



# Investigating the Effects of Yoga Nidra on Sleep Quality and Psychological Well-being in Pregnant Women

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## KEYWORDS

Yognidra, Yoga, Sleep, Pregnant Women

## ABSTRACT:

**Background:** Pregnancy is often accompanied by significant physiological and psychological changes, which can impact sleep quality and overall well-being. Yoga Nidra, a guided relaxation technique, has been suggested to promote relaxation and improve sleep. However, its specific effects during pregnancy warrant further investigation.

**Objective:** This study aimed to evaluate the effects of a Yoga Nidra intervention on sleep quality, as measured by the Pittsburgh Sleep Quality Index (PSQI), and psychological well-being, assessed using the Anxiety, depression and stress scale (ADSS) subscales in pregnant women.

**Methods:** Forty consecutive pregnant women were recruited between January and August 2024 and randomly allocated to either an intervention group (Group A, N=20) receiving Yoga Nidra sessions or a control group (Group B, N=20) receiving standard prenatal care. Baseline characteristics, including age distribution, were comparable between the groups. Sleep quality and psychological well-being were assessed at five observation points (O1-O5) throughout the study period. The Kolmogorov-Smirnov test confirmed the normal distribution of the data for both groups across all observation points. Analysis of Variance (ANOVA) was used to compare post-intervention scores between the groups, and Repeated Measures ANOVA was employed to assess changes within and between groups over time.

**Results:** Baseline characteristics showed no significant difference in age distribution between the intervention and control groups ( $p=0.920$ ). The ANOVA results on post-intervention scores (Table 12) revealed no statistically significant differences between the groups for PSQI ( $p=0.08$ ), ADSS (A) ( $p=0.17$ ), ADSS (D) ( $p=0.22$ ), and ADSS (S) ( $p=0.12$ ). However, the Repeated Measures ANOVA indicated a significant difference in PSQI scores between Group A and Group B when considering pre and post-treatment scores ( $p=0.03$ ). No significant differences were found between pre and post-treatment scores within or between groups for ADSS (A) ( $p=0.15$ ), ADSS (D) ( $p=0.21$ ), and ADSS (S) ( $p=0.14$ ).

**Conclusion:** While the point-in-time ANOVA of post-intervention scores did not show significant differences, the longitudinal analysis using Repeated Measures ANOVA suggests that Yoga Nidra may have a significant effect on improving sleep quality (PSQI scores) in pregnant women over the study period compared to standard prenatal care. The intervention did not demonstrate a statistically significant impact on the measured aspects of psychological well-being (Anxiety, depression and stress scale) as assessed by the ADSS subscales. Further research with larger sample sizes and longer follow-up periods is warranted to confirm these findings and explore the mechanisms underlying the observed effects on sleep quality.



## 1. Introduction

Pregnancy is a transformative period marked by profound physiological, hormonal, and emotional changes. These changes can often lead to various discomforts, including sleep disturbances and fluctuations in psychological well-being, such as increased anxiety, distress, and somatic complaints. [1] Adequate sleep is crucial during pregnancy for both maternal and fetal health, influencing mood, physical recovery, and overall quality of life. [2] Similarly, maintaining psychological equilibrium is vital for a healthy pregnancy and positive birth outcomes.

Yoga, a holistic practice encompassing physical postures, breathing techniques, and meditation, has been increasingly recognized for its potential benefits during pregnancy. [3] Yoga Nidra, a specific type of guided relaxation that induces a state of deep rest while maintaining awareness, has been proposed as a tool to alleviate stress, improve sleep, and enhance psychological well-being. [4] Several studies have explored the positive effects of yoga interventions on anxiety and stress in pregnant women, [5] and recent research specifically indicates that Yoga Nidra can reduce anxiety levels in pregnant women across different trimesters. [1]

Given the potential of Yoga Nidra to address common challenges faced during pregnancy, this study aimed to investigate its impact on sleep quality and specific dimensions of psychological well-being in a cohort of pregnant women. We hypothesized that a Yoga Nidra intervention would lead to improvements in sleep quality and more favorable scores.

## 2. Materials and Methods

### Study Design and Participants

This study employed a parallel-group, randomized controlled trial design. Forty consecutive pregnant women attending routine prenatal check-ups between January 2024 and August 2024 were recruited based on predefined inclusion and exclusion criteria (not specified in the provided text). Eligible participants were randomly allocated in a 1:1 ratio to either the intervention group (Group A, N=20) or the control group (Group B, N=20). Ethical approval was obtained (details not provided), and all participants provided informed consent prior to enrolment.

### Intervention

Participants in the intervention group (Group A) received [Details of the Yoga Nidra intervention: frequency, duration, content, and delivery method would be included here if available in the original paper]. The control group (Group B) received standard prenatal care as provided by the healthcare facility.

### Outcome Measures

The primary outcome measure for sleep quality was the Pittsburgh Sleep Quality Index (PSQI), a self-report questionnaire assessing sleep quality and disturbances over the past month. Higher scores indicate poorer sleep quality. Psychological well-being was assessed using three subscales of the Anxiety, depression and stress scale (ADSS):

These measures were taken at five observation points (O1-O5) throughout the study period to assess changes over time. The specific timing of these observations relative to the intervention period is not detailed in the provided text.

### Statistical Analysis

Baseline characteristics of the two groups were compared using appropriate statistical tests (e.g., t-tests for continuous variables and chi-square tests for categorical variables). The normality of the data for PSQI and ADSS subscales at each observation point was assessed using the Kolmogorov-Smirnov test. To compare the outcome measures between the intervention and control groups at the end of the study (or at each observation point), Analysis of Variance (ANOVA) was employed. Repeated Measures ANOVA was used to analyze the changes in PSQI and ADSS scores within each group over the five observation points and to compare these changes between the two groups. A p-value of less than 0.05 was considered statistically significant for all analyses.

## 3. Results

### Baseline Characteristics

As presented in Table 1, the age distribution of participants was similar between the two groups. In Group A, 35% were aged 21–25, 60% were aged 26–30, and 5% were aged 31–35. In Group B, the distribution was 40%, 55%, and 5% for the same age groups,



respectively. The mean age was  $26.25 \pm 1.93$  years in Group A and  $26.50 \pm 2.01$  years in Group B. The p-value for age group distribution was 0.920, indicating no significant difference between the groups at baseline.

### Normality of Data

The Kolmogorov-Smirnov test results (Table 2 and Table 3) for both Group A and Group B across all five observation points for PSQI, ADSS (A), ADSS (D), and ADSS (S) showed p-values greater than 0.05, confirming that the data for all outcome variables were normally distributed.

### Comparison of Post-Intervention Scores between Groups

Table 12 presents the ANOVA results comparing the post-intervention scores (presumably at the final observation, although this is not explicitly stated). No statistically significant differences were found between Group A and Group B for PSQI ( $F=2.75, p=0.08$ ), ADSS (A) ( $F=1.96, p=0.17$ ), ADSS (D) ( $F=1.55, p=0.22$ ), and ADSS (S) ( $F=2.10, p=0.12$ ).

Table 1: ANOVA Table of Post Scores

Measure	Source of Variability	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Statistic	P-Value
PSQI Post Scores	Between Groups	22.85	1	22.85	2.75	0.08
	Within Groups	61.64	8	7.70		
ADSS (A) Post Scores	Between Groups	14.23	1	14.23	1.96	0.17
	Within Groups	68.74	8	8.59		
ADSS (D) Post Scores	Between Groups	18.12	1	18.12	1.55	0.22
	Within Groups					

ADSS (S) Post Scores	Between Groups	16.30	1	16.30	2.10	0.12
	Within Groups	68.65	8	8.58		

### Repeated Measures ANOVA

The Repeated Measures ANOVA results, presented below, examined the changes in outcome measures over the five observation points within and between the groups.

### Repeated Measure ANOVA test for PSQI Scores:

Source of Variability	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Statistic	P-Value
Between Groups (Group A vs B)	45.00	1	45.00	5.52	0.03
Within Groups (Pre vs Post)	100.00	4	25.00		
Total	145.00	5			

Interpretation: The p-value of 0.03, being less than 0.05, indicates a statistically significant difference in PSQI scores between Group A and Group B when considering the changes from pre- to post-treatment (across the observation points).

### Repeated Measure ANOVA test for ADSS (A) Scores:

Source of Variability	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Statistic	P-Value
Between Groups	12.40	1	12.40	2.10	0.15



<b>(Group A vs B)</b>					
<b>Within Groups (Pre vs Post)</b>					
	vs	50.30	4	12.58	
<b>Total</b>		<b>62.70</b>	<b>5</b>		

Interpretation: The p-value of 0.15, being greater than 0.05, indicates no significant difference between pre and post-treatment ADSS (A) scores in both groups.

#### Repeated Measure ANOVA test for ADSS (D) Scores:

Source of Variability	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-statistic	P-value
<b>Between Groups (Group A vs B)</b>					
	18.50	1	18.50	1.85	0.21
<b>Within Groups (Pre vs Post)</b>					
	75.00	4	18.75		
<b>Total</b>	<b>93.50</b>	<b>5</b>			

Interpretation: The p-value of 0.21, being greater than 0.05, indicates no significant difference in ADSS (D) scores between pre and post-treatment for both groups.

#### Repeated Measure ANOVA test for ADSS (S) Scores:

Source of Variability	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-statistic	P-value
<b>Between Groups (Group A vs B)</b>					
	20.60	1	20.60	2.30	0.14

<b>Within Groups (Pre vs Post)</b>					
	vs	60.00	4	15.00	
<b>Total</b>		<b>80.60</b>	<b>5</b>		

Interpretation: The p-value of 0.14, being greater than 0.05, indicates no significant difference between the pre and post-treatment ADSS (S) scores in both groups.

#### 4. Discussion

The findings of this study suggest that while a single time-point analysis of post-intervention scores did not reveal significant differences between the Yoga Nidra intervention group and the control group, a longitudinal analysis incorporating changes over time showed a significant improvement in sleep quality (PSQI scores) in the intervention group compared to the control group ( $p=0.03$ ). This indicates that the Yoga Nidra intervention may have a beneficial effect on sleep quality in pregnant women when considering the progression throughout the study. This aligns with existing literature suggesting the positive impact of yoga and relaxation techniques on sleep. [4]

However, the study did not find statistically significant effects of the Yoga Nidra intervention on the measured aspects of psychological well-being, specifically arousal/alertness, distress, and somatic symptoms, as assessed by the ADSS subscales. The Repeated Measures ANOVA showed no significant differences between the groups or within groups over time for these measures. This could suggest that the Yoga Nidra intervention, as implemented in this study, might primarily target sleep regulation in this population, or that the ADSS subscales used were not sensitive enough to capture the specific psychological changes induced by the intervention. It is also possible that other factors not accounted for in this study influenced the psychological well-being of the participants.

The comparable baseline characteristics between the two groups, particularly the age distribution, strengthen the internal validity of the study by reducing the likelihood of confounding effects due to demographic differences. The confirmation of normal data distribution allowed for the use of parametric statistical tests, increasing the reliability of the analysis.



## Limitations

This study has several limitations that should be considered when interpreting the results. The sample size of 20 participants per group is relatively small, which may limit the statistical power to detect smaller but potentially clinically significant effects. The duration and specific content of the Yoga Nidra intervention are not detailed in the provided text, making it difficult to assess the intensity and fidelity of the intervention. Furthermore, the timing and nature of the five observation points are not clearly defined, which could impact the interpretation of the longitudinal data. The study also relied on self-report measures for sleep quality and psychological well-being, which may be subject to recall bias and social desirability bias. Finally, the study focused on specific aspects of psychological well-being assessed by the ADSS subscales, and other relevant psychological constructs such as anxiety and depression were not directly measured.

## Conclusion

In conclusion, this study provides preliminary evidence suggesting that Yoga Nidra may have a significant positive effect on improving sleep quality in pregnant women over time compared to standard prenatal care. However, the intervention did not demonstrate a statistically significant impact on arousal/alertness, distress, or somatic symptoms as measured by the ADSS subscales. Future research with larger sample sizes, clearly defined intervention protocols, longer follow-up periods, and a broader assessment of psychological outcomes is warranted to further elucidate the potential benefits of Yoga Nidra during pregnancy.

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