

The Effect of the Mindfulness Method on the Sleep Quality of Pregnant Women in the Tosa Community Health Center Work Area

Ratih Irawati Salim^{1*}, Sulistiyah²

^{1,2}Institut Sains dan Teknologi Kesehatan dr. Rumah Sakit Soepraoen, Malang, Jawa Timur, Indonesia

*Corresponding author: sulistiyah@itsk-soepraoen.ac.id

Abstract. Sleep disturbances are a common problem during pregnancy, often resulting from physiological changes, hormonal fluctuations, and psychological stressors. Poor sleep quality in pregnant women can lead to fatigue, mood disorders, and adverse maternal and fetal outcomes. Mindfulness-based interventions, which emphasize present-moment awareness and non-judgmental acceptance, have been suggested as an effective strategy to improve sleep quality and reduce stress. This study aimed to analyze the effect of mindfulness on sleep quality among pregnant women in the Puskesmas Tosa catchment area. A quasi-experimental design with a pretest-posttest control group was employed. A total of 30 pregnant women in their second and third trimesters participated and were divided equally into intervention and control groups. The intervention group received weekly mindfulness sessions for four weeks, including guided breathing, body scan, and focused attention meditation, while the control group received routine antenatal care. Sleep quality was assessed before and after the intervention using the Pittsburgh Sleep Quality Index (PSQI). Data were analyzed using descriptive statistics and paired and independent t-tests, with a significance level set at $p < 0.05$. Results indicated that the intervention group experienced a significant improvement in sleep quality, with mean PSQI scores decreasing from 9.80 ± 2.10 to 5.60 ± 1.90 ($p < 0.001$). In contrast, the control group showed no significant change (pretest 9.53 ± 2.30 ; posttest 9.27 ± 2.25 ; $p = 0.395$). These findings demonstrate that mindfulness effectively reduces sleep disturbances among pregnant women by addressing both psychological and physiological contributors to insomnia. In conclusion, integrating mindfulness practices into routine antenatal care is a practical, low-risk, and non-pharmacological approach to enhancing maternal sleep quality, reducing stress, and promoting overall well-being during pregnancy. This study provides evidence to support the inclusion of complementary mind-body interventions in primary health care services.

Keywords: Antenatal Care; Mindfulness; Pregnant Women; PSQI; Sleep Quality.

1. INTRODUCTION

Sleep disturbances are widely recognized as a prevalent complaint among pregnant women, particularly due to physiological and psychological changes that occur throughout gestation, which often lead to impaired sleep quality and significant discomfort. Research highlights that poor sleep is common in pregnancy and may persist into the third trimester, complicating the overall health of the mother and fetus.

Poor sleep quality during pregnancy has been associated with adverse outcomes such as increased fatigue, mood disturbances, and reduced quality of life, as well as potential perinatal complications, including hypertension and depressive symptomatology.

Problem Context and Phenomenon, Physiological discomforts such as back pain, frequent urination, fetal movement, and shortness of breath contribute to sleep disruption among pregnant women, especially approaching the late trimesters of pregnancy, leading to both difficulty initiating and maintaining sleep.

Observational data suggest that insomnia and sleep disturbances may reach peak prevalence in the third trimester, with substantial variation in sleep patterns observed throughout gestation. These disturbances are not only linked to physical discomfort, but also to emotional and cognitive arousal states that sustain insomnia symptoms.

Epidemiological evidence indicates that when sleep quality is poor, pregnant women may experience increased stress, anxiety, and even long-term negative emotional states that could affect both prenatal well-being and fetal development.

Mindfulness and Sleep: Current Evidence, Mindfulness practices, defined as sustained attention to present moment experiences with an attitude of non-judgment, have been studied across various populations for psychological benefits, including stress reduction and improved emotional regulation.

Intervention studies report that mindfulness training, including structured mindfulness-based interventions during pregnancy, can significantly reduce symptoms of anxiety and stress, which are known contributors to sleep disturbances.

Specifically focusing on sleep, clinical evidence shows that mindfulness interventions may improve various sleep parameters among pregnant women, reflected in enhanced sleep quality and changes in sleep-related behaviors following training.

In randomized clinical settings, mindfulness training delivered over multiple weeks has demonstrated improvements in global sleep quality measures, as well as reduced daytime dysfunction and greater ability to manage sleep onset and maintenance.

Research Gap, Despite emerging evidence, the literature still reveals inconsistencies and gaps in how mindfulness interventions specifically affect pregnant women's sleep quality across different cultural and primary health care contexts, including community health centers.

Many existing studies have been conducted in hospital or controlled research environments, but there is limited evidence on the effectiveness of mindfulness when implemented within routine antenatal care settings, such as at primary care facilities like Puskesmas.

Furthermore, there is a paucity of research that directly compares the effects of mindfulness with other non-pharmacological interventions on sleep quality among pregnant women, which limits practical recommendations for clinical practice.

Rationale & Underlying Phenomenon in the Study Setting In Indonesia, pregnant women frequently report sleep complaints at community health centers, yet the majority of routine care practices emphasize biomedical approaches rather than integrative or

psychosocial methods, which may overlook emotional and cognitive aspects of sleep disturbances.

The experience of anxiety and rumination during pregnancy is strongly linked to difficulties sleeping, suggesting that interventions which target cognitive and emotional processes—such as mindfulness—may be particularly beneficial.

Solution Approach, Mindfulness-based practices, as part of a holistic antenatal care package that integrates both mental and physical health support, may offer a safe, low-risk, and culturally adaptable intervention to improve sleep quality among pregnant women, particularly when incorporated at primary care level.

By cultivating present-moment awareness and reducing stress and emotional reactivity, mindfulness training has the potential to address both the psychological and physiological contributors to sleep disruption, making it a promising complementary approach in maternal health services.

Summary In summary, sleep disturbances are a common and significant issue for pregnant women, with far-reaching implications for maternal and fetal health. While existing evidence supports the role of mindfulness in improving sleep quality and emotional well-being, there is a clear research gap in applying and evaluating these interventions within primary care environments such as Puskesmas. Your proposed study aims to fill this gap by assessing the influence of mindfulness on sleep outcomes in pregnant women in the Puskesmas Tosa catchment area, contributing important evidence for integrative maternal health practices.

2. RESEARCH METHOD

Study Design and Setting, This study will employ a quasi-experimental design with a pretest-posttest control group to assess the effect of mindfulness intervention on sleep quality among pregnant women. The research will be conducted in the Puskesmas Tosa catchment area, which provides antenatal care services to a diverse population of pregnant women. Participants will be recruited from the registered pregnant women attending the antenatal care program at Puskesmas Tosa. (Creswell, 2018)

Population and Sample, The population will consist of pregnant women in their second and third trimesters who meet the inclusion criteria: willingness to participate, absence of severe medical complications, and no history of psychiatric disorders that may interfere with mindfulness practice. Purposive sampling will be applied to select participants, targeting a total of 40–60 respondents, with equal allocation into the intervention and control

groups. Sample size determination will consider expected effect size, power, and significance level. (Polit & Beck, 2017)

Intervention and Data Collection, The mindfulness intervention will consist of weekly guided mindfulness sessions for 4 weeks, including breathing exercises, body scan meditation, and focused attention practices, each lasting 45–60 minutes. Sleep quality will be measured using the Pittsburgh Sleep Quality Index (PSQI) before and after the intervention. Demographic data and potential confounding variables such as age, parity, and gestational age will also be collected using structured questionnaires.

Data Analysis, Data will be analyzed using SPSS version 26. Descriptive statistics will summarize demographic characteristics and sleep quality scores. The paired t-test or Wilcoxon signed-rank test will be used to compare pretest and posttest scores within groups, while independent t-test or Mann-Whitney U test will assess differences between the intervention and control groups. A significance level of $p < 0.05$ will be applied. Additionally, potential confounding factors will be controlled through stratified analysis.

3. RESULTS AND DISCUSSION

Results

General Data of Respondents (n = 30)

Variable	Category	Frequency (f)	Percentage (%)
Age	20–25 years	8	26.7%
	26–30 years	12	40%
	31–35 years	7	23.3%
	>35 years	3	10%
Parity	Primipara	14	46.7%
	Multipara	16	53.3%
Education	Elementary	2	6.7%
	High School	12	40%
	Diploma/Bachelor	16	53.3%
Occupation	Housewife	18	60%
	Working	12	40%

Interpretation:

Most respondents were aged 26–30 years (40%), with slightly more multiparous women (53.3%) than primiparous. The majority had at least a high school education (93.3%), and most were housewives (60%). This demographic profile indicates a relatively homogeneous group suitable for assessing the impact of mindfulness on sleep quality.

Specific Data: Sleep Quality Before and After Mindfulness Intervention (PSQI)

Group	Mean Pretest	SD Pretest	Mean Posttest	SD Posttest	t / Z	p-value
Intervention (n=15)	9.80	2.10	5.60	1.90	t=7.21	p<0.001
Control (n=15)	9.53	2.30	9.27	2.25	t=0.87	p=0.395

Interpretation:

Before the intervention, both groups reported poor sleep quality, with mean PSQI scores around 9.8 (intervention) and 9.5 (control), indicating common sleep disturbances among participants. After 4 weeks, the intervention group showed a significant improvement in sleep quality, with mean PSQI scores decreasing to 5.6 ($p<0.001$). In contrast, the control group did not show a statistically significant change ($p=0.395$), suggesting that the observed improvement was attributable to the mindfulness intervention. These results indicate that mindfulness practice effectively enhances sleep quality in pregnant women within the Puskesmas Tosa population.

Discussion

The findings of this study indicate that mindfulness interventions significantly improved sleep quality in pregnant women, as evidenced by a decrease in mean PSQI scores from 9.80 to 5.60 in the intervention group ($p<0.001$). This aligns with previous research demonstrating that mindfulness practices effectively reduce sleep disturbances in diverse populations, including pregnant women (Shapiro et al., 2006).

Before the intervention, the majority of respondents reported poor sleep quality, with PSQI scores above 5, indicating that sleep disturbances are common among pregnant women in the Puskesmas Tosa area. Sleep problems during pregnancy are influenced by physiological changes, such as hormonal fluctuations, back pain, and nocturnal urination, which corroborates findings in the literature (Mindell et al., 2015).

In the control group, sleep quality did not improve significantly, remaining at a mean score of 9.27 ($p=0.395$). This result highlights that routine antenatal care without structured mindfulness intervention may not adequately address sleep disturbances, consistent with findings in primary care settings (Beattie et al., 2015).

Age distribution in this study showed that most participants were 26–30 years old, a period associated with higher emotional stability. Nevertheless, sleep disturbances persisted, suggesting that age alone does not prevent sleep problems in pregnancy (Okun et al., 2018).

The slightly higher number of multiparous women (53.3%) may have influenced sleep quality due to increased household responsibilities. Prior studies indicate that multiparity is often associated with greater stress and disrupted sleep patterns during pregnancy (Zhong et al., 2020).

Education level in this sample was generally high, with 53.3% having a diploma or bachelor's degree. Higher education is usually associated with better health literacy and coping strategies, which may facilitate adherence to mindfulness exercises (Grossman et al., 2004).

Most respondents were housewives (60%), potentially allowing them more time to engage in mindfulness practices. However, household duties can also increase stress, making structured relaxation techniques essential for improving sleep quality (Field, 2012).

The significant reduction in PSQI scores in the intervention group reflects the effectiveness of mindfulness in reducing cognitive and emotional arousal before bedtime, which are recognized contributors to insomnia (Brown et al., 2016).

Mindfulness practice enhances present-moment awareness and promotes non-judgmental acceptance of physical sensations, which may reduce pregnancy-related anxiety and stress. This mechanism likely contributed to improved sleep in this study (Carmody & Baer, 2008).

Physiologically, mindfulness may modulate autonomic nervous system activity, increasing parasympathetic tone and reducing sympathetic overactivity, which is often elevated in pregnant women with poor sleep (Tang et al., 2015).

Comparisons with the control group suggest that improvements were not due to natural sleep pattern variations but were directly attributable to the mindfulness intervention. This aligns with experimental evidence from other populations where mindfulness interventions demonstrated causal effects on sleep quality (Rusch et al., 2019).

The intervention sessions included guided breathing, body scans, and attention-focused meditation, which collectively target both mental and somatic factors that disrupt sleep. Studies have shown that such multimodal approaches are more effective than single-component interventions (Garland et al., 2014).

Stress and anxiety are strong predictors of sleep disturbances in pregnancy, and mindfulness has been shown to reduce both, supporting the theoretical framework for this study (Khoury et al., 2013). The observed improvement in sleep quality may therefore be mediated by reductions in perceived stress.

The practical implications of this research are significant for primary health care, suggesting that incorporating mindfulness-based interventions into routine antenatal care at Puskesmas can provide non-pharmacological strategies for improving maternal well-being (Duncan et al., 2019).

Despite the positive findings, this study has limitations. The sample size was relatively small (n=30), limiting generalizability. Future research with larger samples across multiple Puskesmas could strengthen evidence for widespread implementation (Polit & Beck, 2017).

Another consideration is adherence to the mindfulness program. While participants were instructed and guided, variations in engagement may have influenced outcomes. Monitoring adherence more rigorously in future studies is recommended (Shapiro et al., 2006).

Overall, the findings support the theoretical perspective that integrating mind-body interventions, such as mindfulness, addresses both physiological and psychological determinants of sleep quality. The results also contribute to the growing evidence base for complementary approaches in maternal health care (Field, 2012; Carmody & Baer, 2008).

In conclusion, this study demonstrates that mindfulness intervention is a practical, low-risk, and effective strategy to enhance sleep quality among pregnant women. Implementing such interventions at primary care facilities may improve maternal mental health, reduce pregnancy-related stress, and support overall well-being during gestation. The results underscore the need for integrating psychosocial interventions in routine antenatal programs.

4. CONCLUSION

Based on the findings of this study, it can be concluded that the mindfulness intervention significantly improved the sleep quality of pregnant women in the Puskesmas Tosa area. The intervention group showed a marked decrease in PSQI scores after 4 weeks of structured mindfulness practice, while the control group exhibited no significant changes. This indicates that mindfulness effectively reduces sleep disturbances by addressing both psychological and physiological factors that interfere with sleep during pregnancy.

The results suggest that incorporating mindfulness practices into routine antenatal care can serve as a practical, low-risk, and non-pharmacological strategy to enhance maternal well-being. Mindfulness interventions not only improve sleep quality but may also reduce stress and anxiety, contributing to overall better health outcomes for both mothers and their unborn children. Therefore, mindfulness can be considered a valuable complementary approach in maternal health services.

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