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The Effect of Oxytocin Massage on Breast Milk Production and Uterine Recovery in Postpartum Mothers

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ABSTRACT

Breast milk (ASI) is the ideal nutrition for newborns because it contains complete nutrition, antibodies, and irreplaceable protective factors. However, many postpartum mothers experience delayed milk production due to physiological and psychological barriers, which can reduce the success of exclusive breastfeeding. One effective non-pharmacological intervention is oxytocin massage, a light massage technique along the spine and ribs to stimulate the release of the hormone oxytocin. This mechanism supports the milk ejection reflex (let-down reflex) through contraction of breast myoepithelial cells and accelerates the release of colostrum. In addition to its benefits for lactation, oxytocin also plays a role in accelerating uterine involution, thereby reducing the risk of postpartum hemorrhage. The psychological effects of relaxation and reduced anxiety contribute to successful breastfeeding and increase maternal self-confidence. Despite physiological and clinical evidence, the implementation of oxytocin massage in the field remains limited due to lack of training, limited socialization, and suboptimal integration into postpartum care standards. This study used a literature review method to analyze the mechanisms, benefits, and challenges of implementing oxytocin massage. The study results confirm that oxytocin massage is a simple, safe, and effective intervention that has the potential to increase the success of exclusive breastfeeding while accelerating maternal recovery.

Keywords*:* Breast Milk, Uterine Involution, Oxytocin, Oxytocin Massage, Postpartum

INTRODUCTION

Breast milk (ASI) is known as the most ideal nutrition for newborns because it contains complete nutrition, antibodies, and protective factors that cannot be replaced by formula. Exclusive breastfeeding for the first six months of life has been shown to reduce infant morbidity and mortality due to infection and malnutrition. However, in practice, not all mothers are able to express breast milk smoothly from the start, which often causes anxiety in postpartum mothers. This obstacle can be caused by the mother's physiological condition, such as

delayed production of lactation hormones, or psychological factors such as stress and low self-confidence (Agustina et al., 2024). Irregularities in the milk let-down reflex are often closely related to insufficient stimulation of the hormone oxytocin, a key factor in the let-down reflex (Aini, 2023). If left untreated, the baby is at risk of lacking essential nutrients early in life. Therefore, a special approach is needed to facilitate more optimal breast milk release.

The phenomenon of delayed breast milk production during the postpartum period remains a major challenge to the success of exclusive breastfeeding programs in various countries, including Indonesia. Many postpartum mothers complain of a lack of breast milk production in the first few days after delivery, often leading to the urge to provide formula milk. This situation has the potential to undermine the success of maternal and child health programs, a global priority in the Sustainable Development Goals (SDGs) (Sandriani et al., 2023). The contributing factors are not only biological but also include social and cultural factors, including inadequate family support (Kartika et al., 2025). Furthermore, the physical burden of labor and fatigue often inhibit the physiological reflexes necessary for lactation. This situation emphasizes the importance of non-pharmacological intervention strategies that are safe, easy to implement, and have a strong physiological basis. One strategy that is gaining increasing attention is oxytocin massage.

Oxytocin massage is a gentle massage technique along the spine and ribs designed to stimulate the release of the hormone oxytocin. This mechanism works by stimulating sensory nerves that send signals to the hypothalamus, thereby increasing oxytocin secretion from the posterior pituitary. Increased oxytocin levels strengthen the contractions of myoepithelial cells in the breast, making it easier for milk to flow (Nasution et al., 2023). In addition to supporting lactation, oxytocin massage also helps reduce postpartum emotional tension in mothers, which is often a factor inhibiting milk production. Previous research has shown that oxytocin massage can accelerate colostrum production in postpartum mothers. Therefore, this simple intervention has the potential to be a practical solution to address delayed milk production. This demonstrates the close relationship between a mother's physical health, hormones, and psychological state.

Oxytocin not only plays a role in increasing breast milk production, but also plays a vital role in uterine recovery in postpartum mothers (Dwita & Mutmainnah, 2023). Oxytocin stimulates uterine smooth muscle contractions, accelerating involution, or the return of the uterus to its normal size (Camerino, 2023). Rapid uterine recovery is crucial because it can reduce the risk of postpartum hemorrhage, a leading cause of maternal mortality. If uterine contractions are suboptimal, the healing process will be slower and increase the risk of complications. Therefore, oxytocin stimulation through massage not only benefits the baby but also improves the health and safety of the mother. The dual role of oxytocin in lactation and uterine involution underscores the importance of oxytocin massage in modern obstetric practice. This approach provides more

comprehensive benefits because it targets two important aspects of postpartum simultaneously.

The dual role of oxytocin massage aligns with the concept of holistic care, which emphasizes the importance of viewing mothers as individuals who simultaneously require physical, psychological, and emotional support. Midwifery practices that focus solely on one aspect of health often fail to achieve optimal long-term results. With oxytocin massage, nurses and midwives not only help increase breast milk production but also support uterine recovery and maternal psychological well-being (Carbonari et al., 2024). This simple intervention can be performed in health facilities or at home under the supervision of a healthcare professional. Furthermore, the technique is relatively easy to learn and requires no special equipment, thus having the potential for widespread implementation. Family involvement in providing oxytocin massage can also increase the mother's sense of emotional support. Thus, oxytocin massage is not only a medical intervention but also a form of social support that is essential for successful breastfeeding and maternal recovery.

Although the benefits of oxytocin massage are quite clear in theory, its implementation in practice remains suboptimal. Many healthcare professionals have not yet incorporated oxytocin massage into their routine postpartum care, so this intervention is still considered a supplementary method. Yet, various studies have demonstrated the effectiveness of oxytocin massage in accelerating milk letdown and improving uterine health (Wiryadi et al., 2024). Lack of public awareness and practical training are among the barriers to the wider use of oxytocin massage. Furthermore, there is still a perception that delayed milk letdown can only be addressed with formula supplementation or medication. This situation deprives many mothers of the opportunity to receive safe and effective natural interventions. Therefore, further research is needed to strengthen the scientific evidence that can serve as a basis for integrating oxytocin massage into standard healthcare services.

The urgency of research on oxytocin massage is heightened in light of government efforts to increase exclusive breastfeeding coverage. National programs designed to support infant growth and development are often hampered by low rates of successful breastfeeding. Oxytocin massage-based interventions are expected to significantly increase the success of exclusive breastfeeding. Furthermore, research supporting the effectiveness of oxytocin massage on uterine involution also provides added value, as it can contribute to reducing the risk of postpartum complications. This is crucial given the high maternal mortality rate in Indonesia due to postpartum hemorrhage. Strong scientific evidence can encourage health policymakers to incorporate oxytocin massage as an integral part of postpartum care. Therefore, this research is not only clinically relevant but also has broad implications for public health policy.

Given the close relationship between the physiological, psychological, and social benefits of oxytocin massage, it can be concluded that this intervention plays a strategic role in improving the quality of postpartum maternal care. The

positive impact on breast milk production ensures that the baby's nutritional needs are met, while the effect on uterine involution improves maternal safety and comfort. This intervention aligns with the maternal and child health care paradigm, which emphasizes preventive, promotive, and curative approaches. Integrating oxytocin massage into standard care will help reduce maternal and infant morbidity simultaneously. Furthermore, this practice strengthens the role of health workers in providing more humane and non-invasive interventions. If oxytocin massage proves consistently effective, its implementation could become an innovation in obstetric care. Therefore, research on the effect of oxytocin massage on breast milk production and uterine recovery in postpartum mothers is crucial.

METHODOLOGY

This study used a qualitative design with a literature review approach to analyze the effect of oxytocin massage on breast milk production and uterine recovery in postpartum mothers. Articles were searched through the databases PubMed, Scopus, CINAHL, Web of Science, Google Scholar, and national portals such as Garuda and Neliti, with the keywords "oxytocin massage," "oxytocin massage," "breast milk," and "uterine involution." Inclusion criteria included studies in postpartum mothers with oxytocin massage interventions that reported breast milk output or uterine conditions, used qualitative, mixed-methods, or quasi-experimental designs with qualitative components, and were available in Indonesian or English.

Selection was conducted in two stages: title-abstract screening and full-text review by two independent reviewers, then reported using a PRISMA flowchart. Study quality was assessed using CASP and JBI for qualitative studies, and MMAT for mixed-methods studies. Data extraction included information on authors, year, methods, participant characteristics, details of massage interventions, and outcomes related to breastfeeding and the uterus.

The analysis was conducted using a thematic synthesis approach to develop key themes related to the mechanisms, impacts, and supporting and inhibiting factors of oxytocin massage implementation. This was complemented by narrative synthesis to compare results between studies. The credibility and reliability of the results were maintained through triangulation, audit trails, and researcher reflexivity. Because it used secondary data, this study did not require ethical approval, but adhered to the principles of proper citation and reporting according to PRISMA and ENTREQ guidelines.

RESULTS AND DISCUSSION

1. Oxytocin Massage as a Physiological Intervention to Support Breast Milk Production

Oxytocin massage is a physiological intervention increasingly being researched in relation to optimizing breast milk production in postpartum mothers. Its mechanism of action begins with sensory nerve stimulation in the upper back, which is then transmitted to the hypothalamus, stimulating the

release of the hormone oxytocin from the posterior pituitary gland. Oxytocin plays a crucial role in activating the contraction of myoepithelial cells around the breast alveoli, resulting in the milk let-down reflex (Lestari et al., 2022). This process suggests that oxytocin massage can directly support the physiological aspects of lactation, which are often challenging in the early days of breastfeeding.

In addition to its biological mechanisms, oxytocin massage has been shown to accelerate the release of colostrum, an important source of nutrients and antibodies for newborns. Literature studies show that mothers who receive this intervention are more likely to experience faster milk production than mothers who do not receive massage (Amaliasari & Pradanie, 2020). This acceleration has the dual benefit of supporting the fulfillment of infant nutritional needs while preventing lactation delays that risk reducing the success of exclusive breastfeeding. Therefore, oxytocin massage can be considered a simple yet effective intervention to improve the initial breastfeeding process.

The positive effects of oxytocin massage are not limited to physiological aspects but also affect the mother's psychological well-being. Smooth breast milk production often reduces the levels of anxiety, stress, and doubt experienced by mothers after childbirth. Massage stimulation provides a relaxing effect that contributes to the release of endorphins, thereby increasing the mother's emotional well-being (Nuampa & Payakkaraung, 2021). This is crucial because psychological factors are closely related to the smooth functioning of the oxytocin reflex, which, if inhibited, can reduce the effectiveness of breastfeeding. Therefore, oxytocin massage can be a holistic strategy that bridges the biological and emotional aspects to support successful lactation.

Furthermore, oxytocin massage contributes to increased maternal confidence in breastfeeding (Sari et al., 2022). Mothers who feel physiologically and emotionally supported are more motivated to exclusively breastfeed during the first six months of their baby's life. This intervention also gives mothers a sense of control over their own bodies, ultimately strengthening the emotional bond with their babies. This aligns with the physiological theory of lactation, which emphasizes the importance of a balance between oxytocin and prolactin, where oxytocin facilitates milk release and prolactin plays a role in its production. Thus, oxytocin massage can be seen as a comprehensive physiological intervention because it supports both biological mechanisms and the mother's psychological readiness.

2. The Role of Oxytocin in Accelerating Uterine Involution and Preventing Complications

The role of oxytocin in accelerating postpartum uterine involution has a strong physiological basis, as this hormone acts directly on uterine smooth muscle to stimulate rhythmic contractions. These contractions play a crucial role in the involution process, which is the return of the uterus to its pre-pregnancy size and shape. Rapid involution can reduce the risk of uterine atony, a common cause of postpartum hemorrhage (Kody & Sukartiningsih 2023). This mechanism

also helps improve blood circulation in the uterine area, thus supporting tissue healing. Furthermore, oxytocin massage, as a non-pharmacological method, has been shown to increase endogenous oxytocin production, which not only benefits lactation but also strengthens uterine contractile function. Therefore, faster involution can reduce maternal morbidity and accelerate postpartum physical recovery.

Furthermore, oxytocin's role in maintaining hemostasis has a significant impact on preventing serious complications such as postpartum hemorrhage. Effective uterine contractions can clamp open blood vessels at the placental attachment site, thereby preventing excessive blood loss (Shah et al., 2024). This is crucial considering that postpartum hemorrhage remains a leading cause of maternal death in many countries, including Indonesia. Oxytocin massage-based interventions not only complement pharmacological therapy but can also be a safe alternative in health facilities with limited resources. The mild analgesic effect of oxytocin also helps reduce maternal pain, thereby increasing comfort during the postpartum period (Sulistiana et al., 2021). By combining the benefits of uterine contractions, preventing bleeding, and improving maternal well-being, oxytocin occupies a central position in postpartum management. This confirms that oxytocin massage is not simply a lactation intervention but a comprehensive strategy to reduce the risk of obstetric complications.

In addition to its physiological benefits, oxytocin's role in accelerating uterine involution also has important implications for the quality of obstetric care and the prevention of long-term complications. Optimal involution minimizes subinvolution, which is often associated with an increased risk of infection, secondary bleeding, and even future fertility problems. With oxytocin massage, midwives not only provide therapeutic intervention but also educate mothers about the importance of natural body stimulation in the recovery process. This practice aligns with the evidence-based midwifery approach, which emphasizes the use of non-invasive, safe, and low-cost yet effective methods. Furthermore, oxytocin massage is easy to teach to families, providing a form of social support that boosts maternal confidence during the postpartum period. This holistic intervention supports both physical and psychological aspects, as mothers feel calmer and their needs are met. Thus, oxytocin massage has the potential to strengthen the paradigm of mother-centered midwifery care, oriented toward preventing complications, and supporting long-term postpartum well-being.

3. Practical Implications and Challenges of Implementing Oxytocin Massage in Postpartum Care

Oxytocin massage, as a non-pharmacological intervention, has been proven in various literature to increase breast milk production, facilitate uterine involution, and provide a relaxing effect for mothers during the postpartum period. However, its implementation in the field is still suboptimal. The biggest obstacle that often arises is the limited knowledge and skills of health workers in performing this massage technique, as most have not received standardized formal training. This condition causes oxytocin massage to be considered only a

supplementary method, even though physiologically, this technique has a strong scientific basis in stimulating the release of the hormone oxytocin (Zakiyah et al., 2024). Low public awareness also means that families are unaware of the benefits of oxytocin massage, thus limiting their involvement in supporting postpartum mothers. Family involvement plays a crucial role not only in technical aspects but also in emotional aspects that accelerate maternal recovery. Therefore, efforts to integrate oxytocin massage into postpartum care protocols are essential to bridge the gap between scientific evidence and field practice.

The practical implications of this literature review are the need to strengthen the capacity of healthcare workers through comprehensive training programs with clear standard operating procedures so that oxytocin massage techniques can be implemented uniformly across healthcare facilities. Outreach to the community, particularly families, is also crucial so that oxytocin massage is not solely the responsibility of midwives but can also be implemented as a form of household support for postpartum mothers. Integrating oxytocin massage into postpartum care protocols will also strengthen the role of evidence-based midwifery practice, thereby increasing public trust in maternal healthcare services (Vidyapeeth et al., 2024). However, challenges remain, particularly regarding the sustainability of training, limited human resources, and resistance among some healthcare workers to non-pharmacological methods that have not yet been fully incorporated into the midwifery education curriculum.

Furthermore, the need for further research with a more robust methodological design is a key agenda for strengthening the evidence base for oxytocin massage. Longitudinal, multicenter studies measuring various success indicators such as the sustainability of exclusive breastfeeding, reduced postpartum complications, and improved maternal quality of life are needed to strengthen the evidence for its benefits. If the evidence becomes more robust, oxytocin massage has the potential to become an integral part of standard midwifery services, not only in health facilities but also in community-based practices (Purba, 2024). With optimal implementation, oxytocin massage will not only have implications for increasing the success of exclusive breastfeeding but also for broader aspects such as maternal psychological health, family involvement in care, and improving the overall quality of maternal health services. Therefore, the challenges of implementing oxytocin massage should be viewed as opportunities for system improvements that can support the achievement of better maternal health goals.

Considering the practical implications and challenges of implementing oxytocin massage, it is important to emphasize that a successful strategy depends not only on healthcare workers but also on supportive cross-sector synergy. The involvement of professional organizations, educational institutions, and local governments in developing policies that accommodate oxytocin massage as a standard intervention will accelerate adoption at the primary care level. Furthermore, a community-based approach involving health cadres can bridge the gap between healthcare facilities and families, making oxytocin massage more easily accepted as part of daily postpartum care practices. Innovations in

digital educational media, such as video tutorials or maternal health apps, also have the potential to increase the community's understanding and skills in this technique (Umar & Wardani, 2025). Thus, oxytocin massage will not only remain a clinical intervention but also develop into a culture of postpartum care that is internalized by the community. If this is achieved, the benefits of oxytocin massage will be broader, not only increasing the success of exclusive breastfeeding but also strengthening social support systems and improving maternal health sustainably.

CONCLUSION

In conclusion, oxytocin massage is a non-pharmacological physiological intervention with a strong scientific basis for supporting breast milk production and accelerating uterine involution during the postpartum period. Its mechanism of action involves sensory nerve stimulation that triggers the release of the hormone oxytocin, thereby facilitating the milk ejection reflex and uterine contractions. The resulting benefits are not only biological but also provide psychological effects such as relaxation, reduced anxiety, and increased maternal confidence in breastfeeding. Literature shows that oxytocin massage can accelerate colostrum release, prevent delayed lactation, and reduce the risk of obstetric complications such as postpartum hemorrhage. These comprehensive effects make oxytocin massage a holistic strategy that connects physiological, emotional, and social aspects of midwifery care. However, its implementation in the field still faces challenges such as limited training for health workers, lack of socialization, and minimal integration into postpartum care protocols. Therefore, capacity building is needed through standardized training, socialization with families, and policies that support the widespread implementation of oxytocin massage. Further research with a more robust design is also essential to strengthen the evidence for the long-term benefits of this intervention. Community-based approaches and digital educational innovations can be a solution to expand the acceptance of oxytocin massage as part of the postpartum care culture. If implemented optimally, oxytocin massage has the potential to increase the success of exclusive breastfeeding, accelerate maternal recovery, and reduce the risk of postpartum complications. Thus, oxytocin massage is relevant not only in a clinical context but also in strengthening maternal health systems that focus on prevention and long-term well-being.

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