

# The Effect of Prenatal Yoga on Changing Sleep Quality Among Third Trimester Primigravida in Posyandu Mawar 19 Batam City

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## ABSTRACT

During the third trimester of pregnancy, it is estimated that over 75% of women experience sleep difficulties. Preterm labour, low birth weight, blood pressure issues, decreased glucose tolerance, and depression during and after pregnancy are all direct outcomes that can be directly attributed to sleeping conditions that are of poor quality. This study examines the impact of practising prenatal yoga on the quality of sleep experienced by Primigravida women in the third trimester of pregnancy. Methods: This study includes a control group design and is a quasi-experimental study. This research was carried out in Posyandu Mawar 19 in Batam City. The samples for this study consisted of sixty pregnant women between the ages of 28 and 32 weeks along in their pregnancies. These women were split into two groups: thirty individuals were assigned to the intervention group, which received prenatal yoga four times every two weeks, and thirty individuals were assigned to the control group, which consisted of pregnant women who went to their regular antenatal check-up appointments as they normally would. The results of this study were analyzed using the purposive sampling technique. The data was analyzed using the Wilcoxon test ( $p < 0.05$ ). The statistical test findings indicate that the control group ( $p$ -value  $0.001 < 0.05$ ) and intervention ( $p$ -value  $0.001 < 0.05$ ) both exhibited a significant difference. The conclusion can be drawn from this is that there is a substantial change in sleep quality before and after the intervention. Prenatal yoga has the potential to enhance the quality of sleep experienced by Primigravida women who are in their third trimester of pregnancy.

## KEYWORDS

Prenatal yoga; sleep quality; third trimester; primigravida

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## Introduction

Pregnancy is marked by considerable physiological, social, and emotional changes that can impact the mother's and fetus's health and well-being (Phiri et al., 2021). As the pregnancy proceeds, the number of overnight awakenings and the duration of those awakenings both rise while the amount of time spent sleeping decreases. More than four out of every five pregnant women suffer from some form of sleep issue. Sleep problems are a typical problem that pregnant women endure. Sleep is necessary when it comes to the appropriate growth and development of the mind and body. The ability to maintain regular sleep patterns is critical for a successful pregnancy. According to the study's findings that were carried out by Mastryagung et al (2022), ninety percent of the participants had a lower quality of sleep. The findings of a study conducted by Hafid (2023), indicate that sixty percent of pregnant women in their third trimester have mild anxiety, while seventy-seven percent of pregnant women experience poor sleep quality.

Most women experience sleep disturbances during pregnancy. The inability to get enough sleep can reduce the health of pregnant women, reduce their ability to concentrate, get tired more quickly, feel tired, have a low desire to work, and be more irritable. Changes in sleep patterns result from high circulating hormone levels and physical changes associated with pregnancy (Cannon et al, 2023). Various complaints of pregnant women, especially in the third trimester of pregnancy, include shortness of breath, low back pain, haemorrhoids, sleep disturbances, pain in the pelvic area, dizziness, abdominal cramps, leg cramps, frequent urination, and discomfort due to sudden and anxious contractions. One of the complaints in pregnant women that often occurs is sleep disturbance even though the pregnancy is normal (Lee et al., 2021).

Seventy-six percent of pregnant women reported that the quality of their sleep had declined throughout their pregnancy. Additionally, forty-nine percent of pregnant women reported feeling sleepy throughout the day, thirty-eight percent reported that they did not get enough sleep, and one hundred percent reported that they woke up frequently during the night. During the early stages of pregnancy, 35 percent of women reported having problems with the quality of their sleep (Cannon et al, 2023). By the time the pregnancy was over, the prevalence had skyrocketed to sixty percent. Due to the findings of the study conducted by Azward *et al* (2021), most respondents (53%) reported

poor sleep quality. The percentage of pregnant women in Indonesia who suffer from sleep disturbances is rather significant, coming in at approximately 64 percent.

The incidence of gestational, cardiometabolic diabetes mellitus, which is related to mother and baby morbidity, quick exhaustion, and diminished endurance, is impacted adversely by a decline in the quality of sleep experienced during the latter stages of pregnancy. According to Wang *et al* (2020), the quality of sleep is frequently linked to a variety of psychiatric illnesses, including stress, depression, and anxiety, both during pregnancy and during the postpartum period. There is also a correlation between inadequate sleep during pregnancy and a delay in the growth of the fetus, an extension of the duration of labour, and an unplanned cesarean section (Takelle et al., 2022).

Pregnant women must get the recommended amount of sleep for the regular growth and development of the fetus. The evidence that is currently available suggests that physiological and psychological changes, as well as common complaints such as back pain, gastro-oesophageal reflux, fetal movement, nausea and vomiting, urinary frequency, hormonal changes, fetal growth, and respiratory distress during pregnancy, may have an impact on the quality of sleep that pregnant women experience (Takelle et al., 2022). There is a possibility that restless syndrome and sleep apnea are connected with a decrease in the quality of sleep experienced during pregnancy. Anxiety and depressive symptoms are factors that cause poor sleep quality in pregnant women (Tang et al., 2022). Poor sleep quality during pregnancy is associated with psychosocial and physiological stress, a history of insomnia in the past, an advanced trimester, a high body mass index (BMI), increasing maternal age and gestational age, and an advanced trimester.

Because a decline in the quality of sleep experienced by pregnant women can have negative consequences for both their health and the health of their children, substantial steps must be taken to rectify this situation. The researchers in this study carried out a prenatal yoga intervention to enhance the quality of sleep experienced by first-time mothers in their third trimester of pregnancy.

Techniques that can be done to overcome sleep problems and anxiety in pregnant women by applying or providing Prenatal yoga. Prenatal yoga is also a type of light exercise to train the body and breath in pregnant women so that it can relax the body which can make mothers feel more comfortable resting or sleeping, the effect of this exercise can also increase full concentration, and be able to make pregnant women more enthusiastic about facing birth. Yoga in pregnant women is an alternative complementary method that can be done by pregnant women to reduce anxiety. Yoga is a light physical exercise that can be applied by pregnant women because yoga can help with breath regulation, muscle stretching, and meditation to focus concentration and the body feel more relaxed (Hafid, 2023).

## Literature review

Sleep quality refers to an individual's level of contentment with their sleep experience. The quality of sleep has a significant impact on both short-term and long-term human health. Hormonal changes, stress, excessive fetal movement, uncomfortable sleeping positions, frequent urination, and the stretching of bones, particularly in the waist area, as pregnancy progresses often cause sleep difficulties for pregnant women in their third trimester (Susanti et al., 2023). The deterioration in sleep quality is attributed to various factors, such as erratic sleep schedules, insufficient physical activity, and other contributing factors. Quality sleep is characterized by the attainment of both NREM and REM sleep stages. Yoga is a sort of exercise that can enhance the quality of sleep by promoting physical and psychological equilibrium (Hassan & Aljaberi, 2024).

Pregnancy yoga focuses on breathing control, body stretching, body posture, and body relaxation. These things are highly crucial during pregnancy, considering the physiological changes undergone. Prenatal yoga is a cognitive ability that enhances entire personal growth in terms of physical, psychological, and spiritual aspects. Prenatal yoga, particularly in the third trimester of pregnancy, is expected to alleviate sleep difficulties and physical discomfort, such as back pain, and facilitate a smoother birthing experience (Susanti & Ulpawati, 2022).

Prenatal yoga emphasizes comfort, stretching, and relaxation, offering numerous advantages including enhanced energy, vitality, and stamina. It aids in the alleviation of stress, anxiety, and muscle tension, while also improving sleep quality (Veronica et al., 2020). Additionally, it addresses common physical discomforts during pregnancy such as back pain, pelvic pain, and swelling. Furthermore, it facilitates postpartum healing and recovery, stabilizes emotional well-being, strengthens determination and courage, enhances self-confidence and focus, fosters positive affirmations and mental resilience during childbirth, and promotes mental serenity through relaxation and meditation (Kundarti et al., 2020).

## Method

The research employed a quasi-experimental design with a pretest and posttest, along with a control group. The participants were categorized into two groups: the intervention group consisted of primigravida women in their third trimester of pregnancy who received prenatal yoga sessions four times per month (one per week). The ethical committee of the University of Batam, Faculty of Health Sciences, approved this study. This study included a total of 60 pregnant women in their first pregnancy and third trimester. The control group consisted of 30 women, while the intervention group had 30 women. The study enrolled primigravida women in their third trimester of pregnancy who had a singleton pregnancy and a gestational age between 28 and 34 weeks. These women were experiencing a decline in sleep quality and were willing to participate in yoga practice eight times over one month, with sessions occurring once a week. The exclusion criteria pertain to moms who encounter problems during pregnancy. This study employed the Pittsburgh Sleep Quality Index (PSQI) (Pittsburgh et al.) tool and incorporated a supplementary questionnaire about

the attributes of the participants. The analysis of this study employed statistical tests, specifically the homogeneity of variance test, to evaluate the distribution of data in both groups, and the Wilcoxon test to evaluate changes in sleep quality before and after the intervention was administered. The study was carried out in Posyandu Mawar 19 in Batam City. The researcher employed pre and post-intervention questionnaires to collect data.

## Results

A variance homogeneity test was undertaken to assess the homogeneity of the respondents' attributes. The Wilcoxon and Mann-Whitney tests were employed to evaluate the impact of prenatal yoga exercises on the sleep quality of primigravida women in their third trimester of pregnancy.

**Table 1.** Distribution of Respondent Characteristics

Characteristics	Group		p-Value <sup>a</sup>
	Intervention (n = 30)	Control (n = 30)	
<b>Age</b>			
Risk	6 (20%)	7 (23%)	0.758
No risk	24 (80%)	23 (76.7%)	
<b>Education</b>			
Low	12 (40%)	10 (33%)	0.597
High	18 (60%)	20 (66.7%)	
<b>Work</b>			
work	9 (30%)	5 (16.7%)	0.226
Does not work	21 (70%)	25 (83.3%)	

<sup>a</sup>Homogeneity of Variance test

**Table 2.** Differences the Provision of Prenatal Yoga to Sleep Quality in Pregnant Women Third Trimester Primigravida

Component	Group		p-Value <sup>a</sup>	
	Intervention	Control	Intervention	Control
<b>Sleep quality pre and post</b>				
Decrease	18	2	0.001	0.246
Increase	1	5		
Stay	11	23		
<b>Subjective sleep quality pre and post</b>				
Decrease	19	1	0.001	0.319
Increase	3	0		
Stay	8	29		
<b>Sleep Latency pre and post</b>				
Decrease	9	2	0.259	1.000
Increase	6	2		
Stay	15	26		
<b>Long night sleep pre and post</b>				
Decrease	15	1	0.012	0.703
Increase	5	3		
Stay	10	26		
<b>Efficiency of sleep pre and post</b>				
Decrease	12	2	0.146	0.259
Increase	6	5		
Stay	23	12		
<b>Disorders of sleep at night pre and post</b>				
Decrease	10	2	0.108	0.418
Increase	4	4		
Stay	16	23		
<b>Using sleeping pills pre and post</b>				
Decrease	0	0	1.000	1.000
Increase	0	0		
Stay	30	30		
<b>Disruption of daytime activities pre and post</b>				
Decrease	14	2	0.082	0.562
Increase	6	1		
Stay	10	27		

<sup>a</sup>Wilcoxon Test

## Discussion

In Table 1 regarding the characteristics of respondents in the intervention group and control group, the majority of respondents were not at a high-risk age, namely 20-35 years with the number of intervention groups 24 (80%) and in the control group 23 (76.7%). in the education section in the intervention group and control group, the majority had a high education, namely 18 (60%) in the intervention group and 20 (66.7%) in the control group. from the characteristics of work in the intervention and control groups, the majority of respondents did not work with a

total of 21 (70%) in the intervention group and 25 (83.3%) in the control group with homogeneity  $p = \text{value} > 0.05$ . In Table 2 regarding the Difference in the Provision of Prenatal Yoga on Sleep Quality in Primigravida Trimester III Pregnant Women, it can be seen that the sleep quality pre-post prenatal yoga with a p-value of 0.001 in the intervention group and 0.246 in the control group. This concludes that there is significance after a prenatal yoga intervention. This is because prenatal yoga has a mind and body effect, namely relaxation, meditation, muscle stretching, and positive affirmations that can improve sleep quality in third-trimester pregnant women.

One's level of contentment with one's sleep is called one's sleep quality. The individual does not display symptoms such as weariness, worry, lethargy, and apathy; darkness around the eyes; swollen eyelids; red conjunctiva; sore eyes; attention that is divided; headaches; frequent yawning and drowsiness; or any of these other symptoms. A person's health is impacted by the quality of their sleep, both in the short and long term. Throughout the night, the quality of our sleep impacts our level of morning fitness. Getting a good night's sleep can help us wake up feeling more refreshed than we did before (Haack et al., 2020).

During the later stages of pregnancy, it is common for pregnant women to have nighttime awakenings, insomnia, and disturbed sleep. It is possible that some of the sleep disturbances that pregnant women experience can be attributed to physiological changes (Yang et al., 2020). These changes include increased progesterone and prolactin levels, fetal activity, and expanded bladder capacity. Pain can also result in a decrease in the quality of sleep. Studies have shown that between 24 and 90 percent of pregnant women experience instances of low back pain. This indicates that the frequency of this condition among pregnant women is fairly high (Kember et al., 2023).

Table 2 shows that three aspects of sleep quality significantly differed between the pre-test and the post-test. These aspects were as follows: the subjective quality of sleep improved after yoga practice, the duration of nighttime sleep improved after yoga practice, and the number of activity disruptions that occurred throughout the day reduced. As a result, it is possible to conclude that yoga activities can affect the quality of sleep that pregnant women experience. This is because yoga can improve sleep quality from a subjective perspective, increase sleep duration, and reduce activity interruptions.

A brief review of one's sleep, based on whether or not the sleep is extremely deep or very deep, is what is meant by the term "subjective sleep quality." The findings demonstrated that the subjective sleep quality of pregnant women in the control group declined as the women's gestational age increased (Broberg et al., 2022). On the other hand, there were mothers-to-be in the group. On the other hand, pregnant women in the intervention group reported that they tended to have extremely good sleep quality after participating in prenatal yoga practice (Al-Musharaf, 2022).

There were only six respondents who had very good sleep quality before receiving prenatal yoga. However, after receiving prenatal yoga practice, the number of respondents who had very good sleep quality climbed to twenty-one respondents who had very good sleep quality. According to the findings of a study that was carried out by Grace, Meryana, and Pantouw (2020), the results of the PSQI questionnaire revealed that the quality of sleep achieved by respondents before engaging in yoga exercises was an average of nine, while the average value obtained by respondents after engaging in yoga exercises was four. As a result, sleep quality is considered good when the evaluation scores are less than five and poor when the assessment scores are greater than or equal to five.

As a result of a sensation of profound relaxation, which reduces stress in the body, mind, and mind, researchers believe that the quality of sleep that pregnant women experience throughout the third trimester of their pregnancy is increased. This makes them feel more at ease and secure in preparing for childbirth. Practising yoga while pregnant has several advantages, including the alleviation of discomfort in certain areas of the body, the regulation of breathing patterns to attain a state of relaxation, the regulation of heart rhythm, and the enhancement of the quality of sleep (Novelia et al., 2019). Consequently, this activity is of utmost significance for pregnant women, particularly those in their third trimester. Not only does it help increase endurance, but it also provides a means of overcoming sleep difficulties. Pregnant women will find that the gentle movements of yoga, breathing exercises, and relaxation techniques will provide them with comfort and increase the quality of their sleep (Azward et al. (2021).

This study agrees with the findings of Gunawan, Novia Fransiska Ngo and Nur Khoma Fatmawati (2020), who conducted a study in which she practised yoga twice a week and then administered a post-test three days after the second treatment. The results showed that the average mean value before yoga practice was 9.64, while the value after yoga practice was 4.13, and the p-value was 0.004. This indicates a difference in the quality of sleep experienced by pregnant women who were 30-35 weeks pregnant before and after practising yoga. Yoga is a mind-body medicine that includes physical postures, meditation, and breathing methods (Sharma et al., 2022). Yoga is a discipline that integrates these two aspects. It has also been shown that prenatal yoga can increase the quality of sleep that pregnant women get.

The implementation of prenatal yoga has been shown to have a substantial association with the degree of sleep quality experienced by pregnant women during the third trimester, according to the findings of several studies (Astuti et al., 2022). As a result of their participation in prenatal yoga activities, pregnant women in the intervention group reported that the quality of their sleep was generally quite good, according to the findings of research conducted by Azward et al. (2021). As a result of a profound sensation of relaxation and a reduction in tension in the body, mind, and mind, women who are in their third trimester of pregnancy have an improvement in the quality of their sleep. This allows them to feel more at ease and confident in their preparations for birthing.

The researchers hypothesize that prenatal yoga is performed every month, with participants engaging in mindfulness breathing, warming up the fundamental motions of yoga, and concluding with meditation. These various movements induce a state of tranquillity in the mind and promote relaxation in the body. Before receiving the prenatal yoga intervention, the majority of pregnant women in their third trimester suffered subpar sleep quality. After receiving a prenatal yoga intervention four times a month, participants experienced improved sleep quality. They reported reduced complaints such as difficulty breathing comfortably and back pain. This can be attributed to the beneficial effects of yoga exercises in alleviating pregnancy-related discomforts and promoting relaxation of the body, mind, and soul. All participants reported improved sleep quality, transitioning from poor to satisfactory sleep quality.

## Conclusion

A prenatal yoga intervention that was carried out four times a month (once a week) in primigravida women in their third trimester of pregnancy was found to have a significant impact on the quality of sleep these women experienced. This was discovered based on the findings of a study that was carried out.

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