



The Effectiveness of Antenatal Yoga Exercises in Reducing the Anxiety Levels of Primiparous Mothers Before Delivery at the Setia Janji Community Health Center

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Revised: 19 June 2026 Accepted: 4 September 2026 Published: 8 September 2026 How to cite : Pane, H. W., Ilawati, S., & Bahri, S. (2026). The Effectiveness of Antenatal Yoga Exercises in Reducing the Anxiety Levels of Primiparous Mothers Before Delivery at the Setia Janji Community Health Center. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 8(3), 55–67.	<i>Anxiety in primiparous women approaching childbirth may negatively affect labor outcomes and maternal–fetal well-being. Antenatal yoga is a safe non-pharmacological intervention that may improve maternal psychological health. This study aimed to evaluate the effectiveness of antenatal yoga in reducing anxiety among third-trimester primiparous women at the Setia Janji Community Health Center. A quasi-experimental study with a pretest–posttest control group design was conducted involving 60 third-trimester primiparous women selected using purposive sampling. Participants were assigned to an intervention group (n = 30), which received a structured antenatal yoga program for four weeks (eight sessions), and a control group (n = 30), which received routine antenatal care. Anxiety was assessed using the Hamilton Anxiety Rating Scale (HARS). Data were analyzed using the Shapiro–Wilk test, paired t-test, independent t-test, and non-parametric alternatives, with $p < 0.05$ considered statistically significant. The intervention group showed a significant reduction in mean anxiety scores from 24.6 ± 4.1 to 15.2 ± 3.5 (mean difference = -9.4; $p < 0.001$), whereas the control group showed no significant change (23.9 ± 4.3 vs. 22.8 ± 4.0; $p = 0.082$). Post-intervention anxiety was significantly lower in the intervention group than in the control group (mean difference = -7.6; 95% CI: -9.5 to -5.7; $p < 0.001$; Cohen's $d = 2.02$). Antenatal yoga is an effective complementary intervention for reducing anxiety in third-trimester primiparous women and can be integrated into routine antenatal care services, especially in preparing for the birth process in a calmer and more adaptive manner.</i> Keywords: Antenatal yoga, Anxiety, Primiparous women , pregnancy, maternal health

INTRODUCTION

Pregnancy is a physiological process accompanied by substantial anatomical, hormonal, and psychological changes that require continuous maternal adaptation. Among these changes, anxiety is one of the most common mental health disorders experienced during pregnancy, particularly among primiparous women who are preparing for childbirth for the first time. Maternal anxiety has become a major public health concern because it is associated with adverse maternal and neonatal outcomes, including prolonged labor, increased obstetric interventions, preterm birth, low birth weight, impaired maternal–infant bonding, and postpartum depression. Furthermore, persistent antenatal anxiety may disrupt fetal neurodevelopment through prolonged activation of the hypothalamic–pituitary–adrenal (HPA) axis and increased cortisol secretion. Therefore, early identification and appropriate management of maternal anxiety should be considered an essential component of

comprehensive antenatal care (Jiménez-Barragan et al., 2024; Kwon et al., 2020; Mitchell et al., 2023).

Globally, the prevalence of anxiety in pregnant women remains relatively high. In Indonesia, it is reported that approximately 71.90% of pregnant women experience anxiety symptoms, particularly in the third trimester leading up to delivery (Kwon et al., 2020). Studies report that the prevalence of antenatal anxiety in developing countries ranges from 15% to over 30% (Mitchell et al., 2023). The burden of antenatal anxiety remains substantial worldwide, particularly in low- and middle-income countries (LMICs), where access to perinatal mental health services is often limited. A recent systematic review and meta-analysis involving more than 212,000 women from LMICs reported that approximately one in five women experienced clinically significant anxiety during pregnancy or within the first year postpartum. Primiparous women are particularly vulnerable because they frequently encounter uncertainty regarding childbirth, fear of labor pain, concerns about fetal safety, and limited childbirth experience. These psychological challenges may be further exacerbated by inadequate social support, poor mental health literacy, and restricted access to psychosocial interventions during routine antenatal care. Consequently, effective strategies for early detection and management of antenatal anxiety are essential to improve maternal psychological well-being and optimize pregnancy outcomes (Mitchell et al., 2023; Villar-Alises et al., 2023).

The prevalence of anxiety in pregnant women is reported to range from 18% to 25% and increases in the third trimester leading up to delivery (Villar-Alises et al., 2022). Considering the potential adverse effects of pharmacological treatment during pregnancy, non-pharmacological interventions have become increasingly recommended as first-line approaches for managing antenatal anxiety. Among these interventions, antenatal yoga has gained considerable attention because it integrates physical postures (asanas), breathing exercises (pranayama), relaxation techniques, and mindfulness meditation into a comprehensive mind–body practice. These components are believed to regulate the autonomic nervous system by reducing sympathetic activity and enhancing parasympathetic responses, thereby decreasing cortisol secretion and improving emotional regulation. Recent systematic reviews and meta-analyses have consistently demonstrated that prenatal yoga significantly reduces anxiety, stress, and depressive symptoms while improving maternal quality of life, labor outcomes, and psychological well-being. Consequently, antenatal yoga has been recognized as a safe, feasible, and evidence-based complementary intervention that can be incorporated into routine antenatal care services to promote maternal mental health (Corrigan et al., 2022; Kwon et al., 2020; Ranjbar et al., 2026).

The Setia Janji Community Health Center was selected as the study site because it serves a large number of pregnant women through routine antenatal care services and represents a primary healthcare setting where complementary interventions for maternal mental health have not yet been routinely implemented. Preliminary observations conducted by the researchers during antenatal care visits indicated that anxiety among third-trimester primiparous women was frequently encountered, while antenatal yoga had not been incorporated into routine maternal health services. Therefore, this setting was considered appropriate for evaluating the effectiveness of antenatal yoga as a complementary intervention for reducing maternal anxiety before childbirth.

Based on this description, this study aims to analyze the effectiveness of antenatal yoga exercises in reducing anxiety levels in primiparous mothers approaching labor at the Setia Janji Community Health Center (Puskesmas). Setia Janji Community Health Center was selected because it serves one of the largest antenatal care populations in Asahan Regency. Based on the 2025 antenatal registry, approximately 43% of third-trimester pregnant women reported symptoms of anxiety during routine ANC visits. Preliminary interviews with ten primiparous mothers revealed that fear of labor pain, lack of childbirth experience, and limited psychological preparation were the dominant causes of anxiety. Despite regular antenatal services, structured antenatal yoga programs had not yet been implemented in this health center. Therefore, this setting provides an appropriate environment to evaluate the effectiveness of antenatal yoga.

Efforts to manage anxiety in pregnant women can be carried out through pharmacological and non-pharmacological approaches. However, non-pharmacological interventions are more recommended because they are relatively safe for both the mother and the fetus. One emerging method is antenatal yoga, which combines breathing techniques, relaxation, meditation, and light physical movement. Yoga has been shown to reduce levels of stress hormones like cortisol and improve the psychological well-being of pregnant women (Kwon et al., 2020).

Several recent studies have consistently demonstrated that antenatal yoga is an effective complementary intervention for improving maternal psychological health during pregnancy. A systematic review and meta-analysis involving 29 intervention studies found that pregnancy yoga significantly reduced maternal anxiety, depression, and perceived stress while also increasing the likelihood of normal vaginal birth and shortening the duration of labor. Furthermore, a recent randomized controlled clinical trial reported that pregnant women who participated in structured yoga programs experienced lower levels of fear and anxiety during childbirth, accompanied by improved labor outcomes compared with those receiving standard

antenatal care. In addition, a meta-analysis evaluating prenatal yoga interventions confirmed that yoga effectively alleviates anxiety symptoms and enhances emotional well-being, supporting its implementation as an evidence-based non-pharmacological strategy within routine antenatal care services. These findings reinforce the growing evidence that antenatal yoga provides meaningful psychological benefits for pregnant women and may contribute to improved maternal and neonatal outcomes (Corrigan et al., 2022; Kuder et al., 2024; Lin et al., 2022).

In fact, a recent multicenter study in 2024 showed that anxiety and depression are major mental health problems during pregnancy, significantly found in pregnant women in various health care facilities. (Jiménez-Barragan et al., 2024) . Another study conducted in 2024 at a primary health care facility also confirmed that anxiety disorders were one of the dominant problems experienced by pregnant women during the antenatal period (Jalal et al., 2024) . Furthermore, a recent study conducted in 2025 showed that anxiety during pregnancy remains a serious problem influenced by psychosocial factors, lack of support, and unpreparedness for childbirth (Mohammed et al., 2025) .

Recent scientific evidence also demonstrates the effectiveness of antenatal yoga in reducing anxiety. A quasi-experimental study in Indonesia in 2024 showed that all respondents experienced a significant reduction in anxiety levels after a yoga intervention, with a p-value <0.05. Although scientific evidence supporting the effectiveness of antenatal yoga is increasingly strong, its implementation in primary healthcare facilities such as community health centers (Puskesmas) remains suboptimal. Puskesmas play a strategic role in antenatal care and maternal health promotion at the community level. Therefore, further research is needed to assess the effectiveness of antenatal yoga in reducing anxiety levels in primiparous mothers, particularly in primary healthcare settings.

This research is expected to contribute scientifically to the development of effective, safe, and applicable non-pharmacological interventions to improve the mental health of pregnant women and support optimal labor success.

METHOD

This study used a *Quasi-experimental design* with a pretest–posttest control group approach to evaluate the effectiveness of antenatal yoga in reducing anxiety in primiparous women before delivery. The study population consisted of all third-trimester primiparous pregnant women attending antenatal care (ANC) services at the Setia Janji Community Health Center between December 2025 and February 2026. Potential participants were identified from

the ANC registration records maintained by the Maternal and Child Health Unit. Eligible women were screened by the attending midwives according to the predefined inclusion and exclusion criteria. Those who met the eligibility criteria received a detailed explanation of the study and were invited to participate. Written informed consent was obtained prior to enrollment. A total of 60 eligible participants were recruited using purposive sampling and assigned to the intervention group ($n = 30$) and the control group ($n = 30$). Inclusion criteria were primiparous women with gestational age ≥ 28 weeks, willing to participate, no pregnancy complications, and able to attend yoga sessions. Participants with severe psychological disorders or incomplete intervention attendance were excluded from the study.

Anxiety was assessed using the Hamilton Anxiety Rating Scale (HARS), a clinician-administered instrument consisting of 14 items covering psychological and somatic symptoms of anxiety. Each item is scored on a 5-point Likert scale ranging from 0 (not present) to 4 (very severe), yielding a total score between 0 and 56. Higher scores indicate greater anxiety levels. The HARS has demonstrated good validity and reliability, with a Cronbach's alpha exceeding 0.80 in previous studies. Baseline data (pretest) were collected before the intervention. Participants in the intervention group received a structured antenatal yoga program consisting of eight sessions over a four-week period (two sessions per week). Each session lasted approximately 45 minutes and was conducted by a certified antenatal yoga instructor at the Setia Janji Community Health Center. The yoga curriculum included four main components: (1) breathing exercises (pranayama) to improve breathing control and relaxation, (2) pregnancy-adapted yoga postures (asanas) to enhance flexibility, muscle strength, and pelvic preparation for childbirth, (3) balance and gentle stretching exercises to improve posture, body stability, and physical comfort during pregnancy, and (4) guided relaxation and meditation techniques to reduce anxiety and promote psychological well-being. The control group received routine antenatal care according to the standard maternal health services without participation in antenatal yoga sessions. A posttest assessment was conducted immediately after the completion of the four-week antenatal yoga intervention (following the eighth session) using the same Hamilton Anxiety Rating Scale (HARS) administered at baseline. Baseline anxiety (pretest) was assessed before the first yoga session. Following completion of the four-week intervention, posttest anxiety was measured using the same HARS instrument by trained assessors under identical assessment procedures. Participants were followed throughout the four-week intervention period. Anxiety levels were reassessed immediately after completion of the intervention using the same HARS instrument. No further follow-up assessments were conducted after the posttest.

The dependent variable was maternal anxiety before childbirth, defined as the emotional and psychological response experienced by third-trimester primiparous women when anticipating labor. Anxiety was measured using the Hamilton Anxiety Rating Scale (HARS), which consists of 14 items assessing both psychological and somatic symptoms of anxiety. Each item is rated on a 5-point scale (0–4), resulting in a total score ranging from 0 to 56, with higher scores indicating greater anxiety.

Data were analyzed using univariate and bivariate statistics. Paired t-tests and independent t-tests were applied for normally distributed data, while Wilcoxon and Mann–Whitney tests were used for non-normally distributed data. Normality was assessed using the Shapiro–Wilk test with a significance level of 0.05. This study received ethical approval from the Health Research Ethics Committee of Universitas Sari Mutiara Indonesia, Medan, Indonesia (Ethical Exemption No. 4454/F/KEP/USM/VII/2025). Written informed consent was obtained from all participants before enrollment. Participants were informed that their participation was voluntary, confidentiality would be maintained, and they could withdraw from the study at any time without consequences.

RESULTS

This study involved 60 respondents divided into two groups: the intervention group (n=30) and the control group (n=30). Based on descriptive analysis, the characteristics of respondents in both groups showed a relatively homogeneous distribution in terms of age, education level, and employment status.

Table 1 Respondent Characteristics Based on Age, Education and Employment Status

Characteristics	Intervention (n=30)	(%)	Control (n=30)	(%)
Age (years)				
Mean ± SD	27.4 ± 3.2		26.9 ± 3.5	
Median (Min-Max)	32 (30-36)		26 (19-35)	
< 20	2	6.7	3	10
20 – 35	24	80	23	76.7
35 years	4	13.3	4	13.3
Education				
Elementary School	3	10	2	6.7
Junior High School	6	20	7	23.3
Senior High School	18	60	19	63.3
College	3	10	2	6.7
Employment Status				
Work	9	30	10	33.3
Doesn't work	21	70	20	66.7

Based on Table 1, the age distribution of respondents shows that the majority are in the 20–35 age range, with relatively similar average ages between the intervention and control

groups. The education level was dominated by high school graduates in both groups. Furthermore, most respondents were unemployed. Presenting data in the form of frequency distributions, percentages, and measures of central tendency (mean, median) and dispersion (standard deviation, range) provides a more comprehensive picture of the respondents' characteristics and indicates that both groups have relatively homogeneous baseline conditions.

Table 2. Changes in Anxiety Levels Before and After Intervention

Group	Pretest (Mean $\pm$ SD)	Posttest (Mean $\pm$ SD)	Δ Mean	p-value ¹
Intervention	24.6 $\pm$ 4.1	15.2 $\pm$ 3.5	-9.4	<0,001*
Control	23.9 $\pm$ 4.3	22.8 $\pm$ 4.0	-1.1	0.082

Information:

¹ Paired t-test

Significant (($p < 0.05$))

Based on Table 2, the mean anxiety level in the intervention group before treatment was 24.6 $\pm$ 4.1 and decreased to 15.2 $\pm$ 3.5 after antenatal yoga, with a difference in the decrease (Δ mean) of 9.4 points. The results of the *paired t-test* showed that the decrease was statistically significant ($p < 0.05$).

In contrast, in the control group, the mean anxiety level before the intervention was 23.9 $\pm$ 4.3 and after the observation period, it decreased to 22.8 $\pm$ 4.0, a decrease of 1.1 points. However, statistical tests showed that this change was not significant ($p > 0.05$).

These findings indicate that antenatal yoga significantly reduces anxiety levels in primiparous mothers approaching labor. The greater reduction in the intervention group compared to the control group demonstrates a clinically and statistically robust intervention effect.

Table 3. Differences in Anxiety Levels Between Groups After Intervention

Group	Mean $\pm$ SD	Δ Mean (Intervention– Control)	95% CI	p-value ¹	Cohen's d
Intervention	15.2 $\pm$ 3.5				
Control	22.8 $\pm$ 4.0	-7.6	(-9.5; 5.7)	0,000*	2.02

Information:

¹ Independent t-test

Significant ($p < 0.05$)

Based on Table 3, the mean level of anxiety after the intervention in the group receiving antenatal yoga (15.2 $\pm$ 3.5) was lower than in the control group (22.8 $\pm$ 4.0). The mean difference between groups (Δ mean) of -7.6 indicates a substantial decrease in anxiety in the intervention group.

The results of the *independent t-test* showed that the difference was statistically significant ($p < 0.05$). Furthermore, the 95% Confidence Interval (CI) range (-9.5 to -5.7) did not cross zero, confirming that the difference was consistent and not merely coincidental. The

effect size (Cohen's *d*) value of 2.02 indicates a very large intervention effect, thus having a high degree of influence.

Thus, the results of this study not only show statistical significance, but also have strong clinical significance, where antenatal yoga exercises are proven to be effective in reducing the level of anxiety of primiparous mothers before childbirth in a real and relevant way in health service practice.

DISCUSSION

The results of this study indicate that antenatal yoga is effective in reducing anxiety levels in primiparous mothers approaching labor. The significant reduction in mean anxiety in the intervention group and the large effect size indicate that this intervention is not only statistically significant but also clinically meaningful. These findings are consistent with a recent randomized controlled trial by (Dilcen et al., 2026; Thrower et al., 2026), which demonstrated significant reductions in both state and trait anxiety among pregnant women participating in a structured prenatal yoga program ($p < 0.001$). Furthermore, a systematic review and meta-analysis by (Corrigan et al., 2022) confirmed that pregnancy yoga significantly reduces anxiety, depression, and perceived stress while improving labor outcomes, providing strong evidence for integrating antenatal yoga into routine antenatal care.

Physiologically, the effectiveness of antenatal yoga in reducing anxiety can be explained through its regulatory mechanisms of the autonomic nervous system. Yoga can reduce sympathetic nervous system activity and increase parasympathetic activity, resulting in a decrease in stress hormones such as cortisol. This is supported by a study (Villar-Alises et al., 2022) that reported that yoga interventions during pregnancy were effective in improving maternal mental health, including significantly reducing anxiety and depression. Other studies have also shown that yoga interventions can reduce psychological stress and improve neuroendocrine balance during pregnancy (Corrigan et al., 2022; Ranjbar et al., 2026).

In addition to its physiological effects, antenatal yoga may provide psychological benefits through an integrated mind-body approach. Yoga incorporates physical postures, breathing, relaxation, and mindful practices that may contribute to psychological well-being during pregnancy. Recent systematic reviews and meta-analyses have demonstrated that prenatal yoga can significantly reduce anxiety, depression, and perceived stress among pregnant women (Corrigan et al., 2022; Lin et al., 2022; Villar-Alises et al., 2023). More recent evidence further supports the beneficial effect of prenatal yoga on anxiety during pregnancy (Çuvadar et al., 2025; Indrayani et al., 2023). Mindfulness-oriented components of yoga may also provide a

complementary pathway for improving psychological well-being and emotional adaptation during pregnancy.”.

The findings of the present study are consistent with recent evidence indicating that antenatal yoga is an effective complementary intervention for improving maternal psychological well-being during pregnancy. A recent randomized controlled clinical trial demonstrated that pregnant women who participated in structured prenatal yoga experienced significantly lower levels of childbirth-related fear and anxiety, accompanied by improved labor outcomes compared with those receiving standard antenatal care. In addition, participation in prenatal yoga classes has been shown to significantly improve maternal mental health and psychological readiness for childbirth among pregnant women receiving antenatal care. These findings further support the integration of antenatal yoga into routine maternal health services as an evidence-based strategy for promoting positive psychological outcomes during pregnancy (Fitri et al., 2025; Kuder et al., 2024).

The results of this study are also supported by several recent empirical studies. A randomized controlled clinical trial demonstrated that participation in a structured prenatal yoga program significantly reduced childbirth-related fear and anxiety while improving maternal psychological well-being compared with routine antenatal care (Kuder et al., 2024). Furthermore, a systematic review and meta-analysis of randomized controlled trials involving nulliparous women reported that prenatal yoga significantly reduced maternal anxiety (standardized mean difference [SMD] = -0.91 , $p = 0.002$) and perceived stress, while also increasing the likelihood of normal vaginal birth (Chen et al., 2025). Another randomized controlled trial also showed that women participating in prenatal yoga experienced significant reductions in both state anxiety and trait anxiety ($p < 0.001$) together with improved psychological resilience compared with the control group (Dilcen et al., 2026; Karthiga et al., 2022).

The findings of this study were further strengthened by a randomized controlled trial, which showed that yoga intervention significantly reduced anxiety (*state anxiety* and *trait anxiety*) and increased the psychological resilience of pregnant women ($p < 0.001$) (Dilcen et al., 2026; Kwon et al., 2020). This indicates that yoga not only impacts the emotional aspect but also increases the psychological resilience of mothers in facing childbirth.

In addition, evidence from RCT-based network meta-analysis showed that *mind-body interventions* , including yoga, were significantly effective in reducing anxiety and increasing *self-efficacy* in pregnant women (Miao et al., 2026; Yekefallah et al., 2021). These findings

position yoga as a complementary intervention with a strong evidence base compared to other psychological interventions.

In a clinical context, anxiety during pregnancy is a significant risk factor for adverse obstetric and neonatal outcomes. Recent evidence from a cumulative meta-analysis demonstrated that maternal prenatal anxiety was associated with a 41% higher risk of preterm birth and a 32% higher risk of low birth weight, highlighting the importance of early identification and management of anxiety during pregnancy. Therefore, interventions such as antenatal yoga have strategic value as promotive and preventive approaches to improve maternal mental health and optimize pregnancy outcomes (Duko et al., 2026; Kwon et al., 2020).

Furthermore, a quasi-randomized trial study showed that yoga interventions can improve maternal physiological regulation as measured by *heart rate variability*, which is associated with reduced stress and anxiety (Fitri et al., 2025; Mayer et al., 2025). This reinforces the idea that the benefits of yoga are not only subjective but can also be measured objectively through physiological indicators.

Compared with the control group, the present study demonstrated that anxiety levels did not change significantly in the absence of a specific intervention. This finding suggests that routine antenatal care alone may be insufficient to adequately address the psychological needs of pregnant women. Similar evidence has been reported in a recent systematic review and meta-analysis, which concluded that pregnancy yoga significantly reduced anxiety, depression, and perceived stress while improving maternal well-being, increasing the likelihood of normal vaginal birth, and shortening the duration of labor. These findings support the integration of antenatal yoga as an evidence-based complementary intervention within routine antenatal care to enhance maternal psychological health and overall pregnancy outcomes (Dong et al., 2026; Williams et al., 2020).

The practical implication of this research is the need to integrate antenatal yoga into antenatal care services at primary health care facilities, such as community health centers (Puskesmas). This intervention is relatively easy to implement, safe, and low-cost, making it highly potential for widespread implementation in maternal and child health care systems.

CONCLUSION

Antenatal yoga has been shown to be effective in reducing anxiety levels in primiparous mothers approaching labor. This is demonstrated by a significant decrease in mean anxiety scores in the intervention group compared to the control group, both statistically, with a large

mean difference. Furthermore, the high *effect size* indicates that the yoga intervention has a significant impact on reducing anxiety. Comparison between groups also showed that pregnant women who did not receive the intervention did not experience significant changes in anxiety, thus confirming that antenatal yoga is an effective intervention compared to standard antenatal care. Thus, antenatal yoga can be recommended as a non-pharmacological intervention in antenatal care services to improve the mental health of pregnant women, especially in preparing for the birth process in a calmer and more adaptive manner.

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