



The Influence of Pregnancy Massage on the Level of Anxiety Facing Childbirth in Third Trimester Pregnant Women in Jakarta, Banten, West Java, South Sumatra

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Abstract: Anxiety among pregnant women approaching labor can lead to prolonged delivery, complications, and increased risk of maternal and fetal mortality. According to the World Health Organization (WHO), anxiety disorders contributed to approximately 15% of global morbidity rates in 2022. One of the non-pharmacological interventions to reduce anxiety is pregnancy massage. This study aimed to determine the effect of pregnancy massage on the level of anxiety among third-trimester pregnant women facing childbirth in Indonesia. This research employed a pre-experimental design with a one-group pretest-posttest approach. The study involved 180 third-trimester pregnant women selected using a purposive sampling technique. Data were analyzed using the Wilcoxon test after confirming data normality. Before receiving pregnancy massage, most respondents (78.3%) experienced moderate anxiety with an average score of 24.67. After the intervention, 91.7% of respondents showed mild anxiety with a decreased average score of 18.65. Statistical analysis using the Wilcoxon test revealed a significant difference between pretest and posttest anxiety levels ($p = 0.000$), indicating that pregnancy massage effectively reduces anxiety in pregnant women facing labor. These findings support the use of non-pharmacological interventions to promote maternal mental well-being during the perinatal period. Pregnancy massage has a significant effect in reducing anxiety levels among third-trimester pregnant women facing childbirth.

Keywords: Anxiety; Childbirth; Non-pharmacological therapy; Pregnancy massage

Introduction

Anxiety during pregnancy is a common psychological condition characterized by excessive worry, tension, and fear related to the health of the mother and fetus, the delivery process, and the transition to motherhood. It is a natural emotional response; however, when persistent and uncontrolled, it may interfere with both maternal and fetal health (Arianti et al., 2019; Wallace et al., 2020). Prolonged anxiety in pregnant women, especially approaching labor, can result in prolonged delivery, complications during childbirth, and even increase the risk of maternal

and neonatal mortality (Hoyer et al., 2020; Smorti et al., 2019; Votruba, 2025).

According to the World Health Organization (WHO, 2020), anxiety has become one of the leading causes of disability worldwide and contributes approximately 15% to the global burden of disease. In the United States, around 40 million adults experience anxiety disorders, with a prevalence rate of 17.7% (Marcelina et al., 2022). The prevalence of anxiety and depression in developed countries ranges between 7–20%, while in developing countries it can reach up to 20%. In the Asia-Pacific region, India records the highest number of anxiety cases (56,675,969 cases or 4.5% of the

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population), while the Maldives records the lowest (12,739 cases or 3.7%) (Khoiriyah et al., 2020).

Anxiety during pregnancy also remains a global health concern. Puspitasari et al. (2021) reported the prevalence of pregnancy-related anxiety in Bangladesh at 18%, China at 20.6%, and Pakistan at 18%. In Indonesia, the Ministry of Health reported that mental-emotional disorders, including anxiety, affected 9.8% of pregnant women (Rahayu et al., 2024). This highlights the need for early detection and effective management of maternal anxiety, especially during the third trimester when anxiety tends to peak due to the anticipation of labor and concerns about fetal outcomes.

From a physiological perspective, anxiety triggers the release of stress hormones such as cortisol and norepinephrine, which can elevate blood pressure and disrupt hormonal balance. These changes can negatively impact placental function, potentially leading to fetal hypoxia or asphyxia (Sukmaningtyas et al., 2021). Psychologically, pregnant women may experience restlessness, sleep disturbances, difficulty concentrating, and feelings of uncertainty or fear of death during childbirth (Yuliani et al., 2018). According to the biopsychosocial theory, anxiety results from an interaction between biological predisposition, cognitive interpretation of stressors, and social support availability. This theory implies that psychological interventions focusing on relaxation and emotional regulation may effectively reduce anxiety levels.

Midwives and maternal health practitioners play a vital role in identifying and addressing anxiety during pregnancy. As emphasized in Lazarus and Folkman's Transactional Model of Stress and Coping, appropriate coping mechanisms and social support can reduce the negative impact of stressors such as childbirth anxiety. Therefore, providing education, reassurance, and supportive interventions becomes essential to help pregnant women manage anxiety and prepare both physically and mentally for delivery (Suliswati, 2021).

Among various non-pharmacological approaches, pregnancy massage has emerged as one of the most widely used complementary therapies to alleviate anxiety. The Australian Association of Massage Therapists (AAMT) Aswitami et al. (2022) reported that pregnancy massage is utilized by 61% of pregnant women, followed by acupuncture (45%), relaxation techniques (43%), and yoga (41%). Pregnancy massage involves gentle techniques on the back, neck, hands, legs, thighs, and abdomen for 10–20 minutes, performed twice a week from 20 weeks of gestation until late pregnancy (Aswitami et al., 2022).

According to the gate control theory of pain, massage therapy stimulates large nerve fibers that inhibit pain and stress signal transmission to the brain, thereby producing relaxation and comfort. In addition,

the neuroendocrine theory suggests that massage therapy increases the release of endorphins and serotonin while decreasing cortisol levels, contributing to emotional stability and stress reduction (Ouchi et al., 2006). These physiological mechanisms align with the psychological benefits of massage in improving maternal well-being.

Previous studies have confirmed these effects. Aswitami et al. (2022) demonstrated that pregnancy massage effectively reduces anxiety and depressive symptoms in pregnant women. Similarly, Wulandara et al. (2022) found that endorphin massage significantly decreases anxiety among third-trimester pregnant women. These findings indicate that non-pharmacological therapies, particularly pregnancy massage, are beneficial and safe methods to improve maternal psychological health.

Considering the high prevalence of anxiety among pregnant women and its potential adverse impact on both maternal and fetal outcomes, it is essential to identify effective, safe, and accessible interventions. Therefore, this study aims to examine the influence of pregnancy massage on the level of anxiety facing childbirth among third-trimester pregnant women in Jakarta, Banten, West Java, and South Sumatra. The results of this study are expected to provide evidence-based recommendations for healthcare professionals to integrate pregnancy massage as part of holistic maternal care.

Method

This study aimed to determine the effect of pregnancy massage on the level of anxiety faced by third-trimester pregnant women before childbirth. The research was conducted from November to December 2024 at several maternal health facilities in Indonesia, namely: (1) Happybaby Clinic, Kembangan Selatan, West Jakarta. (2) PMB E Talagasari, Karawang. (3) Pondokgede District Hospital (RSUD Kelas D), Bekasi City. (4) Jatimurni Public Health Center, Bekasi City. (5) Sumber Mulia Public Health Center, Muara Enim, South Sumatra. (6) Benda Baru Public Health Center, South Tangerang.

Research Design

This research used a pre-experimental design with a one-group pretest–posttest approach. This design was selected to assess the difference in anxiety levels before and after the pregnancy massage intervention without a control group.

Population and Sample

The study population consisted of third-trimester pregnant women who experienced anxiety during

pregnancy. A purposive sampling technique was applied to select participants who met the inclusion criteria: (1) Pregnant women in their third trimester (gestational age 28–40 weeks), (2) Experiencing mild to moderate anxiety based on pretest scores, (3) Willing to participate and provide informed consent.

The sample size was 180 respondents, determined based on feasibility and data adequacy for statistical analysis. The reason for conducting this research is due to the persistently high rate of anxiety among third-trimester pregnant women in Indonesia (approximately 70%).

Variables

Independent Variable: Pregnancy massage.
 Dependent Variable: Anxiety level when facing childbirth

Research Instrument

The primary data were collected using a structured anxiety questionnaire administered before and after the pregnancy massage intervention. The pregnancy massage was performed by trained health practitioners following standardized procedures targeting the back, neck, arms, legs, thighs, and abdomen for 10–20 minutes, twice a week during the study period.

Data Collection Procedure

- a) Pretest: Measurement of anxiety levels before the intervention using a validated anxiety scale.
- b) Intervention: Provision of pregnancy massage according to the protocol.
- c) Posttest: Re-measurement of anxiety levels after the intervention.

Data Analysis



Figure 1. Research procedures

Data were analyzed using SPSS version 27.0. Univariate analysis was conducted to describe respondents’ characteristics and anxiety levels, while bivariate analysis using the Wilcoxon signed-rank test was employed to evaluate differences between pretest and posttest scores. Prior to the analysis, a normality test was performed to determine the appropriate statistical method.

Result and Discussion

Based on the research results in table 5.1, it is known that the anxiety faced during childbirth before receiving pregnancy massage, the largest data obtained were mothers with moderate anxiety, which amounted to 141 people (78.3%), mild anxiety amounted to 39 people (21.7%), and there were no cases of severe anxiety.

Table 1. The Level of Anxiety Facing Labor in Third Trimester Pregnant Women Before Receiving Pregnancy Massage in Indonesia

Anxiety Facing Childbirth	N	%
Mild Anxiety	39	21.7
Moderate Anxiety	141	78.3
Severe Anxiety	0	0.0
Total	180	100

Table 2. Anxiety Facing Labor in Third Trimester Pregnant Women before Receiving Pregnancy Massage in Indonesia

Anxiety Facing Childbirth	N	Mean	SD	Min-Max	95%CI
Before	180	24.67	3.451	15-33	24.16-25.17

From Table 2, it can be seen that out of 180 respondents, the average anxiety facing childbirth before receiving pregnancy massage was 24.67 with a standard deviation of 3.451. The score of anxiety facing childbirth before receiving pregnancy massage was lowest at 15 and highest at 33, with a 95% CI value of 24.16-25.17.

Table 3. The Level of Anxiety Facing Labor in Third Trimester Pregnant Women After Receiving Pregnancy Massage in Indonesia

Anxiety Facing Childbirth	N	%
Mild	165	91.7
Moderate	15	8.3
Severe	0	0.0
Total	180	100

Based on the research results in Table 3, it is known that anxiety in facing childbirth after receiving pregnancy massage, the largest data obtained, is

mothers with mild anxiety, which amounts to 165 people (91.7%), moderate anxiety 15 people (8.3%), and none with severe anxiety.

Table 4. Anxiety Facing Labor in Third Trimester Pregnant Women before Receiving Pregnancy Massage in Indonesia

Anxiety Facing Childbirth	N	Mean	SD	Min-Max	95%CI
After	180	18.65	2.849	11-25	18.23-19.07

From Table 4, it can be seen that out of 180 respondents, the average anxiety facing childbirth before receiving pregnancy massage was 18.65 with a standard deviation of 2.849. The score of anxiety facing childbirth before receiving pregnancy massage was

lowest at 11 and highest at 25, with a 95% CI value of 18.23-19.07.

Based on Table 5, it was found that the results of the normality test using the Kolmogorov Smirnov method showed a significance value smaller than 0.05. Based on the results of the normality test, it turns out that the data is not normally distributed. The presence of normally distributed data means that the method used is the parametric statistical method using the Wilcoxon test.

Table 5. Results of the Kolmogorov Smirnov Normality Test

Anxiety Facing Childbirth	P value	α=5%	Explanation
Before	0.000	Smaller	Not Normal
After	0.000	Smaller	Not Normal

Table 6. The Influence of Pregnancy Massage on Anxiety Levels Facing Labor in Third Trimester Pregnant Women in Indonesia

Level of Anxiety Facing Labor	Mean	Standard Deviation	Min-Maks	p value
Before Intervention	24.67	3.451	15-33	0.000
After Intervention	18.65	2.849	11-25	

The results of the Wilcoxon test showed a significance value of $0.000 < 0.05$, thus it can be concluded that H_0 is rejected and H_a is accepted. Therefore, it can be concluded that there is an effect of pregnancy massage on the level of anxiety facing childbirth in third-trimester pregnant women in Indonesia.

The Level of Anxiety Facing Labor in Third Trimester Pregnant Women Before Receiving Pregnancy Massage in Indonesia

Based on the research findings, it was found that out of 180 respondents facing anxiety before childbirth, the largest data showed that mothers with moderate anxiety amounted to 141 people (78.3%), mild anxiety to 39 people (21.7%), and none with severe anxiety. The average anxiety level in facing childbirth before receiving pregnancy massage was 24.67.

Walyani (2021) revealed that in the third trimester, pregnant women experience increased anxiety. The occurrence of anxiety in pregnant women during the third trimester is caused by the fear of facing childbirth. Anxiety or fear during childbirth can be influenced by several factors, including fear of death, fear of pain and suffering, fear of inability or concern about the condition of the fetus, such as disabilities or even fetal death, fear of losing self-control, helplessness, fear of loneliness or rejection from others, fear of complications during childbirth that require referral to a facility with more complete services or necessitate a cesarean section. Midwives play a significant role in addressing these issues. The Australian Association of Massage

Therapists (AAMT) in Aswitami et al. (2022) recommends non-pharmacological therapies for pregnant women, one of which is pregnancy massage.

According to the research results of Munawaroh et al. (2022), the respondents' anxiety levels before the intervention were found to be 29.1330. Similarly, the results of Kurniasari (2021) study found that 11 respondents experienced moderate anxiety levels, 4 respondents experienced severe anxiety levels, 3 respondents experienced moderate anxiety levels, and 2 respondents experienced mild anxiety levels before the endorphin massage was performed.

Researchers assume that the anxiety experienced by third-trimester pregnant women is caused by concerns about potential complications during childbirth. The presence of fear of death or failure during childbirth, the mother's lack of preparedness for labor, and insufficient experience and knowledge can be causes of anxiety. Another factor causing anxiety is the lack of support from the husband or difficult economic conditions, which leads to the occurrence of anxiety. Based on the statement, the presence of the husband in providing support during pregnancy can increase the mother's motivation to reduce her anxiety in facing childbirth. Thus, the husband's presence during the pregnancy and childbirth period will bring peace to the mother, allowing the husband to play an active role in providing physical support and mental encouragement to his wife.

The Level of Anxiety Facing Labor in Third Trimester Pregnant Women After Receiving Pregnancy Massage in Indonesia

Based on the research results, it was found that out of 180 respondents, the majority of mothers experienced mild anxiety in facing childbirth after receiving pregnancy massage, with 165 people (91.7%) having mild anxiety, 15 people (8.3%) having moderate anxiety, and none having severe anxiety. The average anxiety level in facing childbirth after receiving pregnancy massage was 18.65.

Pregnancy massage provides stimulation and relaxation effects, improves blood circulation, enhances lymphatic circulation, optimizes and strengthens organ functions to boost health and fitness (Andriana et al., 2021). The benefits of pregnancy massage include reducing stress, tension, and anxiety-causing hormones, as well as improving the mood of pregnant women, enhancing sleep quality, and increasing happiness in pregnant women. It helps eliminate metabolic waste products through the lymphatic and circulatory systems, which can reduce fatigue and make mothers feel more energetic. It also helps alleviate complaints in pregnant women such as lower back pain, neck stiffness, muscle tension, headaches, joint pain, leg cramps, dizziness, edema, and swollen ankles (Irianti, 2022).

According to the research results of Dupe et al. (2021), it was found that the anxiety levels of respondents in the post-intervention measurement showed that the majority of respondents experienced mild anxiety, with 15 people (51.7%), those who did not experience anxiety numbered 7 people (26.9%), respondents who experienced moderate anxiety numbered 5 people (17.2%), and a minority experienced severe anxiety, numbering 2 people (7.6%). Similarly, the results of the study by Rahayu & Sutarno (2024) showed that the average anxiety level after receiving endorphin massage was 14.17 (mild anxiety).

Researchers assume that there is a decrease in anxiety among third-trimester pregnant women who receive pregnancy massage. This is because by performing pregnancy massage, it can eliminate fatigue in the body, improve blood circulation, stimulate the body to expel toxins, and enhance positive thinking, which ultimately can make the mind relaxed. The presence of positive thoughts will reduce anxiety, which will have a positive impact on the body's condition. Especially when receiving prenatal massage, it is not done alone, but with the help of her husband and guided by a midwife, making the mother feel not alone and cared for. According to the observation results on the mother's anxiety, it was found that before receiving pregnancy massage, the mother experienced difficulty concentrating, feelings of sadness, waking up early in the morning, mood swings, muscle pain and soreness,

stiffness, weakness, pale complexion sometimes appearing flushed, rapid heartbeat, and from a respiratory perspective, often taking deep breaths, sometimes taking short breaths, feelings of nausea and bloating, frequent urination, dizziness, headaches, heavy-headedness, restlessness, and a tense appearance. After receiving a pregnancy massage, the mother appeared to become relaxed, as she was able to respond when asked, and her feelings of anxiety began to decrease. This indicates that pregnancy massage can create a sense of calm and relaxation, thereby reducing anxiety.

The Influence of Pregnancy Massage on Anxiety Levels Facing Labor in Third Trimester Pregnant Women in Indonesia

Based on the research results, the Wilcoxon test showed a significance value of $0.000 < 0.05$, thus H_0 is rejected and H_a is accepted. Therefore, it can be concluded that there is an effect of pregnancy massage on the anxiety level facing childbirth in third-trimester pregnant women in Indonesia.

Pregnancy massage is one of the ways to relieve fatigue in the body, improve blood circulation, stimulate the body to expel toxins, and enhance mental health. At the end of pregnancy, the anxiety of pregnant women will increase, and through the provision of pregnancy massage, pregnant women become more relaxed and reduce the hormones cortisol and norepinephrine that cause stress (Sukmaningtyas et al., 2021). This therapy increases blood flow in several parts of the brain directly involved in regulating depression and stress, including the amygdala and hypothalamus, indicating that massage therapy involves hypothalamic regulation of autonomic nervous system activity, cortisol secretion, and limbic activity related to emotion regulation (Ouchi et al., 2006).

According to the research results of Kurniasari (2021), the Wilcoxon test analysis showed a significance value of 0.000, which can be concluded as "there is a significant difference, the effect of endorphin massage on the reduction of anxiety levels in postpartum mothers before and after being given endorphin massage." Similarly, the results of the study by Munawaroh et al. (2022) obtained a statistical test result with a p-value of 0.001, which means there is a significant difference and effect of pregnancy massage on anxiety in third-trimester pregnant women.

The researchers assume that there is an influence of pregnancy massage on the level of anxiety facing childbirth in third-trimester pregnant women, as providing pregnancy massage can reduce anxiety, boost the immune system, and alleviate the pain commonly experienced by pregnant women. Pregnancy massage given to pregnant women makes them feel cared for, in

addition to that, by having a pregnancy massage, mothers can gain self-control over the discomfort experienced during pregnancy due to the feeling of relaxation after the massage. Pregnancy massage helps provide a sense of calm and comfort both as the due date approaches and during the labor process. Through pregnancy massage, muscles and soft tissues are stretched, resulting in relaxation and reducing tension. The occurrence of relaxation begins with pregnancy massage sending signals to the brain, specifically to the hypothalamus. Next, the hypothalamus stimulates the pituitary gland, which then stimulates the parasympathetic nerves to release chemicals, including endorphins, leading to relaxation. Through this relaxation, anxiety is reduced. Similarly, the pituitary gland reduces cortisol and non-epinephrine as well as epinephrine hormones, which enhance feelings of comfort and create a sense of happiness and satisfaction. It is necessary for these actions to be continued during pregnancy, especially approaching childbirth, so that pregnant women will feel their confidence rise and be ready to face childbirth.

Conclusion

This study demonstrated that pregnancy massage significantly reduced anxiety levels among third-trimester pregnant women facing childbirth in Indonesia. Before the intervention, most respondents (78.3%) experienced moderate anxiety with an average score of 24.67, while after receiving pregnancy massage, the majority (91.7%) showed mild anxiety with a decreased mean score of 18.65. Statistical analysis using the Wilcoxon test revealed a significant effect of pregnancy massage on reducing anxiety ($p = 0.000$). These findings indicate that pregnancy massage serves as an effective non-pharmacological intervention to alleviate anxiety and promote maternal psychological well-being during the perinatal period. It is therefore recommended that healthcare providers, particularly midwives, incorporate pregnancy massage as part of antenatal care programs, supported by family involvement to provide emotional comfort and reduce maternal stress before labor.

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Author Contributions

R.K., I.M., N., N.N., S., S.R., S.N. contributed to the conceptualization, data collection process, data processing, and article writing.

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Conflicts of Interest

The authors declare no conflict of interest.

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