinem et al., 2021). With proper application and comprehensive support, oxytocin massage can be an important part of the strategy to increase the success of exclusive breastfeeding, which will ultimately have a positive impact on the growth and development of the baby and the health of the mother (Lestari et al., 2022).

2. METHODS

This type of research is a quasy experiment research (Sugiyono, 2022). The chosen form of research design was pretest-posttest with control group design. The population of this study is all normal postpartum mothers in February - April 2024 at PMB, Kesugihan District, Cilacap Regency. Sampling in this study was carried out using purposive sampling techniques. Purposive sampling and a sample of 30 postpartum mothers was obtained. The data collection

tools used include (1) checklist of oxytocin massage procedures, (2) milk bottles (cc/ml) and breast pumps, (3) observation sheets. The data analysis in this study includes univariate analysis and bivariate analysis using the wilcoxon test.

3. RESULTS AND DISCUSSION

The results of the study are shown in table 1 below:

Table 1. Oxytocin Massage on Breast Milk Production

Result	Min-Max	Mean	Std. Deviation	P value	Z
Before	10-30	22.82	7.427	0.000	4.121
After	60-100	87.59	87.59		

The results of table 1 of the production of milk volume before giving oxytocin massage showed an average milk volume production of 22.82 cc/ml while after giving oxytocin massage was 87.58 cc/ml. This shows that there is an increase in the average milk production after oxytocin massage. The results of the statistical test using the Wilcoxon test obtained a p value = $0.000 < 0.05$. These results show that oxytocin massage is effective on postpartum breast milk production. Based on the Z value, it was obtained at 4.121 which means that every 1 time of oxytocin massage makes postpartum mothers have the potential to increase their milk production by 4.121 times. The above results show that giving oxytocin massage facilitate breast milk production in postpartum mothers.

The research results on the effects of oxytocin massage on breast milk production in postpartum mothers provide profound insights into the effectiveness of this method in addressing one of the significant challenges many new mothers face: inadequate milk supply. Before receiving an oxytocin massage, the average milk production was recorded at 22.82 cc/ml. However, following the massage, the average milk production rose significantly to 87.58 cc/ml. This substantial increase demonstrates how impactful oxytocin massage is as a non-invasive and practical method for boosting milk production. The statistical analysis further reinforces the effectiveness of oxytocin massage. Using the Wilcoxon test, the results revealed a p-value of 0.000, which is well below the threshold of 0.05. This strongly indicates that the increase in milk production following the massage is not due to chance but is directly attributed to the intervention. Moreover, a Z value of 4.121 signifies that each oxytocin massage session potentially increases milk production by 4.121 times. These findings firmly establish oxytocin massage as a reliable approach to enhance lactation in postpartum mothers.

Oxytocin massage operates by stimulating the release of the hormone oxytocin, often referred to as the love hormone (Sihotang et al., 2020)v. This hormone plays a crucial role in

lactation, particularly in facilitating the let-down reflex, which enables milk to flow from the alveoli to the milk ducts. By promoting oxytocin release through the massage technique, the let-down reflex is triggered more effectively, allowing mothers to produce and deliver breast milk more efficiently. In this study, the use of fennel oil during the massage added an essential element to the intervention. Fennel oil contains active compounds such as anethole, which have been shown to support the release of oxytocin. Beyond its biological benefits, fennel oil also provides an aromatherapeutic effect that aids relaxation, further enhancing the massage's impact (Mahulette et al., 2022).

The success of oxytocin massage in increasing milk production benefits not only the mothers but also has a direct and significant impact on the well-being of their babies. Breast milk is universally recognized as the most complete form of nutrition for infants, containing the optimal balance of proteins, fats, carbohydrates, and vitamins needed for their growth and development (Sihotang et al., 2020). Additionally, breast milk provides vital antibodies that protect babies from infections and illnesses. With an increase in milk production facilitated by oxytocin massage, babies are ensured adequate nutrition and improved immune defenses, leading to better health outcomes in the short and long term (Dağlı & Çelik, 2022).

From a psychological perspective, oxytocin massage also addresses the emotional and mental challenges faced by postpartum mothers. Many mothers experience stress, anxiety, or even mild postpartum depression during this period due to hormonal changes, the demands of breastfeeding, and the adjustment to their new roles (Mahulette et al., 2022). These factors can negatively impact milk production. Oxytocin massage provides a calming and therapeutic experience that helps mothers relax and reduce stress levels. By promoting a state of relaxation, the massage increases the natural release of oxytocin, not only aiding lactation but also enhancing the mother's mood and confidence in her ability to breastfeed successfully (Pinem et al., 2021).

In the context of clinical practice, the implications of these findings are profound and far-reaching. Oxytocin massage using fennel oil emerges not only as an effective intervention but also as a practical, accessible, and non-invasive method to support lactation in postpartum mothers. This technique can be seamlessly integrated into postpartum care programs as a standard part of routine maternal health services, especially for mothers who face difficulties with insufficient breast milk production (Prihatin et al., 2020). Given its simplicity and safety, oxytocin massage can be incorporated into midwifery and nursing protocols with relative ease. Healthcare professionals, particularly midwives and nurses, can be equipped through targeted training to deliver this massage competently as part of their daily postpartum care routines.

Regular implementation of this technique in clinical settings can bridge the gap between medical care and natural, hormone-based support for breastfeeding mothers. Moreover, patient education is a vital component of successful implementation (Sari et al., 2017). Educating mothers about the role of oxytocin in lactation and the benefits of massage with fennel oil can foster a deeper understanding and encourage active participation. Empowering mothers and even their partners or family members by teaching them how to perform the massage at home can foster independence, strengthen family bonds, and create a supportive environment for breastfeeding. This participatory approach enhances maternal confidence and may reduce the likelihood of early weaning due to perceived insufficient milk supply (Susilowati & Tridiyawati, 2023).

While the research results are promising, it is important to acknowledge several limitations that may affect interpretation. For instance, the study may have included a relatively small and homogeneous sample of postpartum mothers, which limits the generalizability of the findings to broader populations (Irnawati & Sari, 2022). Furthermore, external factors that can influence breast milk production such as maternal health status, psychological well-being, fluid intake, hormonal balance, and nutritional habits may not have been fully controlled or measured. Future research should aim to address these variables by designing studies with larger, more diverse populations and considering different postpartum conditions. Studies could specifically focus on unique groups such as mothers who delivered via cesarean section, those experiencing postpartum depression or anxiety, or women in rural or low-resource settings where access to breastfeeding support is limited. Additionally, further exploration into the bioactive components of fennel oil and their potential synergistic effects with oxytocin release could deepen our understanding of the mechanism behind this technique (Ludviah et al., 2023).

Oxytocin massage with fennel oil stands out as a highly effective, holistic, and evidence-based strategy for increasing breast milk production (Endelawati et al., 2023). The combination of physiological stimulation and emotional support through human touch provides a comprehensive solution to common breastfeeding challenges. From a clinical perspective, the integration of oxytocin massage into maternal care routines represents a significant advancement in supporting lactation without the need for pharmaceutical interventions. By embracing this approach in both healthcare settings and community-based programs, we can enhance the quality of postpartum care, promote exclusive breastfeeding, and ultimately improve maternal and infant health outcomes. The widespread adoption of oxytocin massage as a standard component of breastfeeding support holds the potential to transform postpartum

experiences, empower mothers globally, and elevate the overall standard of family centered care (Kartini et al., 2020).

4. CONCLUSION

The average milk production before being treated was 22.82 cc/ml and after being given oxytocin massage with fennel oil, the average milk volume was 87.58 cc/ml. The study found that oxytocin massage effectively boosted milk production in mothers after childbirth.

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