



Napande: Jurnal Bidan

e-ISSN 2829-8365

Volume 5 Issue 2, 2026, page 108-115

DOI: [10.33860/njb.v5i2.4398](https://doi.org/10.33860/njb.v5i2.4398)

Website: <https://ojs.polkespalupress.id/index.php/njb>

Publisher: Poltekkes Kemenkes Palu

Original Article

Effectiveness of Oxytocin Massage on Anxiety Scales Among Primiparous Postpartum Mothers

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ARTICLE INFO

Article History:

Received: 2026-07-20

Accepted: 2026-08-06

Published: 2026-08-18

Keywords:

Anxiety; HARS;
Oxytocin Massage;
Postpartum Mothers;
Primiparous

ABSTRACT

Background: Anxiety is a common psychological concern during the postpartum period, particularly among primiparous mothers who are adapting to maternal roles for the first time. Non-pharmacological interventions that are simple, accessible, and applicable in routine postpartum care are therefore needed. Oxytocin massage may promote relaxation and potentially reduce maternal anxiety. This study aimed to determine the effectiveness of oxytocin massage in reducing anxiety among primiparous postpartum mothers.

Methods: This study used a quasi-experimental pre-test and post-test control group design involving 30 primiparous postpartum mothers. Participants were allocated into an intervention group receiving oxytocin massage ($n = 15$) and a control group receiving standard care ($n = 15$). Anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HARS). Within-group changes were analyzed using paired-samples t-tests, while differences in anxiety score reduction between groups were assessed using an independent-samples t-test.

Results: The mean HARS score in the intervention group decreased from 24.73 before the intervention to 14.27 after the intervention, representing a mean reduction of 10.20 points. In the control group, the mean HARS score decreased slightly from 23.93 to 23.27, with a mean reduction of 0.67 points. The reduction in anxiety scores was significantly greater in the intervention group than in the control group ($t = 19.207$; $p < 0.001$).

Conclusion: Oxytocin massage was associated with a significantly greater reduction in anxiety among primiparous postpartum mothers compared with standard care. These findings indicate that oxytocin massage may be considered a simple non-pharmacological supportive intervention for anxiety management during early postpartum care.



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INTRODUCTION

The postpartum period (puerperium) represents a critical transition phase during which a woman undergoes profound physiological and psychological adaptations. For primiparous mothers—women transitioning into motherhood for the first time—this complex adaptation process frequently triggers substantial emotional distress, which commonly manifests as anxiety (Partiwi, 2025; Xie et al., 2026). Factors such as pervasive uncertainty in newborn care, physical exhaustion, severe sleep deprivation, and a fundamental lack of practical experience collectively induce a significant amount of role adaptation stress during this vulnerable period (Mohammed, 2026; Ujung & Hutabarat, 2024; Yuniartis et al., 2025).

If left unaddressed, acute postpartum anxiety can rapidly escalate into severe postpartum depression (Fricker et al., 2024). This clinical progression poses a critical risk of disrupting the vital bonding attachment between mother and infant, while simultaneously diminishing breast milk production. Physiologically, prolonged psychological stress and anxiety hyperactivate the hypothalamic-pituitary-adrenal (HPA) axis, inducing an overproduction of cortisol (Juwita et al., 2025; Octavia & Purwati, 2025; Siswati & Pranoto, 2024). This elevated cortisol level subsequently suppresses the secretion of essential lactogenic and bonding hormones, specifically oxytocin and prolactin (Febriani et al., 2025).

Oxytocin massage therapy has emerged as a safe, highly accessible, and cost-effective non pharmacological intervention to mitigate this physiological tension and psychological distress (Susanti et al., 2025). The therapeutic technique involves systematic massage along the vertebral column down to the fifth or sixth intercostal space, thereby stimulating the parasympathetic nervous system (Triansyah et al., 2021) to accelerate endogenous oxytocin synthesis (Kawajiri et al., 2025). Functionally, oxytocin acts as a natural anxiolytic and sedative within the body, capable of reducing blood pressure, stabilizing heart rate, and inducing a state of profound psychological relaxation (Linde et al., 2025). Consequently, this study aims to evaluate the empirical effectiveness of oxytocin massage therapy in significantly reducing anxiety scales among primiparous postpartum mothers within the working area of Universitas Indonesia Maju in 2026 (V. S. Putri et al., 2025).

METHODS

This study utilized a quasi-experimental design involving a pre-test and post-test control group setup to assess the impact of oxytocin massage therapy on anxiety levels in primiparous postpartum mothers (Adiputra et al., 2021). This design was selected as it allows for the practical evaluation of clinical interventions in community-based healthcare settings where strict randomization may present logistical challenges. The study population comprised primiparous mothers in the early puerperium period residing within the community work area of Universitas Indonesia Maju (Rahmi & Nuzul, 2025). Inclusion criteria required mothers to be in their first postpartum week, capable of providing informed consent, and experiencing mild-to-severe anxiety symptoms. Exclusion criteria included severe medical or psychiatric comorbidities and spinal or integumentary contraindications to back massage.

The study was conducted across the designated public health service area of Universitas Indonesia Maju. Ethical approval was granted by the Institutional Ethics Committee, and strict adherence to ethical standards was maintained throughout. All participants provided written informed consent prior to enrollment. Participant confidentiality and data rights were safeguarded using anonymized identification codes. Data were collected by trained healthcare researchers using the standardized Hamilton Anxiety Rating Scale (HARS) (Hanach et al., 2024; Sulasmi & Kurniawati, 2025).

Primary variables included the baseline and post-intervention anxiety levels, categorized using validated HARS metric ranges. Analytical procedures were performed using SPSS version 26.0 (Herliawati, 2026). Paired-samples t-tests were applied to assess intra-group baseline-to-endpoint

changes, while independent-samples t-tests evaluated inter-group gain score variances. Data integrity was preserved through standardized data collector training and double entry verification techniques (Nisaakmala & Umar, 2024).

RESULTS

The study involved a quasi-experimental design conducted across the community work area of Universitas Indonesia Maju. A total of 30 participants were enrolled, with inclusion criteria specifying primiparous postpartum mothers within their early puerperium period. The demographics of the study population included a high concentration of young adult individuals who primarily identify as homemakers. Participants were non-randomly assigned to either the experimental group receiving structural manual back therapies (n = 15) or the control group receiving standard localized midwifery education (n = 15).

Descriptive Statistics

Table 1 summarizes the baseline characteristics of the study participants. The distribution showed that the majority of respondents were in their early maturity phase, with a high proportion dedicated full-time to household management. Baseline characteristics were comparable between the experimental and control groups, ensuring a balanced distribution of key variables.

Table 1. Distribution of Demographic and Basal Characteristics (n = 30)

Variables	N	%
Maternal Age Range		
Late Adolescence (17–25 Years)	12	40.0
Early Adulthood (26–35 Years)	18	60.0
Occupational Status		
Housewife / Homemaker	21	70.0
Employed Outside Home	9	30.0
Total	30	100.0

Table 1 illustrates the distribution of key demographic and delivery-related characteristics among the study population. It shows that the majority of mothers, 60.0%, were aged 26–35 years old, with 40.0% being in the younger 17–25 years bracket. In terms of occupational distribution, the sample was dominated by homemakers at 70.0%, while 30.0% of the participants maintained external active employment.

Primary Outcome Measures

The primary outcome of the study was the tracking of shifting clinical anxiety parameters. Table 2 presents the paired-samples t-test results, indicating an intensive reduction in score metrics

following regular therapeutic implementation. The experimental group demonstrated a statistically significant decrease compared to the control group ($p < 0.05$).

Table 2. Paired Samples T-Test Interpretation

Group	Measurement	Mean	t	df	p-value (Sig.)	Interpretation
Intervention (Oxytocin Massage)	Pre-test	24.73	22.700	14	0.000	Highly Significant (Substantial Drop)
	Post-test	14.27				
Control (Standard Care)	Pre-test	23.93	3.162	14	0.007	Statistically Significant (Minimal Clinical Drop)
	Post-test	23.27				

Data Interpretation: For the Intervention Group (Oxytocin Massage), the mean HARS score dramatically decreased from 24.73 (Severe Anxiety) to 14.27 (Mild Anxiety). The t-statistic is 22.700 with a p-value of 0.000 ($p < 0.05$), confirming that oxytocin massage effectively reduces postpartum anxiety levels internally. Conversely, the Control Group (Standard Care) showed a slight decrease in mean score from 23.93 to 23.27 (Moderate Anxiety). Although yielding a p-value of 0.007 due to low variance, the absolute change is clinically negligible (a drop of only 0.67 points).

Secondary Outcome Measures

Secondary outcomes, including cross-cohort structural differences, were also assessed using independent-samples t-tests on HARS gain scores as detailed in Table 3. Analysis revealed that non-recipient subjects maintained persistent elevations of emotional tension. Notably, no adverse physical reactions or localized discomfort were reported across the intervention timeline.

Table 3. Independent Samples T-Test Interpretation

Variable	Group	Mean Gain	t	df	p-value (Sig.)	Conclusion
HARS Reduction Score	Intervention (Oxytocin Massage)	10.200	19.207	28	0.000	Oxytocin Massage is Significantly and Superiorly Effective
HARS Reduction Score	Control (Standard Care)	0.667				

Data Interpretation: Table 3 compares the magnitude of anxiety reduction (Gain Score) between the two treatment groups. The Intervention group achieved a substantial mean score reduction of 10.200 points, whereas the Control group achieved a reduction of only 0.667 points ($t = 19.207$, $p = 0.000$). Since $p < 0.05$, we reject H_0 and accept H_a , proving that Oxytocin Massage therapy

is substantially more effective in reducing postpartum anxiety levels compared to standard clinical care alone.

DISCUSSION

Interpretation Of Key Findings

In this study, our findings revealed a striking divergence between the maternal cohorts following the observation window. The observed decreases in clinical anxiety scores within the experimental group suggest that mechanoreceptor activation along the thoracic spine suppresses neuroendocrine stress signals (Jones et al., 2025). These results are consistent with previous research by associated regional frameworks and support the notion that targeted human contact acts as an efficient down-regulator of sympathetic overdrive (Yuningsih et al., 2025). Notably, our study contributes to the existing evidence base by confirming the utility of this manual intervention within a localized public health working zone (Mustikawati, 2022; Spinoni et al., 2023).

Comparison With Previous Studies

Comparing our results with those of previous studies is essential for contextualization. The findings of established lactation and maternal stress models are in line with our results, confirming the robustness of the observed recovery trends (Triansyah et al., 2021). However, disparities with other strictly observational studies warrant consideration. Possible explanations for these discrepancies include variations in family support networks, individual socioeconomic pressures, and localized lifestyle demands, emphasizing the need for further research to reconcile conflicting findings in the literature (Eriksson et al., 2026).

Implications For Public Health

The implications of our study extend to the realm of public health by highlighting an easily distributable, equipment-free therapeutic option for maternal mental wellness inside peripheral health centers (Fricker et al., 2024). For instance, the observed improvements in maternal emotional scales suggest potential interventions to enhance routine early postpartum care protocols. Our results align with the broader goals outlined in community maternal health drives, emphasizing the international relevance of our findings (N. R. Putri et al., 2025).

Limitations and Cautions

Despite the meaningful contributions, our study has several limitations that warrant acknowledgment. The small sample scale ($n = 30$) and localized geographical focus present limitations that narrow the baseline demographic diversity. These limitations may have influenced the generalizability of our findings and should be considered in the interpretation of results. Future research should address these limitations by incorporating multi-center designs to further refine our understanding of maternal psychological transitions.

Recommendations for Future Research

Building on the insights gained from this study, future research should focus on longitudinal assessments tracking maternal-infant attachment quality over extended timelines. Addressing the limitations identified in this study, such as sample size constraints and lack of biochemical

confirmation (such as salivary cortisol monitoring), will contribute to a more comprehensive understanding of the intervention. Additionally, exploring partner-delivered massage techniques may unveil new dimensions and nuances that were beyond the scope of our study.

CONCLUSION

Oxytocin massage was associated with a greater reduction in anxiety among primiparous postpartum mothers compared with standard care. The intervention group showed a substantial decrease in mean HARS scores from 24.73 before the intervention to 14.27 after the intervention, with a mean reduction of 10.20 points, whereas the control group showed only a minimal reduction of 0.67 points. The significant difference in anxiety score reduction between the two groups indicates that oxytocin massage may serve as a simple, accessible, and non-pharmacological supportive intervention for managing anxiety during the early postpartum period. These findings support its potential integration as an adjunct to routine postpartum midwifery care. However, given the small sample size, non-randomized design, and limited study setting, the findings should be interpreted cautiously. Further studies using larger, randomized, multicenter samples and longer follow-up periods are recommended to confirm the effectiveness and sustainability of oxytocin massage in reducing postpartum anxiety.

Author's Contribution Statement: Mardelia Astriani: Conceptualization, Methodology, Formal analysis, Olivia Tri Monica: Data curation, Writing – Original draft preparation, Bella Rachmasari: Writing – Review and editing.

Conflict of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Institutional funding provided under code UIM-2026 had no role in the study design, data collection, analysis, decision to publish, or manuscript preparation.

Funding Source: This research was supported by independent institutional funding from Universitas Indonesia Maju under internal grant allocation code UIM-2026. The funding institution had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Acknowledgments: The authors gratefully acknowledge Universitas Indonesia Maju for the institutional support provided throughout the implementation of this study. We also extend our sincere appreciation to the healthcare staff and field personnel who assisted with participant coordination and data collection. Special thanks are extended to all primiparous postpartum mothers who voluntarily participated in this study and generously contributed their time and cooperation. Their participation was essential to the successful completion of this research.

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