



The Effect of Effleurage Massage on Anxiety in Pregnant Women Facing Childbirth

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ABSTRACT

Anxiety during pregnancy, particularly when facing childbirth, represents a significant psychological challenge that can adversely affect maternal and fetal outcomes. This study aimed to analyze the effectiveness of effleurage massage as a complementary intervention in reducing anxiety levels among pregnant women preparing for childbirth. A quasi-experimental design with pre-post test control group was employed, involving 60 third-trimester pregnant women (28-36 weeks gestation) randomly allocated into intervention group (n=15) receiving effleurage massage and control group (n=15) receiving standard antenatal care. The intervention consisted of effleurage massage performed three times weekly for four weeks, with each session lasting 20 minutes, focusing on back, shoulder, and arm areas. Anxiety levels were measured using the Indonesian validated version of Hamilton Anxiety Rating Scale (HARS). Statistical analysis revealed significant anxiety reduction in the intervention group from baseline to post-intervention ($p < 0.001$), while the control group experienced increased anxiety levels from ($p = 0.042$). Independent t-test demonstrated significant between-group differences post-intervention ($p < 0.001$). The findings suggest that effleurage massage is an effective, safe, and cost-efficient complementary therapy for managing pregnancy-related anxiety and can be integrated into routine maternity nursing practice to enhance maternal psychological well-being.

Keywords: anxiety, childbirth, effleurage massage, maternity nursing, pregnant women

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BACKGROUND

Pregnancy represents a transformative period characterized by significant physiological, psychological, and social changes that can precipitate anxiety disorders in expectant mothers. Research indicates that approximately 10-25% of pregnant women experience clinically significant anxiety symptoms, with primigravid women demonstrating higher prevalence rates due to uncertainty and fear regarding the birthing process (Dennis et al., 2017). Maternal anxiety during pregnancy has been associated with adverse outcomes including preterm labor, low birth weight, prolonged labor duration, increased cesarean delivery rates, and postpartum depression (Biaggi et al., 2016).

Traditional pharmacological approaches for managing pregnancy-related anxiety are often limited due to potential teratogenic effects and maternal concerns regarding medication safety during pregnancy. Consequently, there has been growing interest in non-pharmacological interventions, particularly complementary and alternative medicine approaches that are safe, effective, and culturally acceptable (Smith et al., 2018).



Effleurage massage, derived from the French term meaning "to touch lightly," represents a fundamental massage technique characterized by long, gliding strokes performed with palms and fingers in a rhythmic, continuous manner. The theoretical framework supporting effleurage massage effectiveness is rooted in the Gate Control Theory of pain and stress response mechanisms, whereby tactile stimulation activates large-diameter nerve fibers that inhibit pain and stress signal transmission to the brain (Melzack & Wall, 1965). Additionally, massage therapy stimulates the parasympathetic nervous system, promoting relaxation response and facilitating the release of endorphins, serotonin, and oxytocin while reducing cortisol and adrenaline levels (Field, 2016).

Despite the theoretical foundation and emerging evidence supporting massage therapy benefits during pregnancy, limited research has specifically investigated effleurage massage effectiveness in reducing anxiety among Indonesian pregnant women. Cultural considerations, healthcare system variations, and population-specific factors necessitate localized research to establish evidence-based practice guidelines. This study addresses this knowledge gap by examining the impact of structured effleurage massage intervention on anxiety levels in pregnant women within the Indonesian healthcare context.

METHODS

Design and Samples

This study employed a quasi-experimental design with pre-post test control group conducted at three community health centers (Puskesmas, Indonesia, from March to August 2024). The study population comprised third-trimester pregnant women receiving routine antenatal care. Sample size calculation using power 80% determined a minimum requirement of 26 participants per group. Accounting for 15% attrition rate, 60 participants were recruited using purposive sampling technique.

Inclusion criteria encompassed: (1) pregnant women aged 20-35 years, (2) gestational age 28-36 weeks, (3) singleton pregnancy, (4) primigravida status, (5) ability to read and understand Indonesian language, (6) HARS score ≥ 14 indicating mild to moderate anxiety, and (7) written informed consent. Exclusion criteria included: (1) high-risk pregnancy conditions, (2) history of psychiatric disorders, (3) current psychotropic medication use, (4) skin conditions preventing massage application, (5) pregnancy complications requiring bed rest, and (6) previous massage therapy experience.

Research Instrument and Data Collection

The Indonesian validated version of Hamilton Anxiety Rating Scale (HARS) served as the primary outcome measure. HARS comprises 14 items assessing psychological and somatic anxiety symptoms using a 5-point Likert scale (0-4), with total scores ranging from 0-56. Score interpretation includes: no anxiety (0-13), mild anxiety (14-20), moderate anxiety (21-27), and severe anxiety (28-56). The Indonesian HARS version demonstrated excellent psychometric properties with Cronbach's alpha coefficient of 0.89 and test-retest reliability of 0.85 (Sari et al., 2023).

Demographic and obstetric characteristics were collected using a structured questionnaire encompassing maternal age, education level, employment status, family income, gestational age, and pregnancy history. Data collection occurred at baseline (pre-intervention) and four weeks post-intervention completion.

Intervention Protocol

The effleurage massage intervention was developed based on established massage therapy protocols and expert consultation with certified massage therapists and maternity nursing specialists. The intervention comprised 12 sessions over four weeks (three sessions



weekly) with each session lasting 20 minutes. Massage was performed in a comfortable, private room with participants in side-lying position using unscented, hypoallergenic massage oil.

The effleurage technique involved long, continuous, gliding strokes using palms and fingers with light to moderate pressure (2-3 on 0-10 pressure scale). The massage sequence included: (1) back effleurage - longitudinal strokes along paravertebral muscles (5 minutes), (2) shoulder and neck effleurage - circular and linear movements (5 minutes), (3) arm effleurage - strokes from shoulder to wrist (5 minutes), and (4) integration phase - gentle, encompassing movements (5 minutes). All interventions were delivered by trained research assistants who completed 16-hour training program including anatomy, massage techniques, pregnancy considerations, and safety protocols.

The control group received standard antenatal care consisting of routine prenatal visits, health education, and psychological support without additional massage intervention.

Data Analysis

Data analysis was performed using SPSS version 26.0. Descriptive statistics characterized participant demographics and study variables. Normal distribution was assessed using Shapiro-Wilk test. Within-group changes were analyzed using paired t-test, while between-group differences employed independent t-test. Effect size was calculated using Cohen's d with interpretation: small (0.2), medium (0.5), and large (0.8). Statistical significance was set at $p < 0.05$.

Ethical Consideration

Ethical approval was obtained from the Health Research Ethics Committee . All participants provided written informed consent after receiving comprehensive study information. Participation was voluntary with the right to withdraw without consequences. Data confidentiality and anonymity were maintained throughout the study. Participants experiencing severe anxiety were referred for appropriate psychiatric evaluation and treatment.

RESULTS

Participant Characteristics

Sixty pregnant women were successfully recruited and randomized, with 30 participants in each group. All participants completed the study with 100% retention rate. Baseline characteristics showed no significant differences between groups. Mean maternal age was 26.8 ± 4.2 years in the intervention group in the control group ($p = 0.756$). Mean gestational age was weeks respectively ($p = 0.691$). Educational background showed 60% had completed secondary education, 33.3% had higher education, and 6.7% had primary education in both groups ($p = 0.892$). Employment status indicated 53.3% were housewives, 30% were employed, and 16.7% were self-employed with no significant between-group differences ($p = 0.678$).

Primary Outcomes

Anxiety levels measured by HARS demonstrated significant improvements following effleurage massage intervention. In the intervention group, mean anxiety scores decreased significantly from baseline 24.6 ± 6.8 to post-intervention ($p < 0.001$), representing a 38.2% reduction. Conversely, the control group experienced increased anxiety levels from, ($p = 0.042$), indicating an 11.0% increase.

Between-group analysis revealed significant differences in post-intervention anxiety levels ($p < 0.001$) with large effect. The mean difference between groups was 11.2 points (95%, favoring the intervention group).

Anxiety severity categorization showed marked improvements in the intervention group. Pre-intervention, 16.7% had mild anxiety, 63.3% had moderate anxiety, and 20% had severe anxiety. Post-intervention, 73.3% achieved mild anxiety levels, 26.7% maintained moderate anxiety, and no participants exhibited severe anxiety. In contrast, the control group



showed deterioration with increased proportions in moderate (70%) and severe (23.3%) anxiety categories post-intervention.

Secondary Outcomes

Additional analyses examined intervention effects across demographic subgroups. Age stratification revealed consistent benefits across all age groups, with women aged 25-30 years showing greatest improvement. Educational level analysis indicated similar benefits regardless of educational background, though women with higher education demonstrated slightly greater anxiety reduction (mean difference 1.4 points, $p=0.032$).

Gestational age analysis showed optimal intervention effects for women at 30-34 weeks gestation compared to 28-29 weeks and 35-36 weeks, though differences were not statistically significant ($p=0.156$).

No adverse events or complications were reported during the intervention period. Participant satisfaction surveys indicated high acceptance rates with 96.7% reporting positive experiences and 93.3% expressing willingness to continue massage therapy.

DISCUSSION

This study provides robust evidence supporting effleurage massage effectiveness in reducing anxiety among pregnant women facing childbirth. The observed significant anxiety reduction of 38.2% in the intervention group, coupled with the large effect size, demonstrates clinically meaningful improvements that surpass minimal clinically important differences established for anxiety measures.

The theoretical mechanisms underlying effleurage massage effectiveness encompass multiple physiological and psychological pathways. From a neurophysiological perspective, massage therapy activates mechanoreceptors and pressure receptors, stimulating large-diameter A-beta nerve fibers that inhibit nociceptive transmission according to Gate Control Theory principles (Melzack & Wall, 1965). Additionally, massage promotes parasympathetic nervous system activation, facilitating relaxation response characterized by decreased heart rate, blood pressure, and cortisol levels while increasing serotonin and dopamine production (Field, 2016).

Psychological mechanisms include enhanced body awareness, improved maternal-fetal bonding, increased sense of control over pregnancy experiences, and reduced catastrophic thinking patterns associated with childbirth fears (Chang et al., 2015). The structured, consistent nature of effleurage massage may also provide psychological anchoring effects, creating predictable positive experiences that counteract anxiety-provoking uncertainties inherent in pregnancy progression.

The deterioration observed in the control group (11% anxiety increase) reflects natural pregnancy progression effects, whereby advancing gestational age typically correlates with increased anticipatory anxiety regarding labor and delivery. This finding emphasizes the importance of proactive anxiety management interventions during the third trimester to prevent anxiety escalation that could compromise maternal and fetal outcomes.

Cultural considerations within the Indonesian context may have contributed to intervention success. Traditional Indonesian healing practices commonly incorporate touch-based therapies, potentially enhancing participant receptivity and treatment adherence. Additionally, the communal nature of Indonesian society may amplify massage therapy benefits through increased social support and positive cultural associations with therapeutic touch.

The study's practical implications for maternity nursing practice are substantial. Effleurage massage represents a cost-effective, non-pharmacological intervention that can be easily integrated into routine antenatal care protocols. The technique requires minimal



equipment, can be taught to healthcare providers and family members, and poses no safety risks when properly implemented. Implementation could significantly reduce healthcare costs associated with anxiety-related complications while improving maternal satisfaction and birth experiences.

Limitations

Several limitations warrant consideration. The quasi-experimental design limits causal inference compared to randomized controlled trials, though ethical considerations regarding anxiety treatment allocation support the chosen methodology. The single-blind nature of the study introduces potential performance bias, though objective outcome measures minimize detection bias. Additionally, the study was conducted in urban healthcare settings, potentially limiting generalizability to rural populations with different cultural and healthcare contexts.

The four-week intervention period, while showing significant effects, may not represent optimal treatment duration. Longer follow-up periods would clarify intervention sustainability and potential cumulative benefits. Finally, the study focused exclusively on primigravid women, limiting generalizability to multiparous populations who may demonstrate different anxiety patterns and intervention responses.

CONCLUSION

This study demonstrates that effleurage massage significantly reduces anxiety levels in pregnant women facing childbirth, with clinically meaningful improvements sustained throughout the intervention period. The intervention's safety profile, cost-effectiveness, and high acceptability support its integration into routine maternity nursing practice as an evidence-based complementary therapy for managing pregnancy-related anxiety.

Healthcare providers should consider incorporating effleurage massage training into professional development programs to enhance comprehensive antenatal care delivery. Future research should examine optimal intervention timing, duration, and frequency while exploring effectiveness across diverse populations and pregnancy conditions. Long-term follow-up studies investigating intervention effects on birth outcomes, postpartum mental health, and maternal-infant bonding would further strengthen the evidence base supporting effleurage massage implementation in maternity care settings.

The findings contribute to growing evidence supporting integrative approaches in perinatal mental health management, emphasizing the importance of addressing psychological well-being alongside physical health monitoring during pregnancy. As healthcare systems increasingly recognize the interconnected nature of maternal mental and physical health, interventions like effleurage massage offer promising pathways toward holistic, patient-centered maternity care that optimizes outcomes for mothers and infants.

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