REVIEW ARTICLE

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Systematic Review: Oxytocin Massage More Effective than Breast Care in Supporting Exclusive Breastfeeding

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In Indonesia, the increasing maternal and infant mortality rate is a significant public health problem. During the first six months of an infant's life, exclusive breastfeeding is a proven method to reduce these numbers. Exclusive breastfeeding improves infant lifespan and maternal health in the long term. Prolactin and oxytocin, responsible for milk production and secretion, greatly influence breastfeeding success. Therefore, it is essential to explore methods that stimulate the release of these hormones, particularly oxytocin massage and breast care. Evidence suggests that oxytocin massage is more effective in enhancing the let-down reflex and improving exclusive breastfeeding outcomes. This review was conducted systematically using PRISMA guidelines. A literature search with keywords such as "prolactin," "oxytocin," and "exclusive breastfeeding" was conducted on Google Scholar, ScienceDirect, and PubMed databases. Studies investigating the impact of interventions on hormone levels and breastfeeding success in mothers were also included in the inclusion criteria. The articles' selection determined the topic's relevance, novelty, and appropriateness. Based on the 45 studies, six met the inclusion criteria. Interventions identified included oxytocin massage, breast care, and combinations with supportive approaches such as music therapy, hypnobreastfeeding, lavender aromatherapy, emotional management, and breastfeeding relactation. These interventions were consistently associated with improved hormone release, increased milk production, and higher exclusive breastfeeding success. Oxytocin massage has been shown to improve the success of exclusive breastfeeding by increasing the levels of essential hormones in breastfeeding mothers. Further research is needed to evaluate the effectiveness of other interventions and their impact on the long-term health outcomes of mother and child.

Keywords: breast care, breastfeeding succes, oxytocin massage

Introduction

Maternal mortality rate (MMR) and infant mortality rate (IMR) remain major concerns in Indonesia, as they are key indicators of maternal and child health outcomes.[1] One of the government's main strategies to improve child survival is the promotion of exclusive breast feeding.[2] According to the World Health Organisation (WHO), infants should be exclusively breastfed for the first six months without additional food or drink, including water.[3] Breast milk provides optimal nutrition and immune protection for infants, thereby reducing the risk of morbidity and mortality.[4-5] Although national exclusive breastfeeding coverage in Indonesia has improved, reaching 66.06% in 2020 and exceeding the 40% strategic plan target, this rate remains below the desired program target.[6] This indicates that challenges persist in achieving optimal breastfeeding practices.

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The best food a mother can give to her baby is breast milk. Infants can be protected from various diseases and infections through the protective substances contained in breast milk.[7] The inner relationship between mother and baby is emotionally affected by breastfeeding.[8] Breast milk is a white liquid produced by the mothers breast glands during lactation.[9] When a woman is pregnant, her breasts are naturally capable of producing breast milk for her future baby. In addition, breast milk meets the baby's physical, psychological, social, and spiritual needs. Babies can strengthen their immune system with breast milk, containing micronutrients and anti-allergic and anti-inflammatory compounds.[10] Breast milk for six months can also prevent babies from becoming obese or overweight because breast milk helps stabilize fat growth.[11]

Adequate breastfeeding can be identified when the infant urinates frequently, gains weight steadily, feeds often, and appears active and healthy. However, milk production is strongly influenced by psychological factors.[12] Stress, low confidence, and emotional tension may reduce or even stop milk flow, as many mothers believe their milk supply is insufficient.

The most critical factor is maternal belief in her ability to breastfeed. Stress also disrupts oxytocin release by inhibiting the let-down reflex through adrenaline, causing milk to remain in the alveoli, which can lead to engorgement, pain, and further breastfeeding difficulties.[13] Hypnobreathing can help breastfeeding mothers feel more relaxed, physically and mentally calm, and comfortable during breastfeeding.[14] Hypnobreastfeeding can cause positive effects, such as increased release of prolactin and oxytocin by the pituitary.[15]

Efforts to stimulate prolactin and oxytocin hormones in mothers after childbirth can be carried out through breast care, nipple hygiene, early and frequent breastfeeding, and particularly oxytocin massage. Massage along the mother's spine promotes relaxation, decreases cortisol, and facilitates oxytocin release, which improves the let-down reflex and milk flow. Prolactin enhances mammary gland activity and milk production, while oxytocin supports milk ejection and reduces maternal stress. These two hormones work together to ensure the success of exclusive breastfeeding.[16-20]

Several studies have analyzed the effect of prolactin and oxytocin levels on exclusive breastfeeding success. Findings indicate that these hormones influence breastfeeding outcomes through different approaches. Therefore, it is essential to summarise the existing evidence to compare the effectiveness of interventions designed to increase prolactin and oxytocin levels in supporting exclusive breastfeeding.[17-20]

Methods

Data Collection Strategy

The literature search and retrieval resulted in 45 kinds of literature and six eligible articles for review. The Preferred Reporting Items for Systematic Review And Meta-Analysis (PRISMA) flow diagram presents the stages of the search process to obtain eligible articles in **Figure 1.** The type of research used is a systematic review using research that refers to PRISMA. Some keywords used in the literature search include MeSH (Medical Subject Headings), a literature search using keywords. The keywords used in the search were "effect prolactin", "effect oxytocin", "exclusive breast milk production", and "interventions related to prolactin and oxytocin levels". The search was conducted on journal provider sites, including Google Scholar, PubMed, and ScienceDirect. The screening process was done manually within the last 10 years.

Inclusion and Exclusion Criteria

This review included experimental studies (Quasi-experimental or randomized controlled trials) involving postpartum mothers actively breastfeeding. Eligible articles examined interventions such as oxytocin massage or breast care, were published within the last ten years, written in English, and available in full text. Exclusion criteria were applied to non-empirical studies, qualitative designs, research on non-breastfeeding mothers or those with medical conditions affecting lactation, and studies assessing interventions outside oxytocin massage or breast care. Duplicate publications and non-English articles were also excluded.

Data Extraction

In the data extraction stage, researchers collected and recorded important information from each article that was eligible for inclusion. This procedure is intended to facilitate the analysis and comparison of study results. Title, study design, type of intervention used (oxytocin massage or breast care), p-value as an indicator of the significance of the results, and population or target of the study were all data extracted. Providing a clear and structured overview does.

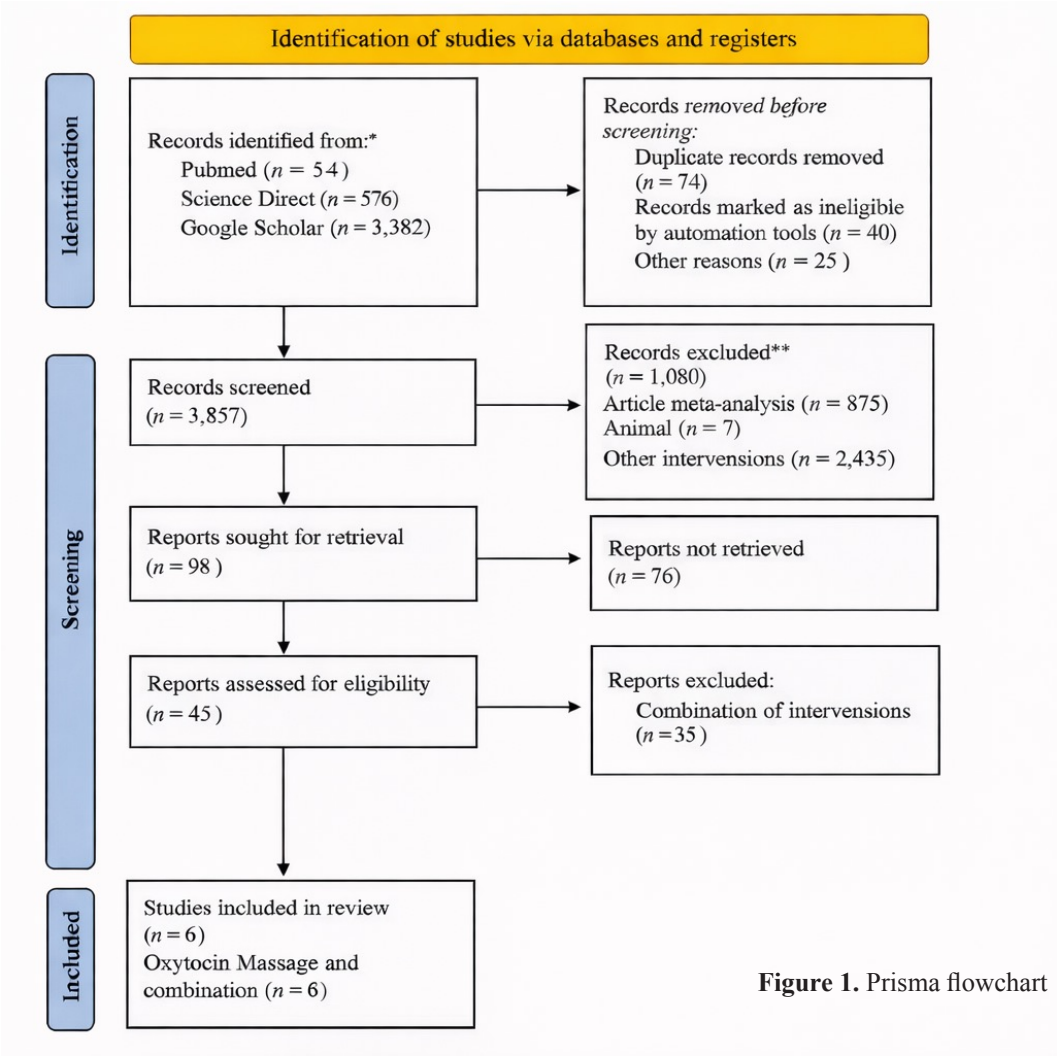

Figure 1. Prisma flowchart

Results

All studies were conducted in different regions. The sample range for all studies was 30-100 postpartum mothers, with an average of 50, using a quasi-experimental pre-post design with the control group showed on **Table 1.**

Exclusive breastfeeding is essential during the first six months of a baby's life to support growth, development, and immunity.[25] However, not all mothers can breastfeed optimally due to physical or psychological problems.[26] Therefore, appropriate interventions such as breast care and oxytocin massage are needed to assist mothers in maintaining adequate milk production.

Oxytocin massage has gained attention because of its direct influence on the oxytocin hormone, a key component in the breastfeeding process.[27] This technique is practical, inexpensive, requires no special tools, and can even be performed by family member such as the husband. Compared to other complementary interventions like aromatherapy, music therapy, or herbal supplements, oxytocin massage is more advantageous since it directly activates the physiological pathways of lactation and can be implemented independently. Several studies [28, 16, 15] support its effectiveness in improving breastfeeding outcomes.

The reviewed studies mostly involved postpartum mothers, an ideal population for this intervention. In this period, mothers commonly face challenges in breastfeeding, and oxytocin massage provides physiological as well as psychological benefits that can help overcome these problems.[29-30] Oxytocin plays a crucial role in breastfeeding physiology and maternal well-being.[31] Oxytocin induces contraction of myoepithelial cells around the alveoli, pushing milk through the ducts to the nipple.[32-33] Oxytocin also contributes to uterine involution by stimulating uterine

Table 1. Charasteristics the included literature

Design	Intervention	Control	P-Value	Target	Ref
One group pretest-posttest	Breast care	Standard care	(p=0.016)	30 postpartum breastfeeding women	[21]
Quasi-experimental	Emotional management, Oxytocin massage and Breast care	Lactation education only	(p=0.048)	93 postpartum breastfeeding women	[16]
Quasi experimental (pre-posttest)	Combination of oxytocin massage+ relaxation music therapy	Standard care	(p=0.000)	80 postpartum mothers	[22]
RCT	Oxytocin massage + structured hypnobreastfeeding	Routine breastfeeding	(p<0.001)	60 postpartum mothers	[15]
Quasi experimental (pre-posttest)	Oxytocin massage + lavender aromatherapy inhalation	Standard care	(p=0.000)	34 postpartum mothers	[23]
Experimental	Relactation + oxytocin massage	Breastfeeding education	(p=0.010)	40 postpartum mothers	[24]

contractions after childbirth, which helps prevent postpartum hemorrhage and restore the uterus to its pre-pregnancy size.[34]

In addition, the release of oxytocin during breastfeeding and skin-to-skin contact strengthens mother–infant bonding, enhancing breastfeeding success and supporting infant development.[35] From a psychological perspective, oxytocin helps reduce stress and anxiety, increases maternal confidence and relaxation, and offers protection against postpartum depression by improving emotional regulation.[35-36]

The six articles reviewed consistently showed that oxytocin massage supports exclusive breastfeeding by promoting calmness and comfort in mothers, facilitating milk ejection, and strengthening maternal infant bonding. Its practicality, cost-effectiveness, and ability to be performed by close family members make it a preferred method to enhance breastfeeding success.

This review has some limitations. First, the number of eligible studies was relatively small, and most of them used quasi-experimental designs with limited sample sizes, which may reduce the generalizability of the findings. Second, variations in intervention protocols, such as massage duration, frequency, and combination with other therapies, made it difficult to compare outcomes across studies directly. Third, most included articles were conducted in specific regions, limiting their applicability to broader populations.

Future studies should employ larger randomized controlled trials with standardized intervention protocols to strengthen the evidence base. Long term follow-up is also needed to evaluate sustained effects on breastfeeding duration and maternal infant health outcomes. In addition, exploring the integration of oxytocin massage with digital health education or partner supported programs could provide innovative strategies to promote exclusive breastfeeding in diverse settings.

Conclusion

The review showed that prolactin and oxytocin are essential in exclusive breast milk production. Oxytocin massage effectively stimulates oxytocin release, supports the let-down reflex, and facilitates breastfeeding. This intervention increases breastfeeding success, making the mother more relaxed, comfortable, and close to the baby. In addition to being inexpensive and can be done by a partner, this massage also provides psychological support. Therefore, oxytocin massage should be included in maternal and child health education and promotion programs as it supports. Therefore, oxytocin massage should be included in maternal and child health education and promotion programs as it supports exclusive breastfeeding, maternal health, and infant growth and development.

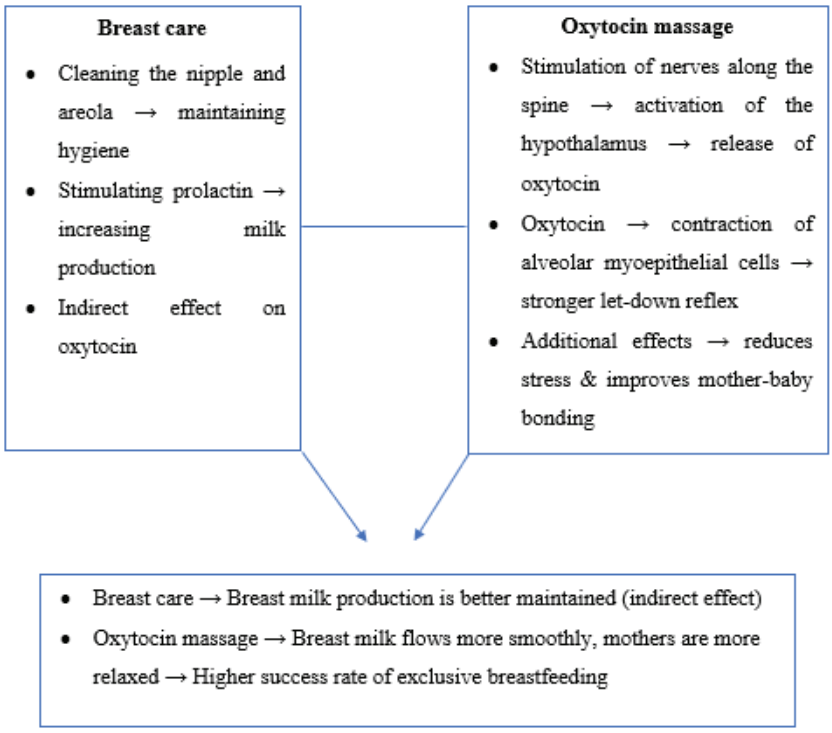

Figure 2. Comparison of the mechanisms and effects of breast care and oxytocin massage on breast milk production and release.

Authors' Contribution

SNI conceived and designed the study, developed the systematic review protocol, conducted literature searching, article screening, data extraction, and data synthesis, and drafted the manuscript. AP contributed to methodological refinement, assisted in article screening and data verification, and critically reviewed and revised the manuscript. All authors approved the final manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this publication.

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