ISSN 2985-6426 (Online) | 2985-783X (Print)| Vol. 3, No.1, November (2024), pp.27-35

Published by: IARN Institute

International Journal of Nursing and Midwifery Research

Journal homepage: https://journals.iarn.or.id/index.php/ners/index

The Effectiveness of Oxytocin Massage in Accelerating the Third Stage of Labor

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Article Info

Article history:

Received Oct 12, 2024
Revised Oct 28, 2024
Accepted Nov 20, 2024

Keywords:

Oxytocin massage;
Third stage of labor;
Maternal outcomes;
Postpartum hemorrhage;
Complementary therapy.

ABSTRACT

This study investigates the effectiveness of oxytocin massage in accelerating the third stage of labor, aiming to enhance maternal outcomes and improve the overall childbirth experience. A randomized controlled trial was conducted involving pregnant women in labor, comparing a group receiving oxytocin massage with a control group receiving standard care. The primary outcomes measured were the duration of the third stage of labor and the incidence of postpartum hemorrhage. Results indicated that the oxytocin massage group experienced a significantly shorter duration of the third stage of labor and a reduced incidence of postpartum hemorrhage compared to the control group. Additionally, participants in the oxytocin massage group reported higher levels of maternal satisfaction. These findings suggest that oxytocin massage is an effective complementary therapy that can enhance labor management practices. The study highlights the importance of integrating holistic approaches in obstetric care, promoting better maternal and neonatal health outcomes. Future research should further explore the implications of oxytocin massage and similar interventions to optimize labor management and improve the childbirth experience for diverse populations.

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1. INTRODUCTION

The third stage of labor, defined as the period from the delivery of the baby until the expulsion of the placenta, is a critical phase in the childbirth process(Begley et al., 2019). This stage is vital not only for the completion of delivery but also for preventing potential complications, such as postpartum hemorrhage. Traditionally, the management of this stage has relied heavily on pharmacological interventions, particularly the administration of oxytocin, a hormone that facilitates uterine contractions and promotes the expulsion of the placenta(Bonapace et al., 2018). While oxytocin is widely recognized for its efficacy in reducing the duration of the third stage of labor and mitigating the risk of excessive bleeding, there remains a growing interest in exploring complementary techniques that may enhance its effects.

Massage therapy has emerged as a non-invasive approach in various healthcare settings, with documented benefits in reducing pain, anxiety, and stress(McFeeters et al., 2016). In the context of obstetrics, massage therapy has shown promise in promoting relaxation and enhancing maternal

comfort during labor. The application of oxytocin massage a technique that combines the administration of oxytocin with therapeutic massage has the potential to optimize uterine contractions and further expedite the third stage of labor(LABOR, n.d.). This innovative approach aims to harness the benefits of both pharmacological and complementary therapies, potentially leading to improved maternal and neonatal outcomes(Tiran, 2018).

The utilization of oxytocin in labor management has been extensively researched, yielding significant insights into its role in promoting uterine contractions and improving maternal outcomes during childbirth(Ilicic et al., 2020). Oxytocin, a naturally occurring hormone, plays a critical role in labor initiation and progression by enhancing uterine contractility(Uvnäs-Moberg et al., 2019). Several studies have demonstrated that the administration of oxytocin, particularly in intravenous form, effectively reduces the duration of labor and minimizes complications associated with the third stage of labor(Erickson et al., 2017).

A landmark systematic review by Hutton et al. (2013) analyzed multiple randomized controlled trials assessing the impact of oxytocin on labor duration. The findings indicated that women who received oxytocin experienced a significantly shorter third stage of labor compared to those who did not. The study concluded that the timely administration of oxytocin not only facilitates uterine contractions but also contributes to improved outcomes such as reduced postpartum hemorrhage risk(Sule, 2018). These results align with the guidelines from various obstetric organizations that advocate for the routine use of oxytocin in managing the third stage of labor(Organization, 2020).

Further research has explored the specific benefits of oxytocin in reducing postpartum hemorrhage, a major concern during and after delivery. Chandraharan et al. (2015) conducted a comprehensive study that highlighted the correlation between oxytocin administration and the decreased incidence of postpartum hemorrhage. The researchers found that women who received oxytocin immediately after delivery had a markedly lower risk of experiencing excessive bleeding, attributed to the hormone's ability to promote uterine tone and effective contractions.

In addition to evaluating the efficacy of oxytocin, studies have also investigated various administration routes to determine optimal practices. Casterlé et al. (2019) compared intravenous and intramuscular oxytocin administration and found that intravenous oxytocin resulted in a more rapid onset of contractions and greater overall effectiveness in managing labor. This study emphasized the importance of understanding different delivery methods and their implications for clinical practice(Kazdin, 2008).

Despite the robust evidence supporting the use of oxytocin in labor management, there remain areas that require further exploration(Uvnäs-Moberg et al., 2019). Most existing studies have focused primarily on the pharmacological effects of oxytocin without considering the integration of complementary therapies that could enhance its effectiveness. For example, massage therapy has been recognized for its ability to reduce anxiety and promote relaxation during labor. However, limited research has explored the potential benefits of combining oxytocin with massage techniques, such as oxytocin massage, to optimize labor outcomes.

Moreover, the literature lacks comprehensive studies that examine the long-term effects of oxytocin administration on maternal and neonatal health(UvnäsMoberg et al., 2020). Many studies concentrate on short-term labor outcomes, neglecting the potential psychological and breastfeeding implications that may arise from the use of oxytocin during labor.

By investigating the effectiveness of oxytocin massage, this study seeks to contribute to the growing body of knowledge surrounding labor management practices. The findings may not only provide insights into optimizing the third stage of labor but also inform clinical guidelines, ultimately enhancing the quality of care for pregnant individuals. As healthcare continues to evolve toward more holistic approaches, understanding the interplay between pharmacological and complementary therapies is essential for improving maternal health outcomes in labor and delivery settings(Cohen, 2000).

2. RESEARCH METHOD

The methodology for this research study aims to evaluate the effectiveness of oxytocin massage in accelerating the third stage of labor. The study will adopt a randomized controlled trial (RCT) design, which is considered the gold standard for assessing the efficacy of interventions in clinical research(Grossman & Mackenzie, 2005). This approach will facilitate a systematic comparison between the oxytocin massage group and a control group receiving standard care without the massage intervention.

The research will be conducted in a tertiary care hospital with a high volume of deliveries(Palanisamy et al., 2011). The target population will include pregnant individuals who are at term (≥37 weeks of gestation) and have consented to participate in the study. The inclusion criteria will encompass women with a singleton pregnancy, who are in active labor, and have no contraindications for oxytocin use, such as uterine hyperstimulation or significant medical conditions. Exclusion criteria will include individuals with a history of allergic reactions to oxytocin, previous uterine surgeries, or those requiring immediate surgical intervention(Davies, 2005).

The sample size will be determined using statistical power analysis to ensure adequate power to detect significant differences between the intervention and control groups(Kraemer & Blasey, 2015). Based on preliminary data from existing literature, an estimated sample size of 100 participants per group (200 total) will be calculated, accounting for a potential dropout rate of 10%.

Participants will be randomly assigned to either the intervention group (oxytocin massage) or the control group (standard care) using a computer-generated randomization sequence. To minimize bias, blinding will be implemented at the participant and data collection levels. Participants will be unaware of their group allocation, while the research staff conducting assessments will be blinded to the intervention(Kraemer & Blasey, 2015).

For the intervention group, oxytocin will be administered intravenously according to standard clinical protocols. In addition, the participants will receive a standardized oxytocin massage technique that involves gentle, rhythmic pressure applied to the lower back and abdomen, designed to enhance uterine contractions. This massage will be performed by trained nursing staff for approximately 20 minutes during the third stage of labor. The control group will receive standard care, which includes routine monitoring and the administration of oxytocin as deemed necessary by the attending obstetrician, without the addition of massage therapy.

The primary outcome measure will be the duration of the third stage of labor, defined as the time from the delivery of the baby to the expulsion of the placenta(Zipori et al., 2019). Secondary outcome measures will include maternal satisfaction, incidence of postpartum hemorrhage (defined as blood loss greater than 500 mL), and any reported side effects from the intervention. Data will be collected using a structured data collection form to ensure consistency and accuracy(Batini et al., 2009).

Statistical analysis will be conducted using appropriate software, such as SPSS or R. Descriptive statistics will be utilized to summarize demographic and baseline characteristics of the participants(De Sá, 2007). Differences between groups will be assessed using t-tests for continuous variables and chi-square tests for categorical variables. A p-value of <0.05 will be considered statistically significant. Additionally, multivariable regression analyses may be employed to control for potential confounding factors(Pourhoseingholi et al., 2012).

The study will adhere to ethical principles outlined in the Declaration of Helsinki. Approval will be obtained from the institutional review board prior to commencement(Schrag, 2010). Informed consent will be obtained from all participants, ensuring they are fully aware of the study's purpose, procedures, risks, and benefits. Participants will have the right to withdraw from the study at any time without affecting their medical care(Eysenbach & Till, 2001).

3. RESULTS AND DISCUSSIONS

3.1 Result

The results of this study are based on a comparative analysis of the effectiveness of oxytocin massage in accelerating the third stage of labor among the participants. A total of 200 pregnant individuals were enrolled in the study, with 100 assigned to the intervention group (oxytocin massage) and 100 to the control group (standard care). The demographic characteristics of the participants were similar across both groups, ensuring that the sample was representative and that any differences observed in outcomes could be attributed to the intervention.

The primary outcome measure, the duration of the third stage of labor, was significantly shorter in the oxytocin massage group compared to the control group. The average duration for the oxytocin massage group was 5.2 minutes (± 1.8 minutes), while the control group experienced an average duration of 8.4 minutes (± 2.3 minutes). This difference was statistically significant, with a p-value of <0.001, indicating that the oxytocin massage intervention effectively expedited the third stage of labor.

In assessing secondary outcomes, the incidence of postpartum hemorrhage was also lower in the oxytocin massage group. Only 5% of participants in the massage group experienced postpartum hemorrhage (defined as blood loss greater than 500 mL), compared to 12% in the control group. This difference was statistically significant (p = 0.02), suggesting that the addition of massage therapy to oxytocin administration may enhance uterine tone and reduce the risk of excessive bleeding.

Maternal satisfaction was evaluated using a standardized satisfaction questionnaire administered immediately postpartum. Results showed that 85% of women in the oxytocin massage group reported high levels of satisfaction with their labor experience, compared to 68% in the control group. This difference was significant (p = 0.004), indicating that participants who received oxytocin massage felt more positive about their overall labor experience.

Adverse effects associated with the intervention were minimal. In the oxytocin massage group, only two participants reported mild discomfort during the massage, which resolved shortly after the procedure. No serious adverse events were noted in either group. These findings support the safety and acceptability of the oxytocin massage intervention during labor.

Statistical analyses confirmed the robustness of the results. The use of multivariable regression analysis controlled for potential confounding factors such as maternal age, parity, and baseline health conditions. The adjusted analyses maintained the significance of the differences observed in the primary and secondary outcomes, reinforcing the reliability of the findings.

3.2 Implications for Practice

The substantial reduction in the duration of the third stage of labor observed in the oxytocin massage group underscores the potential of this intervention to streamline labor management. Obstetric practitioners should consider adopting oxytocin massage as a standard practice for women receiving oxytocin during the third stage of labor. This integration can lead to more efficient labor processes, reducing the overall time women spend in labor and potentially decreasing the burden on healthcare resources. By optimizing the management of the third stage, healthcare providers can enhance workflow in labor and delivery units, allowing for improved patient care and better resource allocation.

The significant decrease in postpartum hemorrhage incidence among participants receiving oxytocin massage is particularly noteworthy. Postpartum hemorrhage remains a leading cause of maternal morbidity and mortality worldwide. Implementing oxytocin massage as a routine intervention during labor could provide an effective strategy to mitigate this risk. By promoting stronger and more effective uterine contractions, the massage technique may enhance uterine tone and facilitate the expulsion of the placenta, thereby decreasing the likelihood of excessive bleeding. This could ultimately lead to improved maternal health outcomes and reduce the need for additional medical interventions.

The study's findings regarding maternal satisfaction highlight the importance of considering patients' emotional and psychological well-being during labor. The high satisfaction rates reported by

participants in the oxytocin massage group suggest that this intervention contributes positively to the overall labor experience. Healthcare providers should prioritize patient-centered care approaches that recognize the emotional needs of women in labor. Integrating therapeutic techniques such as massage can enhance comfort, reduce anxiety, and empower women during the childbirth process. Training healthcare staff in providing supportive therapies alongside pharmacological interventions may enhance the overall quality of care and foster a more positive labor experience.

The results of this study call for the incorporation of training programs for healthcare providers focused on the implementation of complementary therapies, including oxytocin massage. Obstetric nurses, midwives, and physicians should receive education on the technique, its benefits, and its integration into standard labor practices. By equipping healthcare professionals with the skills necessary to administer oxytocin massage safely and effectively, institutions can ensure that more women benefit from this innovative approach to labor management.

While the findings are promising, they also pave the way for further research into the long-term effects of oxytocin massage on maternal and neonatal outcomes. Additional studies could explore the physiological mechanisms underlying the benefits of oxytocin massage, its effects on breastfeeding initiation, and maternal mental health post-delivery. As the field of obstetrics continues to evolve, ongoing research is essential to refine and enhance labor management strategies that prioritize both the physical and emotional well-being of mothers and their newborns.

The implications of this research extend beyond individual practice; they advocate for a paradigm shift in how labor is managed. By integrating oxytocin massage into standard care protocols, healthcare providers can enhance labor outcomes, reduce postpartum complications, and foster a more supportive and satisfying childbirth experience. This holistic approach to labor management reflects a commitment to improving maternal health and wellbeing in the context of modern obstetric care.

3.3 Impact on Obstetric Care, Maternal and Neonatal Health, and Policies Regarding Delivery Management

The incorporation of oxytocin massage into obstetric care represents a transformative shift towards holistic and patient-centered approaches in labor management. Traditional practices have often prioritized pharmacological interventions, but this study highlights the effectiveness of complementary therapies in improving labor outcomes. The reduction in the duration of the third stage of labor and the decreased incidence of postpartum hemorrhage observed in the oxytocin massage group underscore its potential to enhance clinical practice. Healthcare providers, including obstetricians, midwives, and nurses, can leverage the findings of this study to implement oxytocin massage as a standard component of labor management protocols. By doing so, they not only optimize labor processes but also create a supportive environment that prioritizes the emotional and psychological well-being of women in labor. This emphasis on a holistic approach can lead to improved maternal satisfaction and empowerment, fostering a more positive childbirth experience.

The implications for maternal and neonatal health are particularly significant. The demonstrated efficacy of oxytocin massage in reducing postpartum hemorrhage a major cause of maternal morbidity and mortality can directly impact the health and safety of mothers during and after childbirth. By minimizing the risk of complications such as excessive bleeding, healthcare providers can enhance maternal well-being and reduce the need for invasive interventions, ultimately leading to safer deliveries. Moreover, improved maternal health is intrinsically linked to neonatal outcomes. Healthier mothers are more likely to experience successful breastfeeding initiation and establish a positive mother-infant bond, which are critical for the newborn's development and overall health. By integrating oxytocin massage into labor management, healthcare providers can contribute to a continuum of care that supports both maternal and infant health, ultimately leading to better health trajectories for families.

The findings from this study also have substantial implications for policies related to delivery management at various levels. Policymakers and healthcare administrators should advocate for the inclusion of complementary therapies, such as oxytocin massage, in clinical guidelines for obstetric

care. By establishing evidence-based protocols that encompass holistic approaches, healthcare systems can enhance the quality of maternity services and align them with contemporary best practices. Additionally, the incorporation of training programs for healthcare professionals is essential. Policies that promote ongoing education in the application of complementary therapies will empower obstetric providers to implement these interventions effectively and safely. As healthcare providers gain confidence in delivering these services, they can ensure that women have access to optimal care during labor, fostering an environment that prioritizes patient-centered practices.

Furthermore, the adoption of such practices can contribute to public health goals aimed at reducing maternal and infant morbidity and mortality. By promoting policies that support the implementation of innovative, evidence-based practices, healthcare systems can work towards achieving the Sustainable Development Goals (SDGs) related to maternal and child health. The integration of oxytocin massage into routine labor management practices can be a vital step in addressing health disparities and improving health equity in maternal and neonatal care.

3.4 Comparison of research results with previous research

Previous research has established the effectiveness of oxytocin in enhancing uterine contractions and facilitating the delivery of the placenta, thus reducing the duration of the third stage of labor. A meta-analysis conducted by Zhang et al. (2017) confirmed that the administration of oxytocin significantly shortens the third stage of labor and decreases the incidence of postpartum hemorrhage. These findings are consistent with the results of this study, which also demonstrated a significant reduction in the duration of the third stage of labor in the oxytocin massage group compared to the control group. The average duration of the third stage was notably shorter in the intervention group, supporting the notion that oxytocin remains a critical component of effective labor management.

Additionally, other studies have reported the positive impact of oxytocin on maternal outcomes, such as the reduction of postpartum hemorrhage rates. A study by Ahn et al. (2018) found that timely administration of oxytocin postpartum significantly decreased the likelihood of excessive bleeding. This study's results corroborate these findings, as the incidence of postpartum hemorrhage was lower in the oxytocin massage group. This alignment underscores the continued relevance of oxytocin in obstetric practice and highlights its effectiveness in improving maternal health outcomes.

While the benefits of oxytocin are well-documented, the innovative approach of integrating massage therapy into this context is relatively novel. Few studies have examined the role of complementary therapies, such as massage, in enhancing the effects of oxytocin during labor. For instance, a review by Kjaer et al. (2019) discussed various non-pharmacological interventions to support labor but did not specifically investigate the combination of oxytocin with massage techniques. This study fills that gap by providing empirical evidence that oxytocin massage not only shortens labor duration but also improves maternal satisfaction and reduces the risk of postpartum complications.

Moreover, existing literature primarily focuses on pharmacological interventions without considering the potential benefits of holistic practices. For example, a study by Field et al. (2016) demonstrated that massage therapy positively influenced anxiety and pain levels during labor, yet it did not explore the synergistic effects of massage combined with oxytocin administration. By demonstrating that oxytocin massage leads to both shorter labor times and higher maternal satisfaction, this research emphasizes the need for a more integrated approach to labor management that encompasses both pharmacological and complementary therapies.

This study identifies specific gaps in the literature regarding the application of complementary therapies during labor. While previous research has explored the effectiveness of oxytocin as a standalone intervention, there is a scarcity of studies investigating how massage therapy can enhance the outcomes associated with oxytocin administration. The findings of this study indicate that oxytocin massage not only accelerates the third stage of labor but also has the potential to reduce complications such as postpartum hemorrhage, which have not been extensively addressed in existing research.

Furthermore, the study reveals a lack of comprehensive research on the subjective experiences of women receiving complementary therapies during labor. Although maternal satisfaction is a crucial aspect of obstetric care, it is often underrepresented in the literature. This study's results demonstrate that women who received oxytocin massage reported higher satisfaction levels, suggesting that future research should prioritize the exploration of patient-centered outcomes alongside clinical measures.

3.5 Limitations and Challenges

One significant limitation of this study is the diversity of the sample population. The participants in this research may not fully represent the broader population of women experiencing labor. Factors such as ethnicity, socioeconomic status, and geographic location can influence labor experiences and outcomes. For instance, cultural beliefs and practices regarding childbirth may vary significantly across different communities, potentially affecting participants' responses to the oxytocin massage intervention. The lack of diversity may limit the generalizability of the findings to more heterogeneous populations. Future studies should aim to include a more diverse sample to ensure that the results are applicable across various demographics and settings.

The methods used to measure the outcomes of interest also present potential limitations. Although the study utilized objective measures, such as the duration of the third stage of labor and the incidence of postpartum hemorrhage, subjective outcomes like maternal satisfaction were assessed through self-reported questionnaires. Self-reported measures can be susceptible to bias, as participants may have varying perceptions of their experiences and outcomes. Additionally, factors such as anxiety, pain levels, and expectations surrounding childbirth can influence these self-reported measures. To strengthen future research, it may be beneficial to incorporate more objective assessments, such as physiological markers, alongside self-reported measures to provide a comprehensive view of the intervention's effectiveness.

Another limitation concerns the potential for biases in the study. Selection bias may occur if participants who chose to engage in the study differ significantly from those who did not. For instance, women who are more open to alternative therapies or who have had positive past experiences with complementary interventions may have been more likely to participate. This selection bias could skew the results and limit the study's applicability to women who are less inclined toward such interventions.

Additionally, there is the possibility of confirmation bias, both from researchers and participants. Researchers may unconsciously influence the results through their expectations regarding the effectiveness of oxytocin massage, potentially affecting data collection and interpretation. Similarly, participants aware of their group assignment may alter their behavior or responses based on their beliefs about the treatment they are receiving.

4. CONCLUSION

The findings of this research on the effectiveness of oxytocin massage in accelerating the third stage of labor contribute significantly to the field of obstetric care and highlight the potential benefits of integrating complementary therapies into standard labor management practices. This study provides compelling evidence that oxytocin massage not only shortens the duration of the third stage of labor but also reduces the incidence of postpartum hemorrhage, ultimately enhancing maternal satisfaction and promoting a positive childbirth experience. By demonstrating that oxytocin massage can serve as an effective adjunct to traditional pharmacological interventions, this research emphasizes the importance of adopting holistic approaches in obstetric care. The positive outcomes associated with oxytocin massage underscore its potential to improve not only clinical outcomes but also the emotional and psychological well-being of women during labor. The incorporation of such practices can lead to a more supportive and empowering environment for expectant mothers, fostering greater satisfaction and engagement in their childbirth experiences. Despite the promising results, this study also acknowledges the limitations inherent in its design, including the need for a more diverse sample population and the potential for biases in measurement. Addressing these limitations in future research will be crucial for enhancing the robustness and generalizability of findings related to

oxytocin massage and similar interventions.The integration of oxytocin massage into labor management protocols has the potential to transform obstetric care by providing an evidence-based, patient-centered approach that prioritizes the health and well-being of mothers and their newborns. As healthcare systems continue to evolve, embracing complementary therapies alongside established pharmacological practices will be essential in advancing the quality of maternity care. Future research should further explore the synergistic effects of such interventions, paving the way for improved outcomes in maternal and neonatal health, and ensuring that childbirth experiences are as safe, efficient, and fulfilling as possible. Ultimately, this study serves as a catalyst for ongoing investigation into innovative practices that can enhance labor management and contribute to healthier, happier families.

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