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THE ROLE OF KUNDALINI YOGA IN ALLEVIATING EARLY PREGNANCY DISCOMFORTS: A PRE-POST TEST EXPERIMENTAL STUDY

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ABSTRACT

Background: Recent studies highlight the therapeutic potential of yoga and meditation in pregnancy, particularly for managing anxiety, nausea and vomiting in pregnancy (NVP). Although some clinical research has established yoga's benefits, the specific effects of Kundalini Yoga on anxiety and NVP during early pregnancy remain underexplored. **Objective:** This study examines the effectiveness of Kundalini Yoga in reducing anxiety and NVP levels among pregnant women in their first trimester. **Methods:** A true experimental study with a pre-posttest randomized controlled design was conducted. A total of 50 pregnant women attending Polindes Mancon, Nganjuk were randomly assigned to either the treatment group (receiving Kundalini Yoga intervention) or the control group (receiving standard prenatal care). Anxiety and NVP levels were measured using validated questionnaires before and after a four-week intervention period. **Results:** The treatment group exhibited significant reductions in anxiety ($p = 0.039$) and NVP levels ($p = 0.000$) compared to the control group ($p < 0.05$). Within-group analysis showed that anxiety levels significantly decreased in the treatment group ($p = 0.002$), while no significant change was observed in the control group ($p = 0.102$). Additionally, both groups demonstrated improvements in NVP from pre- to post-intervention, though the effect was more pronounced in the treatment group ($p = 0.000$) compared to the control group ($p = 0.013$, $p < 0.05$). **Conclusion:** These findings suggest that Kundalini Yoga is an effective intervention for reducing anxiety and NVP during early pregnancy, potentially improving both the psychological and physical well-being of expectant mothers. Future research should explore long-term effects and optimal implementation strategies for integrating Kundalini Yoga into prenatal care programs.

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BACKGROUND

Pregnancy is a physiological process that requires significant adaptations, often leading to psychological changes, including anxiety. In Indonesia, approximately 28.7% of pregnant women experience anxiety, which can be mitigated through various relaxation techniques¹. Anxiety during pregnancy can occur at any stage, from the first to the third trimester, and has potential negative consequences for both the mother and fetus². Moreover, psychological distress, such as anxiety, has been linked to an increased severity of nausea and vomiting during pregnancy

(NVP), exacerbating both physical and psychological discomfort³.

NVP is a prevalent condition, particularly in early pregnancy, and can significantly disrupt daily life and overall well-being. While its etiology is multifactorial, the roles of family support and psychological factors remain underexplored⁴. Pharmacological treatments are often prescribed to alleviate symptoms; however, they may not be entirely effective, highlighting the need for complementary therapeutic approaches⁵.



Yoga, derived from the Sanskrit term yuj (meaning "to unite"), is a holistic practice that integrates spiritual, mental, emotional, and physical dimensions through breathing exercises (pranayama), concentration and meditation (dharana and dhyana), and physical postures (asanas). Several studies suggest that yoga provides therapeutic benefits during pregnancy by reducing anxiety, depression, and physical discomfort, as well as lowering the risk of antepartum complications and labor pain. However, further systematic research is needed to substantiate these effects⁶.

Kundalini Yoga, rooted in the Tantric Yoga tradition, involves practices aimed at activating energy along the spine toward the brain. This form of meditation has been explored across various contemplative traditions, including Buddhist and Christian practices. Prior research indicates that Kundalini Yoga can improve symptoms related to post-traumatic stress, enhance sleep quality, improve stress management, elevate mood, increase resilience, and reduce anxiety compared to control groups⁷.

Given these potential benefits, this study aims to evaluate the effects of Kundalini Yoga on anxiety and NVP levels in pregnant women during the first trimester.

METHODS

This study employed an experimental design to compare outcomes between control and treatment groups, both pre-and post-intervention. A total sampling technique was utilized, involving all first-trimester pregnant women attending the Polindes Mancon Nganjuk pregnancy class. Anxiety levels were assessed using the Perinatal Anxiety Screening Scale (PASS), while the frequency of nausea and vomiting during pregnancy (NVP) was measured using the Pregnancy-Unique Quantification of Emesis (PUQE-24) questionnaire. The final sample consisted of 50 participants, who were randomly assigned to either the control or treatment group.

The intervention involved daily, self-administered Kundalini Yoga sessions for the treatment group, lasting 25 minutes per session. These sessions were structured as follows: deep breathing exercises (3 minutes), basic spinal flexion exercises (11 minutes), and meditation for pregnancy (11 minutes). Certified yoga instructors provided

instructional videos to guide participants through the Kundalini Yoga exercises.

Anxiety and NVP levels were reassessed after four weeks. Data analysis was conducted using the Mann-Whitney U test to compare differences between groups and the Wilcoxon Signed-Rank test to evaluate within-group changes. All statistical analyses were performed using SPSS.

RESULT

Figure 1 illustrates the distribution of anxiety levels between the control and treatment groups before and after the intervention. Prior to treatment, 17 participants (68%) in the control group were asymptomatic, 7 (28%) experienced mild-to-moderate anxiety, and 1 (4%) experienced severe anxiety. In the treatment group, 15 participants (60%) were asymptomatic, 9 (36%) had mild-to-moderate anxiety, and 1 (4%) experienced severe anxiety. After four weeks of intervention, anxiety levels changed as follows: in the control group, 21 participants (84%) were asymptomatic, 3 (12%) had mild-to-moderate anxiety, and 1 (4%) remained in a severe category. In contrast, all participants in the treatment group (100%) were asymptomatic following the intervention.

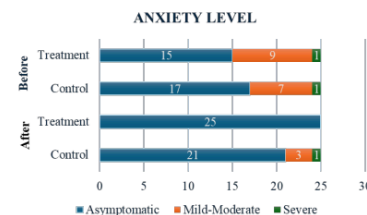


Figure 1. Anxiety Level Results Before and After Treatment

Figure 2 presents the levels of nausea and vomiting in pregnancy (NVP) among participants before and after treatment. Before the intervention, 22 participants (88%) in the control group experienced mild NVP, while 3 participants (12%) experienced moderate NVP. In the treatment group, 18 participants (72%) reported mild NVP and 7 (28%) reported moderate NVP. After four weeks of intervention, NVP levels shifted in both groups. In the control group, 2 participants (8%) were asymptomatic, 9 participants



(36%) continued to experience mild NVP, and 14 participants (56%) experienced moderate NVP. In contrast, in the treatment group, 19 participants (76%) were asymptomatic, and 6 participants (24%) experienced mild NVP.

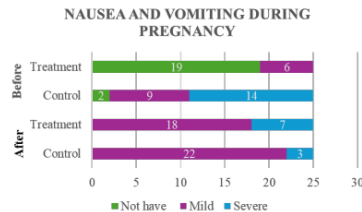


Figure 2. Nausea and Vomiting during Pregnancy (NVP) Level Results Before and After Treatment

The Mann-Whitney statistical test results, presented in Table 1, indicate significant post-intervention differences between the intervention and control groups in anxiety levels and NVP ($p = 0.039$ for anxiety; $p = 0.000$ for NVP, $p < 0.05$). In contrast, no significant differences were observed between the groups for anxiety and NVP levels at baseline ($p = 0.579$ for anxiety; $p = 0.162$ for NVP, $p > 0.05$).

Table 1. Analysis of Kundalini Yoga Analysis on Differences in Levels of Anxiety and Nausea and Vomiting in Pregnancy Between Groups

	Before Treatment		After Treatment	
	Anxiety	Nausea and vomiting	Anxiety	Nausea and vomiting
Mann-Whitney U	288.500	262.500	262.500	58.000
Z	-.554	-1.400	-2.063	-5.272
Asymp. Sig. (2-tailed)	0.579	0.162	0.039*	0.000*

Table 2 displays the results of the Wilcoxon test for within-group comparisons. No significant change in anxiety levels was observed in the control group over the study period ($p = 0.102$, $p > 0.05$). In contrast, the treatment group demonstrated a statistically significant reduction in anxiety following the intervention ($p = 0.002$, $p < 0.05$). Additionally, a marked decrease in the incidence of nausea and vomiting was observed from pre- to post-treatment in both the control and treatment groups ($p = 0.013$ for control; $p = 0.000$ for treatment, $p < 0.05$).

Table 2. Analysis of Group Differences in Anxiety Levels and Nausea and Vomiting During Pregnancy

	Anxiety	Nausea and vomiting
Control	0.102	0.013*
Treatment	0.002*	0.000*

DISCUSSION

The present study demonstrates that Kundalini effectively reduces anxiety among first-trimester pregnant women. This finding is consistent with prior research suggesting that light yoga and relaxation practices can significantly alleviate pregnancy-related anxiety⁸. Similarly, previous studies have emphasized the effectiveness of meditation and breathing techniques in supporting mental well-being during pregnancy^{6,9}. Given that early pregnancy is often marked by emotional fluctuations and increased vulnerability to anxiety, the observed reduction suggests that Kundalini may serve as a meaningful intervention during this critical period.

The mechanisms through which Kundalini exerts its benefits appear to be both physiological and psychological. This practice integrates postures, breathing exercises, meditation, and energy management aimed at promoting balanced energy flow¹⁰. Among these, breathing techniques play a pivotal role in enhancing relaxation, managing stress, and regulating physiological responses. Previous evidence shows that such exercises can lower cortisol levels—a biomarker of stress—thereby improving emotional stability, cognitive function, and metabolic regulation¹¹. In addition, improvements in heart rate variability (HRV), such as increases in SDNN and RMSSD, suggest better autonomic nervous system regulation following prenatal yoga¹². These neurovascular responses, especially parasympathetic activation, may play a role in reducing the anxiety symptoms identified in this study.

Supporting this physiological rationale, the current results reveal statistically significant reductions in anxiety ($p = 0.039$) and nausea and vomiting in pregnancy (NVP) levels ($p = 0.000$) in the treatment group compared to the control group. Within-group analysis further confirmed a significant decrease in anxiety within the treatment group ($p = 0.002$), whereas no meaningful change occurred in the control group ($p = 0.102$). Although both groups showed some reduction in NVP, the improvement was markedly greater in the treatment group ($p = 0.000$) compared to the control ($p = 0.013$). These outcomes reinforce the potential of



Kundalini Yoga as a dual-targeted intervention addressing both emotional and physical symptoms of pregnancy.

The reduction in NVP is particularly noteworthy, as nausea and vomiting are common in up to 80% of pregnancies, especially during the first trimester¹³. While a natural decline in symptoms may occur over time, the significantly greater reduction in the treatment group highlights the added benefit of yoga practice. Breathing techniques such as pranayama are known to enhance parasympathetic activity and modulate the autonomic nervous system, which can help mitigate gastrointestinal discomfort¹⁴. These findings align with previous reports on the utility of yoga in reducing both psychological distress and physical symptoms, such as NVP, in early pregnancy^{4,15}.

Given the association between early pregnancy anxiety and long-term maternal mental health, including risk for postpartum anxiety³, early interventions such as Kundalini Yoga may serve as a foundational preventive strategy. Not only does it reduce anxiety and NVP, but it also enhances relaxation and overall quality of life, supporting its inclusion in holistic prenatal care⁴.

In conclusion, the results of this study support the use of Kundalini Yoga as a complementary non-pharmacological intervention during early pregnancy. Despite certain limitations—such as the small sample size, short duration of intervention, and lack of control over external variables such as diet and social support—these findings offer meaningful preliminary evidence. Future studies are recommended to include larger, more diverse samples, longer intervention periods, and biomarker-based outcomes to further explore the long-term impact and underlying mechanisms of Kundalini Yoga on maternal health.

CONCLUSION

The implementation of Kundalini Yoga interventions during the first trimester of pregnancy provides significant benefits for both psychological and physical well-being. This study demonstrates that Kundalini Yoga effectively reduces anxiety levels and alleviates symptoms of nausea and vomiting in pregnancy (NVP). These findings highlight the potential of Kundalini Yoga as a complementary therapy to enhance maternal health during early pregnancy. Future research with larger sample sizes and

longer intervention periods is recommended to further validate these results.

ETHICAL APPROVAL

Informed consent was obtained from all participants who agreed to participate voluntarily. This research complied with ethical standards and has received ethical clearance under letter 110/FKES/EP/2023.

CONFLICT OF INTEREST

The authors declare no conflicts of interest related to this study.

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AUTHOR CONTRIBUTION

All authors contributed equally to every research stage, from the initial conceptualization to the drafting and finalization of this article.

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