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ENDORPHIN MASSAGE AS A COMPLEMENTARY INTERVENTION TO REDUCE ANXIETY AMONG EARLY POSTPARTUM MOTHERS

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ABSTRACT

Postpartum anxiety is a common psychological problem experienced by mothers during the early postpartum period and may adversely affect maternal well-being, mother–infant bonding, and breastfeeding outcomes. This study aimed to determine the effectiveness of endorphin massage as a complementary intervention in reducing anxiety among early postpartum mothers. A quantitative study using a quasi-experimental pretest–posttest control group design was conducted among 70 postpartum mothers (1–7 days postpartum) in the working area of Kelapa Public Health Center, West Bangka Regency, Indonesia. Participants were selected using accidental sampling and allocated into an intervention group (n = 35) and a control group (n = 35). Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS). The intervention group received endorphin massage once daily for three consecutive days, while the control group received routine postpartum care. The mean anxiety score in the intervention group decreased from 32.0 before the intervention to 20.3 after the intervention, whereas the control group showed only a slight decrease from 30.4 to 30.0. Wilcoxon test results indicated a significant reduction in anxiety levels in the intervention group ($p < 0.001$). Furthermore, the Mann–Whitney test demonstrated a significant difference in posttest anxiety scores between the intervention and control groups ($p < 0.001$). Endorphin massage was found to be effective in reducing anxiety among early postpartum mothers. This intervention may be recommended as a safe, non-pharmacological complementary therapy to enhance psychological well-being during the postpartum period.

Keywords: anxiety; complementary therapy; endorphin massage; early postpartum mothers; postpartum care

INTRODUCTION

The postpartum period is a critical transition phase that begins immediately after childbirth and continues for approximately six weeks. During this period, women experience substantial physiological, hormonal, psychological, and social changes as they adapt to their new maternal role (Azizah & Rosyidah, 2021). In addition to physical recovery, mothers are required to adjust to new responsibilities in caring for and meeting the needs of their newborns. These challenges make the postpartum period a vulnerable stage for the development of psychological disorders, particularly postpartum anxiety. Postpartum anxiety is characterized by excessive worry, fear, tension, and uncertainty related to maternal health, infant well-being, and parenting responsibilities (Stuart, 2022).

Maternal mental health disorders during the postpartum period remain a significant public health concern worldwide. The World Health Organization (WHO) reported that approximately 13–20% of women experience mental health problems during the postpartum period, with anxiety and depression being the most common conditions (WHO, 2022). Previous studies have reported varying prevalence rates of postpartum anxiety, ranging from 18.2% in Portugal and 29% in Bangladesh to 54% in Hong Kong and 70% in Pakistan (Agustin & Septiyana, 2018). These findings indicate that postpartum anxiety is a global health issue that requires effective prevention and

management strategies. Recent evidence suggests that postpartum anxiety is associated with adverse maternal and infant outcomes, including impaired mother–infant bonding, reduced breastfeeding confidence, and increased risk of postpartum depression (Fawcett et al., 2023).

In Indonesia, maternal mental health problems have shown an increasing trend. National health survey data indicated that the prevalence of emotional mental disorders increased from 6% in 2013 to 9.8% in 2018 (Riskesdas, 2018). Furthermore, approximately 20–30% of postpartum mothers experience anxiety and other psychological disturbances following childbirth (Kementerian Kesehatan Republik Indonesia, 2021). Postpartum anxiety may result from hormonal fluctuations, childbirth experiences, lack of family support, physical fatigue, sleep disturbances, and challenges associated with infant care and breastfeeding (Pratiwi et al., 2021; Sulastri, 2023). If not adequately addressed, postpartum anxiety may progress to postpartum blues or postpartum depression, adversely affecting maternal quality of life, mother–infant bonding, breastfeeding success, and child development (Rezaei et al., 2022).

Various interventions have been developed to manage postpartum anxiety, including pharmacological and non-pharmacological approaches. However, pharmacological therapies require careful consideration, particularly among breastfeeding mothers, due to potential adverse effects on both mother and infant. Consequently, complementary and non-pharmacological interventions have become increasingly popular as safer alternatives. Recent systematic reviews have highlighted the growing role of complementary therapies, including massage-based interventions, in supporting maternal mental health and reducing anxiety symptoms during the postpartum period (Dennis et al., 2022).

One such intervention is endorphin massage, a gentle touch therapy designed to stimulate the release of endorphins, natural neurochemicals that promote relaxation, comfort, and emotional well-being (Babb et al., 2021). Physiologically, endorphin massage may reduce stress hormone levels, relieve muscle tension, improve sleep quality, and enhance psychological relaxation (Khairunnisa, 2020). In addition, the supportive physical touch involved in the massage process may provide emotional comfort and strengthen social support, particularly when performed by a spouse or family member (Budari et al., 2023).

Several studies have demonstrated the beneficial effects of endorphin massage in reducing anxiety among postpartum mothers. Apriani and Faiqah (2017) reported a significant reduction in maternal anxiety following endorphin massage therapy. Similar findings were reported by Anggraini et al. (2018) and Budari et al. (2023), who found that endorphin massage effectively enhanced relaxation and reduced anxiety levels among postpartum women. Despite these promising findings, most previous studies were conducted in different settings and among populations with varying characteristics, limiting the generalizability of the results. Furthermore, evidence regarding the effectiveness of endorphin massage among mothers during the early postpartum period (1–7 days after childbirth) remains limited, particularly in community-based maternal healthcare settings.

A preliminary study conducted using the Hamilton Anxiety Rating Scale (HARS) among ten postpartum mothers in the working area of Kelapa Public Health Center revealed that six mothers experienced moderate anxiety, while four mothers reported no anxiety symptoms. Interviews indicated that anxiety was primarily associated with insufficient rest, concerns regarding infant health, breastfeeding difficulties, and limited social support. To date, no previous study has specifically examined the effectiveness of endorphin massage in reducing anxiety among early postpartum mothers in the working area of Kelapa Public Health Center, West Bangka Regency, Indonesia.

The novelty of this study lies in the application of endorphin massage as a complementary intervention for reducing anxiety among mothers during the first week postpartum in a community-based healthcare setting. Therefore, this study aimed to analyze the effect of endorphin massage on anxiety levels among early postpartum mothers in the working area of Kelapa Public Health Center, West Bangka Regency, Indonesia.

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METHOD

This study employed a quantitative approach using a quasi-experimental pretest–posttest control group design to examine the effect of endorphin massage on anxiety levels among early postpartum mothers. The study was conducted from September to October 2025 in the working area of Kelapa Public Health Center, West Bangka Regency, Indonesia. The study population consisted of postpartum mothers within 1–7 days after delivery. A total of 70 respondents were recruited using accidental sampling and assigned to either an intervention group (n = 35) or a control group (n = 35). Accidental sampling was applied because eligible postpartum mothers who met the inclusion criteria were recruited as they attended postpartum healthcare services during the study period. This approach was considered practical and feasible within the community-based healthcare setting where the study was conducted. Inclusion criteria included mothers who were 1–7 days postpartum, willing to participate, able to communicate effectively, and free from postpartum complications.

Data were collected using the Hamilton Anxiety Rating Scale (HARS) to assess anxiety levels before and after the intervention. The Hamilton Anxiety Rating Scale (HARS) is a standardized instrument consisting of 14 items that assess both psychological and somatic symptoms of anxiety. This instrument has been widely used in clinical and research settings and has demonstrated good validity and reliability. Previous studies reported item validity coefficients ranging from 0.529 to 0.727 and a Cronbach's alpha coefficient of 0.756, indicating acceptable internal consistency (Ramdan, 2019). Therefore, HARS was considered an appropriate instrument for measuring anxiety levels among early postpartum mothers in this study.The intervention group received endorphin massage once daily for three consecutive days according to a standardized procedure, while the control group received routine postpartum care without endorphin massage. Anxiety levels were measured at baseline (pretest) and after completion of the intervention period (posttest).

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to describe respondents' characteristics and anxiety levels. The Wilcoxon Signed-Rank Test was applied to assess changes in anxiety scores before and after the intervention, while the Mann–Whitney U Test was used to compare anxiety levels between the intervention and control groups. Statistical significance was set at $p < 0.05$. This study received ethical approval from the Health Research Ethics Committee of Institut Citra Internasional, Indonesia, with ethical clearance number 1567/KEPK/ICI/VIII/2025. Ethical principles were maintained throughout the study by obtaining informed consent from all participants and ensuring confidentiality, anonymity, beneficence, non-maleficence, and justice.

RESULTS

A total of 70 early postpartum mothers participated in this study, consisting of 35 respondents in the intervention group and 35 respondents in the control group. Respondents' characteristics based on age and educational level are presented in Table 1.

Table 1 Characteristics of Respondents (n = 70)

Characteristics of responden	n	%
Age		
22-26 Years	36	51,4
27-29 years	27	38,6
30-33 years	7	10,0
Education		
Junior High School	18	25,7
Senior High School	42	60,0
Bachelor's Degree	10	14,3
Total	70	100

Table 1 shows that most respondents were aged 22–26 years (51.4%), while only 10.0% were aged 30–33 years. Regarding educational level, the majority of respondents had completed senior high school education (60.0%), followed by junior high school education (25.7%) and bachelor's degree education (14.3%)

To evaluate the effect of endorphin massage on anxiety levels, anxiety scores were measured before and after the intervention in both groups. The distribution of mean anxiety scores is presented in Table 2.

Table 2. Mean Anxiety Scores Before and After Intervention

Group	n	Pretest Mean ± SD	Posttest Mean ± SD	Mean difference
intervention	35	31.97 ± 2.47	20.29 ± 2.75	11,68
Control	35	30.46 ± 1.69	30.14 ± 1.65	0.32

As presented in Table 2, the mean anxiety score in the intervention group decreased from 31.97 ± 2.47 before the intervention to 20.29 ± 2.75 after the intervention, indicating a reduction of 11.68 points. In contrast, the control group showed only a slight decrease from 30.46 ± 1.69 to 30.14 ± 1.65, with a reduction of 0.32 points.

The effectiveness of endorphin massage in reducing anxiety levels was further analyzed using the Wilcoxon Signed-Rank Test. The results are presented in Table 3.

Table 3. Comparison of Pretest and Posttest Anxiety Scores Using the Wilcoxon Signed-Rank Test

variable	Group	Mean rank	Sum of ranks	*p-value*
Anxiety Score (Pretest–Posttest)	Intervention	18,00	630,00	<0,001
Anxiety Score (Pretest–Posttest)	Control	6.00	66,00	0,001

Based on Table 3, a statistically significant reduction in anxiety scores was observed in the intervention group after receiving endorphin massage ($p < 0.001$). Although a significant difference was also found in the control group ($p = 0.001$), the magnitude of change was considerably smaller than that observed in the intervention group.

To compare anxiety levels between the intervention and control groups, the Mann–Whitney U Test was performed. The results are presented in Table 4.

Table 4. Comparison of Anxiety Scores Between Groups Using the Mann–Whitney U Test

Variable	Group	n	Mean Rank	Sum of Rank	Asymp Sig.
Pretest	Intervention	35	41.73	1460.50	0.010
	control	35	29.27	1024.50	
Posttest	Intervention	35	18.00	630.00	<0.001
	control	35	53.00	1855.00	

As shown in Table 4, a significant difference was observed between the intervention and control groups before the intervention ($p = 0.010$). Following the intervention, the posttest analysis revealed a highly significant difference between the two groups ($p < 0.001$). The lower anxiety scores observed in the intervention group indicate that endorphin massage was effective in reducing anxiety among early postpartum mothers.

DISCUSSION

The findings of this study demonstrated that endorphin massage significantly reduced anxiety levels among early postpartum mothers. The mean anxiety score in the intervention group decreased from 32.0 before the intervention to 20.3 after the intervention, representing a reduction of 11.7 points. In contrast, the control group showed only a slight decrease from 30.4 to 30.0. These findings indicate that mothers who received endorphin massage experienced greater improvements in psychological well-being than those who received routine postpartum care alone. The results suggest that endorphin massage may serve as an effective complementary intervention for reducing anxiety during the early postpartum period.

The high anxiety levels observed before the intervention may be related to the substantial physical and psychological adjustments experienced by mothers after childbirth. During the postpartum period, women undergo hormonal fluctuations, physical recovery, sleep disturbances, breastfeeding adaptation, and increased responsibility for newborn care. These changes often create uncertainty and emotional stress,

particularly among mothers who are still adapting to their new role. According to Stuart (2022), postpartum women are at increased risk of anxiety due to the complex interaction between biological, psychological, and social factors occurring after childbirth. Similar findings have been reported by Pratiwi et al. (2021), who identified maternal fatigue, infant care concerns, and inadequate social support as important contributors to postpartum anxiety.

The significant reduction in anxiety scores following endorphin massage may be explained by its physiological effects on the nervous and endocrine systems. Endorphin massage stimulates sensory nerve receptors, promoting the release of endorphins, which function as natural analgesics and mood regulators. Increased endorphin secretion contributes to feelings of relaxation, comfort, and emotional stability while reducing the body's stress response. In addition, relaxation induced by massage may decrease cortisol levels and muscle tension, thereby improving overall psychological well-being. Khairunnisa (2020) reported that endorphin massage effectively reduced anxiety and enhanced relaxation among postpartum mothers through these physiological mechanisms. These findings are consistent with recent evidence indicating that massage-based therapies may reduce anxiety by modulating autonomic nervous system activity, decreasing cortisol secretion, and promoting relaxation responses among postpartum women (Field, 2021).

Another possible explanation for the effectiveness of endorphin massage is the psychological benefit derived from therapeutic touch. Physical touch has been shown to promote emotional comfort, reduce feelings of isolation, and increase perceived social support. During the postpartum period, emotional support plays a crucial role in helping mothers adapt to new responsibilities and challenges. When endorphin massage is provided by healthcare professionals or family members, mothers may feel more cared for, supported, and emotionally secure. This positive emotional experience may further contribute to anxiety reduction and improve maternal confidence in caring for their infants (Babb et al., 2021; Rezaei et al., 2022).

The results of the Wilcoxon Signed-Rank Test showed a statistically significant reduction in anxiety levels among mothers who received endorphin massage ($p < 0.001$). Furthermore, the Mann–Whitney U Test demonstrated a significant difference between the intervention and control groups after the intervention ($p < 0.001$). These findings support the effectiveness of endorphin massage as a complementary therapy for postpartum anxiety management. The reduction observed in the intervention group was substantially greater than that observed in the control group, indicating that the improvement was not solely attributable to the natural recovery process during the postpartum period.

An important finding of this study was the significant difference in baseline anxiety scores between the intervention and control groups prior to treatment ($p = 0.010$). This indicates that the groups were not fully equivalent at baseline, which may have influenced the magnitude of the intervention effect. Nevertheless, the intervention group demonstrated a substantially greater reduction in anxiety scores compared with the control group, suggesting that endorphin massage contributed to the observed improvement. Therefore, the findings should be interpreted with caution, and future studies are recommended to use randomization or matching procedures to minimize baseline differences between groups.

The findings of this study are consistent with previous research. Apriani and Faiqah (2017) reported that endorphin massage significantly reduced anxiety among postpartum mothers. Similar results were also reported by Anggraini et al. (2018), who found that endorphin massage enhanced maternal relaxation and reduced psychological distress. In addition, Budari et al. (2023) demonstrated that endorphin massage effectively improved emotional comfort and reduced anxiety among postpartum women. The consistency of these findings strengthens the evidence supporting the use of endorphin massage as an effective non-pharmacological intervention for improving maternal mental health.

From a clinical perspective, the findings of this study have important implications for maternal

healthcare services. Endorphin massage is a simple, low-cost, and non-invasive intervention that can be incorporated into routine postpartum care. Unlike pharmacological therapies, endorphin massage does not pose risks associated with medication use during breastfeeding and can be performed by trained healthcare providers or family members. Therefore, integrating endorphin massage into postpartum care programs may contribute to improved maternal psychological well-being and enhance the overall quality of postpartum services. Recent studies have also emphasized the importance of integrating maternal mental health interventions into routine postpartum care, particularly in primary healthcare settings where early identification and management of anxiety can improve maternal outcomes (Howard & Khalifeh, 2022).

Despite these promising findings, several limitations should be acknowledged. The study used accidental sampling, which may limit the representativeness of the sample. In addition, the relatively small sample size and single-study setting may affect the generalizability of the findings to other populations. Future studies involving larger samples, multiple healthcare settings, and longer follow-up periods are recommended to further investigate the long-term effectiveness of endorphin massage in reducing postpartum anxiety.

CONCLUSION

This study demonstrated that endorphin massage was effective in reducing anxiety levels among early postpartum mothers in the working area of Kelapa Public Health Center, West Bangka Regency, Indonesia. Mothers who received endorphin massage experienced a substantial reduction in anxiety scores compared to those who received routine postpartum care. The findings suggest that endorphin massage may serve as a safe, simple, and effective complementary intervention to improve psychological well-being during the early postpartum period. Therefore, the integration of endorphin massage into routine postpartum care is recommended to support maternal mental health. Future studies with larger sample sizes and broader study settings are needed to strengthen the evidence regarding the effectiveness of this intervention.

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