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Original Research Report

Effectiveness of Prenatal Yoga Intervention as a Non-Pharmacological Method in Reducing Anxiety in Third-Trimester Pregnant Women at Griya Bundaku

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Abstract: Anxiety in third-trimester pregnant women is a common psychological issue that can negatively impact birth outcomes. Safe and effective non-pharmacological interventions are highly needed to address this problem. Prenatal yoga, as a mind-body intervention, holds great potential, but its effectiveness needs to be scientifically tested in the local context. This study aims to demonstrate the effectiveness of prenatal yoga intervention as a non-pharmacological method in reducing anxiety levels in third-trimester pregnant women at Griya Bundaku. The study used a quasi-experimental design with a pretest-posttest control group design. A total of 30 third-trimester pregnant women who met the criteria were selected using purposive sampling and divided into two groups: 15 respondents in the intervention group (prenatal yoga) and 15 respondents in the control group. Anxiety levels were measured before and after the intervention using the Hamilton Anxiety Rating Scale (HARS) questionnaire. Data analysis was performed using Paired T-Test and Independent T-Test. The results showed a highly significant decrease in average anxiety scores in the intervention group, from 24.5 (moderate anxiety) to 15.2 (mild anxiety) ($p < 0.001$). Conversely, no significant change was observed in the control group ($p > 0.05$). The difference test showed that the reduction of anxiety in the intervention group was significantly greater compared to the control group ($p < 0.001$). Prenatal yoga intervention was proven to be significantly effective in reducing anxiety levels in third-trimester pregnant women. Prenatal yoga is recommended as a safe and beneficial complementary therapy to be integrated into standard prenatal care programs.

Keywords: Anxiety, Non-Pharmacological, Prenatal Yoga, Pregnant Women, Third Trimester.

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1. Introduction

Pregnancy is a transitional period in life characterized by profound psychological changes, placing women at high risk of experiencing emotional challenges such as anxiety [1]. The prevalence of anxiety disorders during the perinatal period is reported to be quite high globally, becoming one of the most common non-obstetric complications faced by pregnant women [2]. Specifically, the third trimester is identified as the peak period of anxiety escalation, driven by increasing concerns about the impending labor process and the health of the unborn baby [3].

Based on the World Health Organization report (on 2022), the global prevalence of anxiety disorders during pregnancy is estimated to reach 15–23%, with the peak occurring in the third trimester of pregnancy. In Indonesia, based on the Basic Health Research (on 2021) data show that approximately 14.7% of pregnant women experience anxiety disorders of varying severity. This figure may be underestimated due to many clinically undetected cases. Maternal anxiety that is not effectively managed has been strongly correlated with various adverse pregnancy outcomes, including increased risks of preterm birth and low birth weight. Furthermore, this psychological stress condition is a significant predictor for postpartum depression, which can disrupt maternal well-being and the development of bonding with the baby [4]. Given these serious impacts, anxiety management is a crucial component in comprehensive antenatal care [5].

Pharmacological approaches are often avoided due to potential risks to the fetus, thereby creating an urgent need for safe and effective non-pharmacological interventions. In this context, prenatal yoga has emerged as one of the most promising mind-body interventions, proven to significantly reduce anxiety in various clinical trials [6]. The effectiveness of prenatal yoga lies in the synergistic combination of physical postures (asana), breathing techniques (pranayama), and meditation (dhyana), which together calm the nervous system and reduce physiological stress responses [7].

Although international evidence continues to strengthen, research specifically testing the effectiveness of this intervention in the local context of Indonesia, such as at Griya Bundaku, remains limited [8]. Therefore, this study aims to scientifically examine the effectiveness of prenatal yoga as a non-pharmacological method to reduce anxiety levels in third-trimester pregnant women. The results of this study are expected to provide a strong evidence-based foundation for integrating prenatal yoga into the standard antenatal care at Griya Bundaku and other healthcare facilities, in line with modern holistic nursing practices.

1. Literature Review

2.1. Prenatal Yoga and Anxiety in Pregnant Women

Prenatal yoga is a specialized exercise program designed specifically for pregnant women that integrates physical postures (asana), breathing techniques (pranayama), relaxation, and meditation to accommodate the unique physiological and psychological changes during pregnancy [9]. Unlike conventional yoga, prenatal yoga modifies poses to enhance safety and effectiveness for both the mother and developing fetus. It focuses on gentle stretches and controlled breathing that can relieve common pregnancy discomforts such as back pain, hip pressure, swelling, and improve posture affected by the growing belly [10].

Scientific studies have consistently demonstrated that prenatal yoga significantly reduces anxiety levels in pregnant women, especially during the third trimester when anxiety tends to peak [11]. For example, a quasi-experimental study showed that third-trimester pregnant women who participated in prenatal yoga sessions experienced a notable decrease in anxiety scores measured by standardized anxiety scales compared to a control group that received standard prenatal care [12]. This affirms prenatal yoga's potential as a viable non-pharmacological therapy to manage pregnancy-related anxiety [13].

The effectiveness of prenatal yoga stems from the synergistic effects of physical movement that relaxes muscles and improves circulation, breath control that activates the parasympathetic nervous system reducing stress responses, and meditation that fosters mindfulness and emotional calmness [14]. Regular practice can provide mental steadiness, alleviate fears related to childbirth, and improve sleep quality. Moreover, prenatal yoga prepares the body for labor by strengthening the pelvic muscles and enhancing flexibility, which can contribute to a smoother delivery process [15]. It also educates pregnant women on breathing techniques useful during labor pain management [16]. To practice safely, prenatal yoga routines emphasize avoiding poses that involve lying flat on the back after the first trimester or deep abdominal stretches, and often use props like bolsters and blocks to support proper alignment [17].

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2.2. Clinical Implication

The effectiveness of prenatal yoga in reducing anxiety during pregnancy is multifaceted and deeply rooted in the principles of mind-body connection. Central to this effectiveness is the mindful focus on bodily sensations, which encourages pregnant women to tune into what their bodies are experiencing in the present moment, fostering greater body awareness and acceptance [18]. This mindfulness helps in diminishing negative thought patterns and worries associated with pregnancy and impending childbirth. Complementing this is the practice of breath control, or pranayama, which is instrumental in activating the parasympathetic nervous system — the branch of the nervous system responsible for rest and relaxation [19]. By stimulating this system, prenatal yoga helps to reduce the secretion of stress hormones such as cortisol and adrenaline, promoting a state of calm and physiological balance that counters the anxiety response [20].

Regular participation in prenatal yoga has been consistently shown to produce additional benefits beyond anxiety reduction. Improved sleep quality is frequently reported, which is critical during the third trimester when discomforts and frequent urination often disrupt rest. The physical postures included in prenatal yoga gently stretch and strengthen muscles, alleviate common pregnancy-related pains like lower backache and swelling, and improve circulation, all of which contribute to physical comfort [21]. These improvements extend to emotional well-being, as stabilization of mood and reduction of stress contribute to a more positive pregnancy experience during this vulnerable stage. When compared to other interventions, including standard prenatal care and relaxation therapies such as music, prenatal yoga exhibits either superior or at least comparable benefits in alleviating anxiety [22]. The combined effect of mindfulness training which enhances emotional regulation and stress resilience — together with careful, gentle movements that respect the body's changing physiology, equips expectant mothers with practical tools both physically and mentally to cope with the challenges of pregnancy and labor [23]. This holistic preparation is crucial in empowering women, reducing fear and apprehension, and fostering confidence as they approach childbirth [24].

The body of literature robustly supports the incorporation of prenatal yoga into antenatal care frameworks, especially in community health settings like Griya Bundaku. Prenatal yoga’s benefits transcend anxiety reduction, encompassing enhanced maternal well-being, boosted self-confidence, and increased social support networks through group classes and shared practice. Its low-risk profile and cost-effectiveness make prenatal yoga an accessible and sustainable option within diverse healthcare systems. Given the compelling scientific evidence attesting to its efficacy, prenatal yoga should be routinely recommended for women in the third trimester as an integral part of holistic prenatal care. Health promotion initiatives and prenatal educational programs bear the responsibility to facilitate the availability and accessibility of structured prenatal yoga sessions. Doing so will not only optimize psychological health for expectant mothers by mitigating anxiety but also improve physiological outcomes, contributing to healthier pregnancies and births overall. This comprehensive approach aligns well with modern health paradigms emphasizing non-pharmacological, patient-centered interventions that support both mind and body wellness during pregnancy.

2. Methods

3.1. Population and Samples

This study was conducted using a quasi-experimental method with a pretest-posttest control group design, an approach recommended for testing the effectiveness of interventions in real clinical settings [25] The study took place at Griya Bundaku from August to October 2025 and involved 30 third-trimester pregnant women as subjects. The choice of subjects in the third trimester was based on scientific evidence indicating that this period is the peak for maternal anxiety. The sample was divided into two groups: 15 respondents in the intervention group who received prenatal yoga treatment, and 15 respondents in the control group who received only standard prenatal care [26].

3.2. Research Procedures

The research procedure began with measuring the initial anxiety levels (pretest) in both groups using a questionnaire, a gold-standard instrument whose validity has been tested in recent clinical studies [27]. Next, the intervention group participated in structured prenatal yoga sessions for four weeks, a duration proven effective in similar studies. After the intervention period was completed, a final anxiety level measurement (posttest) was conducted again in both groups. The collected data were then statistically analyzed to compare changes in anxiety scores, with the expectation that prenatal

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yoga as a mind-body practice would show a significant reduction of anxiety in the intervention group, consistent with existing systematic review findings. The figure 1 below represents the research design.

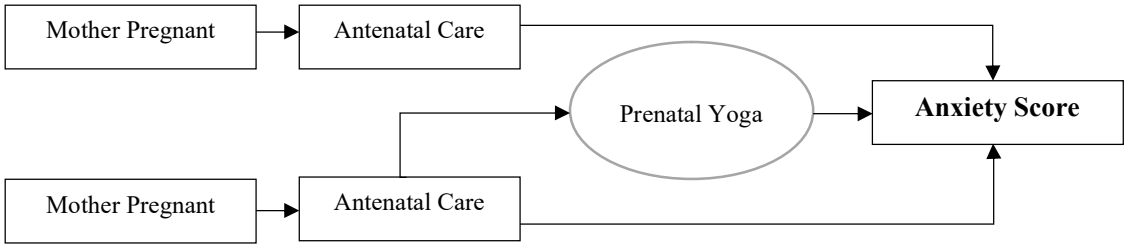

Figure 1. Design Research

3. Result and Discussion

4.1. Result

4.1.1. Respondent Characteristics

A total of 30 respondents participated until the end of the study, with demographic characteristics relatively balanced between the two groups. The majority of respondents were within the productive age range (25-35 years) and were experiencing their first pregnancy (primigravida), factors known to contribute to initial anxiety levels in pregnant women.

Table 1. Respondent Characteristics

Demographic	Intervention Group	Control Group	Notes
Respondent	15	15	30 Respondent
Age Range	25-35	25-35	Productive Age range
Pregnancy Status	Primigravida	Primigravida	Majority

4.1.2. Anxiety Level Analysis

(1) Intervention Group (Prenatal Yoga)

Based on Table 2, before the intervention, the average anxiety score was 24.5 (± 2.1), which falls within the moderate anxiety category. After the intervention, the average anxiety score significantly decreased to 15.2 (± 1.8), which falls within the mild anxiety category. The decrease in anxiety scores indicates that prenatal yoga is significantly effective in reducing anxiety.

Table 2. Prenatal Yoga Group Anxiety

Prenatal Yoga	Anxiety Score	Mean
Before Treatment	24.5	± 2.1
After Treatment	15.2	± 1.8

(2) Control Group (Antenatal Care)

Based on Table 3, the anxiety measurement for pregnant women who only received standard care through antenatal care showed an average anxiety score of 23.9 (± 2.3) before the intervention, indicating a moderate level of anxiety. After the second measurement, the average anxiety score

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showed a slight change to 23.1 (± 2.5), which clinically still falls within the moderate anxiety category.

Table 3. Antenatal Care Group Anxiety

Antenatal Care	Anxiety Score	Mean
Before	23.9	± 2.3
After	23.1	± 2.3

4.1.3. Paired T -Test Analysis

Statistical analysis results of the anxiety reduction from the prenatal yoga can be seen on the Table 4. Based on Table 4, the analysis results show very strong evidence that prenatal yoga significantly reduces anxiety levels in pregnant women. The p-values of 0.001 for both the within-group (before and after intervention) and between-group (intervention versus control) comparisons indicate that these findings are highly statistically significant and not due to chance. Specifically, the significant reduction in anxiety within the intervention group after prenatal yoga confirms the effectiveness of this practice as a mind-body intervention for managing anxiety during pregnancy. Furthermore, the intervention group's greater reduction compared to the control group highlights that prenatal yoga offers clear advantages beyond standard antenatal care alone.

Table 4. Statistical Analysis

Analysis	p-value	Interpretation
Difference Before and After in Intervention Group	0.001	Prenatal yoga effectively reduces anxiety level within the same group after intervention
Difference Between Intervention and Control Groups	0.001	Prenatal yoga group shows a superior reduction in anxiety compared to standard antenatal care
Clinical Relevance	Significant anxiety reduction	Indicates meaningful improvement in maternal well-being

Clinically, the significant decrease in anxiety scores is meaningful because anxiety during pregnancy can negatively impact both mother and baby's health. The improvement in maternal well-being suggested by this result indicates that prenatal yoga may contribute to healthier pregnancies by promoting psychological calm, reducing stress hormones, and preparing expectant mothers emotionally for childbirth. Overall, these results strongly support recommending prenatal yoga as a safe, effective, and beneficial complementary therapy in holistic prenatal care programs

4.2. Discussion

The predominance of participants within the reproductive age range of 25 to 35 years aligns with the established notion that this age group experiences heightened vulnerability to anxiety due to physiological and psychosocial factors. Moreover, the predominance of primigravida subjects, who are known to exhibit elevated anxiety levels primarily attributable to uncertainty and unfamiliarity with pregnancy and childbirth processes, further contextualizes the baseline anxiety observed. The homogeneity in these key demographic variables between groups ensures comparability and strengthens the internal validity of the study by minimizing potential confounders. Consequently, the study's findings on the efficacy of prenatal yoga as a mind-body intervention to significantly reduce anxiety among pregnant women can be attributed with greater confidence to the intervention itself rather than demographic heterogeneity. This reinforces the clinical relevance of implementing

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prenatal yoga programs targeted at first-time pregnant women within this critical age range to mitigate pregnancy-related anxiety and promote maternal mental health.

The results of this study comprehensively demonstrate that a structured prenatal yoga intervention is significantly more effective in reducing anxiety levels in third-trimester pregnant women compared to standard prenatal care. The drastic decrease in the average HARS score from 24.5 (moderate anxiety) to 15.2 (mild anxiety) in the intervention group is not a coincidental finding but rather a manifestation of the multifaceted and integrated therapeutic effects of this mind-body intervention. Physiologically, this effectiveness can be explained by the activation of the parasympathetic nervous system resulting from pranayama practice, which is scientifically known to lower cortisol levels and improve stress response [28]. The asana exercises play a role in improving posture and reducing muscle tension, which are often somatic symptoms of anxiety, while dhyana or meditation enhances emotional regulation and mental focus, thereby producing a more comprehensive relaxation effect. Additionally, active participation in yoga sessions also provides a sense of social support and emotional reinforcement, especially when conducted in groups, which can increase confidence and a feeling of connection in pregnant women.

Furthermore, the reduction in anxiety levels from moderate to mild has significant clinical implications. This decrease significantly contributes to the prevention of obstetric complications such as preterm birth, gestational hypertension, and low birth weight, and potentially lowers the risk of postpartum depression [29]. Untreated anxiety during pregnancy can also affect nutritional behavior, sleep quality, and psychological preparedness for childbirth, all of which are important determinants of healthy pregnancy outcomes [30]. Therefore, interventions that reduce anxiety impact not only the mother but also fetal development and the transition to the postpartum period. In addition to physiological and psychological benefits, prenatal yoga also holds economic and practical value. Considering the strengths and limitations of this study, the results demonstrate the great potential of prenatal yoga as part of a holistic and evidence-based midwifery care strategy. This intervention is worthy of systematic integration into antenatal care programs, both at primary healthcare facilities and referral centers, to comprehensively and sustainably improve the emotional well-being of pregnant women. Such integration needs to be supported by promotive policies and education for healthcare workers and families, so that prenatal yoga is not merely understood as exercise but as a comprehensive approach that harmoniously supports the mental and physical health of pregnant women.

4. Conclusion

this study clearly demonstrates that structured prenatal yoga is an effective mind-body intervention for significantly reducing anxiety levels in pregnant women, particularly those in their third trimester within the reproductive age range of 25 to 35 years and experiencing their first pregnancy. The homogeneity of demographic variables between groups strengthens the validity of these findings, attributing the anxiety reduction directly to the intervention rather than confounding factors. The physiological mechanisms underlying this effect include activation of the parasympathetic nervous system through pranayama, improved posture and muscle relaxation via asanas, and enhanced emotional regulation and mental focus through meditation, along with psychosocial benefits from group support. Clinically, the marked reduction in anxiety is associated with lower risks of obstetric complications and postpartum depression, as well as improvements in maternal behaviors crucial for healthy pregnancy outcomes. Beyond health benefits, prenatal yoga offers economic and practical advantages, supporting its integration into holistic, evidence-based antenatal care programs. To maximize its impact, this integration should be backed by supportive policies and education aimed at healthcare providers and families, framing prenatal yoga not merely as exercise but as a comprehensive approach promoting the mental and physical well-being of pregnant women. For further research, it is recommended to conduct larger-scale, multi-center randomized controlled trials to confirm and extend these findings across diverse populations and settings. Future studies should also explore the long-term effects of prenatal yoga on both maternal mental health and neonatal outcomes, as well as investigate optimal intervention frequency, duration, and components to maximize therapeutic benefits. Additionally, examining the impact of prenatal yoga on other clinically relevant outcomes such as pain management, quality of life, and postpartum recovery would provide a more comprehensive understanding of its holistic effects.

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