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Progressive Muscle Relaxation in Managing Anxiety During Third-Trimester Pregnancy in the Banabungi Community Health Center Area: A Case Study

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ABSTRACT

Background: Anxiety during the third trimester of pregnancy, if left unmanaged, can adversely affect both maternal and fetal outcomes. Elevated anxiety levels may prolong labor due to increased uterine muscle tension and stress hormone secretion, leading to ineffective contractions. Moreover, maternal anxiety is associated with fatigue, sleep disturbances, infection, preterm birth, low birth weight, prolonged labor, and impaired mental and motor development in children. Progressive Muscle Relaxation (PMR) is a non-pharmacological intervention that may help reduce muscle tension and psychological stress during pregnancy.
Objective: This study aimed to examine the implementation of Progressive Muscle Relaxation exercises over a three-day period and their effect on anxiety levels in a third-trimester pregnant woman in Kombeli Village.
Methods: A descriptive case study with a pre–post test design was conducted. The subject was Mrs. R, a 27-year-old woman in her third trimester of pregnancy, observed from May 29 to May 31, 2025. Progressive Muscle Relaxation exercises were administered once daily for 5–10 minutes. Anxiety levels were assessed using the Pregnancy-Related Anxiety Questionnaire–Revised 2 (PRAQ-R2), categorized as mild (<23), moderate (23–37), and severe (>37).
Results: Following the intervention, the anxiety score decreased from 39 (severe anxiety) to 33 (moderate anxiety).
Conclusion: Progressive Muscle Relaxation exercises contributed to a reduction in anxiety levels in a third-trimester pregnant woman. Although the decrease was not substantial, PMR demonstrated potential as a supportive non-pharmacological intervention for anxiety management during pregnancy.

ABSTRAK

Latar Belakang: Kecemasan pada kehamilan trimester ketiga merupakan masalah psikologis yang umum dan dapat berdampak negatif terhadap kesejahteraan ibu serta luaran kehamilan. Tingginya tingkat kecemasan dapat mengganggu proses persalinan melalui peningkatan ketegangan otot uterus dan sekresi hormon stres, yang menyebabkan persalinan berlangsung lebih lama dan ibu mengalami kelelahan. Jika tidak ditangani, kecemasan terkait kehamilan dapat meningkatkan risiko kelahiran prematur, berat badan lahir rendah, gangguan tidur, serta gangguan perkembangan janin. Perawat memiliki peran penting dalam memberikan intervensi non-farmakologis untuk menurunkan kecemasan selama kehamilan. Relaksasi Otot Progresif (ROP) merupakan intervensi keperawatan yang sederhana, aman, dan dapat diterapkan oleh perawat dalam pelayanan keperawatan maternitas.
Tujuan: Penelitian ini bertujuan untuk mendeskripsikan penerapan Relaksasi Otot Progresif sebagai intervensi keperawatan serta pengaruhnya terhadap tingkat kecemasan pada ibu hamil trimester ketiga.
Metode: Penelitian ini menggunakan desain studi kasus deskriptif dengan pendekatan pre–post test yang melibatkan seorang ibu hamil trimester ketiga berusia 27 tahun di Desa Kombeli. Intervensi Relaksasi Otot Progresif diberikan satu kali sehari selama 5–10 menit selama tiga hari berturut-turut (29–31 Mei 2025). Tingkat kecemasan diukur menggunakan instrumen Pregnancy-Related Anxiety Questionnaire–Revised 2 (PRAQ-R2), dengan kategori kecemasan ringan (<23), sedang (23–37), dan berat (>37).
Hasil: Hasil penelitian menunjukkan adanya penurunan skor kecemasan dari 39 (kecemasan berat) sebelum intervensi menjadi 33 (kecemasan sedang) setelah intervensi.
Kesimpulan: Relaksasi Otot Progresif berpotensi menjadi intervensi keperawatan yang bermanfaat dalam menurunkan tingkat kecemasan pada ibu hamil trimester ketiga. Meskipun penurunan kecemasan tidak signifikan, Relaksasi Otot Progresif dapat digunakan sebagai strategi non-farmakologis pendukung dalam asuhan keperawatan maternitas untuk meningkatkan kesejahteraan psikologis ibu hamil.

INTRODUCTION

Pregnancy is a physiological process in women that begins with fertilization, leading to the formation of a zygote and the subsequent development of the fetus in the uterus, ultimately resulting in childbirth (Amalia et al., 2022). During pregnancy, women often experience health problems, one of which is anxiety (Meirany et al., 2024). Anxiety that occurs throughout pregnancy until the third trimester, if left untreated, can have serious consequences for pregnancy as well as fetal growth and development. This condition may increase the risk of preterm birth, low birth weight (LBW), prolonged labor, and impaired mental and motor development in children. Therefore, because anxiety during pregnancy significantly affects maternal and fetal health, appropriate interventions are needed (Sutriningsih et al., 2024), particularly for third-trimester pregnant women who are approaching childbirth (Sari & Wahyuni, 2023).

In 2020, the World Health Organization (WHO) reported that the prevalence of anxiety during pregnancy ranged from 8–10%, increasing to 12% as childbirth approached. According to the Indonesian Ministry of Health (Kemenkes RI, 2020), approximately 107,000,000 pregnant women, or about 28.7% of the total number of pregnant women, experienced anxiety, particularly in the period leading up to labor.

In general, anxiety related to childbirth is a common issue in pregnancy. Survey data indicate that 10 out of 25 pregnant women experienced anxiety prior to labor. This anxiety is often associated with uncertainty regarding the childbirth process itself (Kiftiyah & Sari, 2023). Several factors, including maternal age, gestational age, parity, educational level, employment status, social support, and environmental conditions, contribute to the development of anxiety in pregnant women (Ratna Sari et al., 2023).

Unmanaged anxiety in third-trimester pregnant women can have detrimental effects on both the mother and the infant. Anxiety may prolong and intensify labor due to increased uterine muscle tension and elevated stress hormone levels, resulting in ineffective uterine contractions. Additionally, mothers may experience fatigue, infection, and sleep disturbances that further compromise their physical and mental health (Baro et al., 2020).

Persistent anxiety also increases the risk of postpartum depression. For infants, maternal anxiety may raise the risk of preterm birth, low birth weight, and respiratory problems at birth. Family support, particularly from husbands, plays a crucial role in helping pregnant women feel calmer and more confident during childbirth. Early management of anxiety through psychological and social support is essential to ensure the health and safety of both mother and infant. Therefore, addressing anxiety in third-trimester pregnant women is vital for maternal and neonatal well-being (Avelina et al., 2023).

Research conducted by Sudin et al. (2022) reported that 42.3% of pregnant women experienced mild anxiety, 43.4% moderate anxiety, and 14.3% severe anxiety. According to Aprilia and Richmond (2011), pregnant women experiencing anxiety or stress are at risk of increased heart rate, which may result in preterm birth or lower birth weight infants compared to normal births. To reduce these negative impacts on both the mother and the fetus, targeted interventions for managing anxiety in pregnant women are essential (Amalia et al., 2022).

One effective method for reducing anxiety in pregnant women is progressive relaxation techniques, which help calm the mind and gradually relieve muscle tension. Progressive relaxation techniques influence the sympathetic nervous system and can reduce perceived tension (Putra et al., 2022). Furthermore, Progressive Muscle Relaxation (PMR) involves physiological mechanisms that gradually reduce fatigue (Jannah & Rachmawati, 2021). PMR helps reduce muscle tension, particularly in the extremities, improves blood circulation, lowers blood pressure, reduces anxiety and stress-related problems, alleviates insomnia and sleep disturbances, and decreases pain and muscle stiffness (Irmawati S. et al., 2024).

Mayasari (2016) stated that the principle of Progressive Muscle Relaxation within the mind–body approach is to relax both muscles and the mind by sequentially tensing and relaxing each muscle group (Shafira et al., 2024).

Progressive Muscle Relaxation has physiological mechanisms that are capable of gradually reducing fatigue and is an appropriate intervention for third-trimester pregnant women. This technique emphasizes slow, regular, and sequential muscle relaxation to reduce muscle tension. PMR also stimulates parasympathetic nervous system activity, leading to decreased heart rate, blood pressure, oxygen demand, and sweat gland activity (Mulyati, 2021).

Progressive Muscle Relaxation helps pregnant women reduce muscle tension and stress commonly experienced during pregnancy, particularly in the third trimester. Physiological changes such as weight gain and increased muscle tension may cause discomfort and anxiety. Through PMR exercises, women sequentially tense and relax their muscles, promoting muscle

relaxation. This process sends signals to the brain to reduce stress hormones such as cortisol, resulting in a calmer physiological state (Ii et al., 2022).

This technique also activates the body's calming nervous system, lowers blood pressure, and slows respiration. In addition, PMR promotes the release of endorphins, which enhance comfort and reduce pain. Consequently, pregnant women experience greater comfort, reduced anxiety, and improved sleep quality. Progressive Muscle Relaxation has been proven effective in reducing back pain and anxiety in third-trimester pregnant women (Irmawati S. et al., 2024).

A study by Mardiyanti (2017) on the effect of Progressive Muscle Relaxation on anxiety levels in primigravida women during the third trimester demonstrated that this relaxation method effectively reduced maternal anxiety (Purwati, 2023).

Progressive Muscle Relaxation is a therapeutic technique delivered through structured and guided movements (Wahyudi, 2019). This therapy aims to calm both the mind and body—particularly the muscles—by reducing tension and restoring a relaxed, balanced, and controlled physiological state. The relaxation process is performed gradually, starting from the muscles of the hands and progressing to the feet (Shafira et al., 2024). Progressive Muscle Relaxation is a relaxation technique that focuses directly on muscle activity without requiring imagination, suggestion, or high levels of concentration (Setyoadi, 2011). This method involves recognizing tense muscles and releasing that tension through relaxation exercises, allowing the body to achieve a more relaxed state (Shafira et al., 2024).

METHODS

This study employed a qualitative approach with a case study design to explore the application of progressive muscle relaxation in reducing anxiety levels among third-trimester pregnant women with gestational age of 36–40 weeks. The case study involved one primigravida woman in her third trimester who experienced severe anxiety and was registered as a patient in the working area of UPTD Banabungi Public Health Center.

The focus of this case study was the implementation of a non-pharmacological intervention in the form of progressive muscle relaxation to reduce anxiety levels in pregnant women approaching childbirth. The intervention was administered for three consecutive days following the standard operating procedure (SOP) for progressive muscle relaxation. The intervention was conducted by the researcher in collaboration with a trained nurse at UPTD Banabungi Public Health Center who had received prior training in muscle relaxation therapy.

Data collection was carried out using interviews, observation, and anxiety assessment. Anxiety levels were measured before and after the intervention using the Pregnancy Related Anxiety Questionnaire–Revised 2 (PRAQ-R2). Pre- and post-intervention interviews were conducted to explore the participant's subjective experiences and perceptions of the intervention. Observations focused on the participant's physical and emotional responses during the intervention, supported by narrative documentation to record changes in behavior and expressions of anxiety.

This study was conducted in the working area of UPTD Banabungi Public Health Center on May 29, 2025. Ethical considerations were addressed by providing comprehensive information regarding the study objectives and procedures, and by obtaining written informed consent from the participant prior to the intervention.

RESULTS

This study was conducted in the service area of the Banabungi Community Health Center (UPTD Puskesmas Banabungi), specifically in Kombeli Village. The research was carried out from May 29 to May 31, 2025, encompassing the stages of assessment, questionnaire administration, data analysis, establishment of nursing diagnoses, development of interventions, and implementation of nursing care over a three-day period through the provision of Progressive Muscle Relaxation therapy. Data collection was conducted using primary data obtained through a questionnaire technique. All questionnaire items were developed in accordance with the research objectives and based on an established theoretical framework. The questionnaires were administered directly to the respondent. The assessment process included autoanamnesis, direct interviews with the client, observation, and physical examination.

1. Assessment

a. Case Study Subject Description

The assessment was conducted on May 29, 2025, at 4:00 PM (Central Indonesia Time) in Kombeli Village, using direct interviews and observation. The assessment results showed that Mrs. R was 36 weeks pregnant with a fundal height

of 30 cm and an estimated date of delivery of July 7, 2025. Her obstetric status was G1P0A0. Vital signs were within normal limits, with blood pressure of 120/80 mmHg, respiratory rate of 22 breaths per minute, pulse rate of 80 beats per minute, and body temperature of 36.5°C. Her body weight before pregnancy was 43 kg and increased to 47 kg during pregnancy, with a height of 150 cm. The client reported feeling anxious due to facing childbirth for the first time, with an anxiety score of 39.

During the assessment, the client asked whether her anxiety could affect the fetus and whether there were any methods to reduce her anxiety. The client reported no history of chronic illnesses such as heart disease, diabetes mellitus, or other systemic diseases. She occasionally experienced mild complaints such as cough and common cold. There was no significant family history of disease. During the interview, the client expressed anxiety regarding the upcoming labor process. The signs and symptoms of anxiety reported included persistent feelings of worry, tension, difficulty resting calmly, and ongoing restlessness.

b. Basic Needs

During pregnancy, particularly in the third trimester, pregnant women have various basic needs that must be fulfilled to maintain maternal and fetal well-being. Based on hierarchical theory, the first needs to be met are physiological needs. These include adequate nutrition, where the client reported eating three meals per day consisting of rice, fish, and vegetables. Regarding rest, the client slept twice a day, during the day and at night. At 36 weeks of gestation, the client experienced increased urinary frequency, urinating more than eight times per day. Her daily activities at 36 weeks of pregnancy included teaching in the morning. In addition, pregnant women require routine antenatal care to monitor both maternal and fetal conditions. Safety needs, both physical and emotional, are also essential and can be fulfilled through access to health services, a supportive environment, and education regarding the childbirth process and newborn care. Furthermore, the need for love and a sense of belonging is important, where support from the husband, family, and friends plays a significant role in helping pregnant women cope with physical and emotional changes during pregnancy.

2. Diagnosis and Interventions

Table 1. Diagnosis and Interventions Nursing

Component	Description
Nursing Diagnosis (SDKI)	**Anxiety**
Etiology	Situational crisis related to first pregnancy and approaching childbirth
Signs and Symptoms	Verbalized anxiety and worry, tension, restlessness, difficulty resting calmly, diaphoresis, PRAQ-R2 score of 39 (severe anxiety)
Nursing Outcomes (SLKI)	**Outcome Name:** Anxiety Level
	Outcome Indicators: - Decreased verbal expression of anxiety - Reduced restlessness and muscle tension - Improved ability to relax and rest - Reduced autonomic responses (e.g., sweating) - Decreased PRAQ-R2 score
Target Outcome	Anxiety level decreases from severe to moderate or mild after nursing intervention
Nursing Interventions (SIKI)	**Anxiety Reduction** - Identify the level, onset, duration, and triggers of anxiety - Monitor verbal and non-verbal signs of anxiety - Create a calm and therapeutic environment - Accompany the client when possible
	Therapeutic Communication - Establish a trusting nurse–client relationship - Listen actively to client concerns - Use a calm, reassuring, and empathetic approach - Encourage expression of feelings and perceptions
	Health Education - Explain the childbirth process and possible sensations - Provide factual information regarding diagnosis, care plan, and prognosis
	Coping Enhancement) - Identify anxiety-triggering situations - Assist in developing realistic plans for childbirth - Encourage adaptive coping strategies

	Relaxation Therapy: Progressive Muscle Relaxation (PMR) - Explain the purpose and benefits of PMR - Guide sequential tensing and relaxing of muscle groups - Practice PMR regularly to reduce muscle tension and anxiety
Evaluation	After three days of intervention, the PRAQ-R2 score decreased from 39 (severe anxiety) to 33 (moderate anxiety). The client appeared calmer, reported reduced tension, and was able to rest more comfortably.

The client presented with severe anxiety related to a situational crisis associated with first pregnancy and impending childbirth, as indicated by a PRAQ-R2 score of 39, verbalized worry, restlessness, muscle tension, diaphoresis, and difficulty resting. Following three consecutive days of nursing interventions based on SIKI Anxiety Reduction, including therapeutic communication, health education, coping enhancement, and Progressive Muscle Relaxation (PMR), anxiety levels progressively decreased. The PRAQ-R2 score declined to 33 (moderate anxiety), accompanied by observable improvements in relaxation, reduced restlessness, decreased muscle tension, and improved comfort. The SLKI outcome target—reduction of anxiety from severe to moderate—was achieved.

3. Implementation and Evaluation

Table 2. Daily Nursing Implementation and Evaluation Based on SLKI

Nursing Diagnosis (SDKI): Anxiety related to situational crisis (first pregnancy)
Nursing Intervention (SIKI): Progressive Muscle Relaxation (PMR)
Outcome Indicator (SLKI): Anxiety intensity measured using PRAQ-R2

Day/Date	Nursing Implementation	SLKI Evaluation Outcome
Day 1 **29 May 2025** **16:00 WITA**	- Assessed anxiety level using PRAQ-R2 - Monitored verbal and nonverbal signs of anxiety - Established a therapeutic environment and provided education about the childbirth process - Conducted structured **progressive muscle relaxation** training	- Pre-intervention score: **39 (Severe anxiety)** - Client expressed concerns about labor pain, fetal condition, body image changes, and loss of self-control during childbirth - Post-intervention score: **37 (Severe anxiety)** - **Target not achieved** - Client appeared anxious, tense, and mildly restless
Day 2 **30 May 2025** **16:00 WITA**	- Reassessed anxiety level using PRAQ-R2 - Monitored emotional and behavioral responses - Provided emotional support and reinforced childbirth-related information - Continued **progressive muscle relaxation** training	- Pre-intervention score: **37 (Severe anxiety)** - Post-intervention score: **35 (Moderate anxiety)** - **Target achieved** - Client reported reduced anxiety, although mild restlessness and tension persisted
Day 3 **31 May 2025** **16:00 WITA**	- Reassessed anxiety level and anxiety-related behaviors - Encouraged emotional expression - Strengthened adaptive coping mechanisms - Performed **progressive muscle relaxation** training	- Pre-intervention score: **35 (Moderate anxiety)** - Post-intervention score: **33 (Moderate anxiety)** - **Target achieved** - Client appeared calm, relaxed, and able to communicate comfortably - Client reported that spousal and family support contributed to anxiety reduction

Source: Primary data, 2025

Progressive muscle relaxation implemented over three consecutive days resulted in a consistent reduction in anxiety intensity. The PRAQ-R2 score decreased from 39 (severe anxiety) at baseline to 37 after Day 1, indicating an initial response. On Day 2, the score further declined to 35 (moderate anxiety), achieving the expected outcome. Continued intervention on Day 3 led to a sustained reduction to 33 (moderate anxiety), accompanied by observable behavioral improvements, including reduced muscle tension, decreased restlessness, and calmer verbal expression.

These findings suggest that progressive muscle relaxation effectively reduced antenatal anxiety in a third-trimester primigravida, providing a physiological basis for further discussion regarding autonomic nervous system modulation and stress-response regulation.

DISCUSSION

This case study demonstrated that progressive muscle relaxation (PMR) effectively reduced anxiety intensity in a third-trimester primigravida. The client initially experienced severe anxiety, manifested by feelings of tension, restlessness, difficulty resting, and autonomic symptoms such as sweating. After three consecutive days of PMR implementation, the anxiety score decreased from severe (PRAQ-R2 = 39) to moderate (PRAQ-R2 = 33). This gradual reduction suggests that PMR contributes to meaningful improvement in antenatal anxiety when applied consistently.

Anxiety during pregnancy, particularly in the third trimester, is a complex psychophysiological condition influenced by hormonal fluctuations, psychosocial stressors, and anticipation of childbirth. Increased activation of the hypothalamic–

pituitary–adrenal (HPA) axis during anxiety leads to elevated secretion of cortisol and catecholamines, which enhances sympathetic nervous system activity (Wayan et al., 2021). Prolonged exposure to maternal stress hormones has been associated with adverse maternal outcomes, including prolonged labor, hypertensive disorders, postpartum depression, and sleep disturbances, as well as fetal risks such as low birth weight, impaired placental perfusion, and long-term neurodevelopmental disorders (Dunkel Schetter & Tanner, 2019; Kingston et al., 2021).

Progressive muscle relaxation reduces anxiety primarily through modulation of the autonomic nervous system. Systematic muscle tension followed by relaxation suppresses sympathetic activation and promotes parasympathetic dominance, resulting in decreased heart rate, blood pressure, respiratory rate, and muscle tension (Varvogli & Darviri, 2019). Neurophysiologically, PMR has been shown to increase gamma-aminobutyric acid (GABA) activity, thereby reducing neuronal excitability and anxiety symptoms, while simultaneously lowering cortisol levels (Toussaint et al., 2021). These mechanisms explain the observable behavioral changes in this case, including reduced restlessness, improved emotional expression, and increased relaxation by the third day of intervention.

The findings of this case are consistent with recent empirical evidence. A randomized controlled trial by Bastani et al. (2022) demonstrated that pregnant women who received PMR training experienced significantly lower anxiety scores compared to those receiving routine prenatal care. Similarly, a systematic review and meta-analysis by Shi et al. (2023) confirmed that relaxation-based interventions, including PMR, significantly reduced anxiety and stress among pregnant women. These findings support PMR as an effective, safe, and low-cost non-pharmacological intervention in maternity nursing practice.

The gradual reduction of anxiety observed in this study aligns with the adaptive nature of psychological interventions. PMR requires repeated practice for optimal effectiveness, as individuals need time to familiarize themselves with the technique and develop confidence in its use. The significant improvement observed on the second and third days suggests increased physiological adaptation and coping self-efficacy. Moreover, the client reported that spousal and family support enhanced emotional comfort, consistent with evidence that social support plays a protective role against antenatal anxiety (Biaggi et al., 2021).

Overall, this case study reinforces the role of progressive muscle relaxation as a beneficial nursing intervention for managing anxiety in third-trimester pregnancy. Integrating PMR into routine antenatal nursing care may improve maternal psychological well-being and potentially reduce stress-related maternal and fetal complications.

CONCLUSION

This case study demonstrates that progressive muscle relaxation (PMR) is an effective nursing intervention for reducing anxiety in a third-trimester primigravida. A consistent decrease in anxiety intensity, measured using the Pregnancy-Related Anxiety Questionnaire–Revised 2 (PRAQ-R2), was observed over three consecutive days of intervention, shifting from severe to moderate anxiety. These findings support the effectiveness of PMR as a non-pharmacological intervention aligned with the Indonesian Nursing Outcome Standards (SLKI) for anxiety reduction.

From a clinical perspective, PMR is a simple, safe, and low-cost intervention that can be independently implemented by nurses in antenatal care settings. Incorporating PMR into routine maternal nursing care may enhance emotional regulation, promote parasympathetic nervous system activation, and strengthen adaptive coping mechanisms among pregnant women. Furthermore, the integration of PMR education into antenatal classes may improve maternal preparedness for childbirth and potentially reduce stress-related maternal and fetal complications.

This case reinforces the role of nurses as key providers of psychosocial care during pregnancy and highlights the importance of evidence-based relaxation techniques as part of holistic maternal nursing interventions.

LIMITATIONS AND RECOMMENDATION

This study has several limitations. First, the findings are based on a single case, which limits generalizability to broader populations. Second, anxiety was assessed over a short observation period, preventing evaluation of long-term effects of PMR on maternal mental health and birth outcomes. Third, the use of self-reported anxiety measurement may be influenced by subjective perception and response bias.

Future research is recommended to employ larger sample sizes and experimental or quasi-experimental designs to strengthen causal inference. Longitudinal studies are also needed to examine the sustainability of anxiety reduction and its

impact on labor outcomes, maternal satisfaction, and neonatal health. Additionally, combining PMR with other non-pharmacological interventions, such as breathing exercises, mindfulness-based techniques, or partner-supported relaxation, may further enhance its effectiveness.

In clinical practice, structured PMR protocols should be standardized and integrated into antenatal nursing guidelines to ensure consistency and reproducibility. Training programs for maternity nurses are recommended to optimize the delivery of PMR and improve the quality of psychosocial care for pregnant women.

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