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The Efficacy of Combination of Prenatal Yoga and Self Hypnosis on Anxiety Level of Pregnant Women with Preeclampsia in Indonesia

Deasy Irawati, Ali Madinah, Siti Anisak

Department of Midwifery, Poltekkes Kemenkes Surabaya, Surabaya, Indonesia

Corresponding author: Deasy Irawati (e-mail: deasyrwt@gmail.com)

ABSTRACT Preeclampsia is a significant obstetric complication that contributes substantially to maternal and neonatal morbidity and mortality worldwide. Beyond physical health implications, it is often associated with increased levels of maternal anxiety, particularly due to the high risk posed to both mother and fetus. Addressing this anxiety is essential to improving pregnancy outcomes. This study aimed to determine the effectiveness of a combined intervention involving prenatal yoga and self-hypnosis in reducing anxiety levels among pregnant women diagnosed with preeclampsia. Utilizing a quasi-experimental design with a pretest-posttest control group format, 40 pregnant women with preeclampsia were recruited from Anna Medika Madura Hospital and divided equally into treatment and control groups via consecutive sampling. The intervention group participated in three sessions of guided prenatal yoga and self-hypnosis exercises over 12 days. Anxiety was assessed before and after the intervention using the State-Trait Anxiety Inventory (STAI). Statistical analysis using the Wilcoxon Signed-Rank Test and Mann-Whitney U Test revealed a significant reduction in both momentary and basic anxiety levels in the intervention group ($p = 0.000$), while no significant changes were observed in the control group. These findings suggest that the combination of prenatal yoga and self-hypnosis is a highly effective non-pharmacological intervention for reducing anxiety among preeclamptic pregnant women. It is recommended that such practices be integrated into antenatal care services as an alternative therapeutic strategy. Further research should explore the physiological impact on blood pressure and fetal health outcomes in a larger and more diverse population.

INDEX TERMS Prenatal yoga, self-hypnosis, anxiety, preeclampsia, antenatal intervention

I. INTRODUCTION

Preeclampsia is a serious hypertensive disorder that emerges after 20 weeks of gestation and is responsible for a substantial portion of maternal and neonatal complications worldwide [1]–[5]. Characterized by elevated blood pressure (≥140/90 mmHg) and proteinuria, its incidence is estimated at 2–8% of all pregnancies globally [2], [3]. The burden is significantly higher in low-to-middle-income countries, where limited access to adequate antenatal care exacerbates outcomes [1], [4]. In Indonesia, the prevalence of preeclampsia contributes to an alarming maternal mortality rate and remains a public health concern.

The etiology of preeclampsia remains multifactorial and not entirely understood; however, growing evidence suggests a strong link between psychological stress particularly anxiety and the onset or exacerbation of preeclampsia [6]–[11]. Anxiety is one of the most prevalent psychological disorders experienced during pregnancy and is known to contribute to physiological alterations that may worsen hypertensive states [12], [13]. Moreover, untreated prenatal anxiety is associated with adverse maternal mental health outcomes, increased use of medical interventions during labor, and delayed postpartum recovery [8], [9], [11].

Current management of anxiety in pregnant women often includes pharmacological interventions such as anxiolytics or antidepressants. However, their use has been linked with increased risk of preeclampsia and other pregnancy complications [14]. As such, non-pharmacological strategies are being increasingly explored. Among these, prenatal yoga and hypnosis have demonstrated promise in managing anxiety and improving maternal well-being [15]–[20].

Prenatal yoga incorporates breathing techniques, stretching, and mindfulness practices designed to balance the autonomic nervous system and reduce sympathetic activity, thereby promoting physical and emotional relaxation [15], [19], [27]. Simultaneously, self-hypnosis defined as a self-directed state of focused attention enables the modulation of physiological responses and stress perception, reducing maternal anxiety and even influencing fetal parameters such as heart rate [21]–[23], [30]. While both interventions independently have shown positive outcomes in anxiety reduction, their combined effects remain underexplored.

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To date, there is limited empirical evidence regarding the effectiveness of combining prenatal yoga and self-hypnosis specifically to address anxiety in pregnant women with preeclampsia. While previous studies have examined each intervention individually, research exploring their combined use remains scarce. Moreover, there is a noticeable lack of intervention models that are adapted to the context of low-resource healthcare settings, such as those commonly found in many areas of Indonesia. This gap highlights the urgent need for accessible and practical solutions that can be integrated into antenatal care for high-risk pregnancies.

This study aims to evaluate the effectiveness of a combined prenatal yoga and self-hypnosis program in reducing anxiety levels among pregnant women diagnosed with preeclampsia. The ultimate goal is to provide evidence-based support for integrating non-pharmacological therapies into maternal healthcare services, particularly in environments where access to mental health care is limited.

The contributions of this study are threefold. First, it examines a combined non-pharmacological intervention tailored specifically for women with preeclampsia a group that faces both physiological and psychological risks. Second, it provides statistical evidence that supports the implementation of holistic approaches, such as yoga and self-hypnosis, in antenatal care (ANC) programs. Third, it offers a replicable and scalable model that can serve as an anxiety management strategy in antenatal settings, especially those operating with limited resources.

The structure of this paper is organized into five main sections. Section I presents the background, problem formulation, and identified research gap. Section II outlines the research methodology, including the quasi-experimental design, intervention protocol, and data analysis tools. Section III reports the findings on anxiety levels before and after the intervention. Section IV discusses these findings in relation to physiological mechanisms and previous literature. Lastly, Section V summarizes the conclusions and provides recommendations for future research and clinical implementation.

II. METHOD

A. STUDY POPULATION AND SAMPLING

The target population included all pregnant women diagnosed with preeclampsia who attended the hospital during the study period. A consecutive sampling technique was utilized, whereby participants who met the inclusion criteria and were present at the hospital during the data collection timeframe were recruited until the desired sample size was achieved. A total of 40 participants were selected and equally divided into two groups: 20 in the intervention group and 20 in the control group. Inclusion criteria encompassed pregnant women with a gestational age of 22 weeks or more, clinically diagnosed with mild preeclampsia, and willing to provide informed consent. Exclusion criteria included gestational age below 22 weeks, severe preeclampsia symptoms, a history of antepartum hemorrhage, low birth weight deliveries, and premature rupture of membranes. Ethical approval was obtained from the Institutional Review Board prior to participant enrollment, and confidentiality was maintained throughout the study.

B. INTERVENTION PROCEDURES

The intervention group underwent a structured program combining prenatal yoga and self-hypnosis techniques. Participants attended three supervised sessions over a period of 12 days, with each session occurring every four days. Each session was guided by trained facilitators using standardized protocols, adhering to the hospital's Standard Operating Procedures (SOPs). The prenatal yoga routine included stretching, breathing regulation, and mindfulness practices tailored for pregnant women with hypertension. Self-hypnosis sessions included guided visualization, focused breathing, and affirmations designed to induce deep relaxation and enhance self-efficacy. After each session, participants rested for 30 minutes to allow for physiological stabilization. The State-Trait Anxiety Inventory (STAI), which consists of 20 items for both momentary (state) and baseline (trait) anxiety, was used to assess anxiety levels before and after the intervention. The control group received standard antenatal care without exposure to any additional intervention.

C. RESEARCH INSTRUMENTS

The primary instrument for anxiety measurement was the validated Indonesian version of the STAI questionnaire. The STAI has been widely used in perinatal research due to its high reliability and ability to distinguish between short-term situational anxiety and general anxiety tendencies [31]. All instruments used in this study were pre-tested and shown to have high internal consistency, with a Cronbach's alpha exceeding 0.80. The intervention was administered according to the SOPs adapted from the prenatal yoga curriculum of the Ministry of Health and self-hypnosis scripts based on internationally recognized hypnobirthing techniques [32]. Compliance was monitored using attendance records and facilitator logs.

D. DATA ANALYSIS

Quantitative data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the demographic and baseline characteristics of the participants. The Shapiro-Wilk test indicated non-normal data distribution; thus, non-parametric statistical tests were applied. The Wilcoxon Signed-Rank Test was used to assess differences in anxiety levels within each group before and after the intervention, while the Mann-Whitney U Test was employed to compare post-intervention anxiety levels between groups. Statistical significance was set at $p < 0.05$. Data presentation included mean ± standard deviation for continuous variables and frequency distributions for categorical data.

E. VALIDITY AND RELIABILITY

All instruments were tested for face validity through expert review, and pilot-tested on a sample of five pregnant women not included in the final study. The inter-rater reliability between observers was ensured by training all facilitators prior to the intervention. The internal consistency reliability for the STAI in this study was $\alpha = 0.88$, which confirms strong reliability.

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F. ETHICAL CONSIDERATIONS

All participants provided written informed consent. The study upheld confidentiality, data anonymization, and the right of participants to withdraw at any time without penalty. Ethical clearance was approved by the Institutional Review Board of the Health Polytechnic of the Ministry of Health, Surabaya.

TABLE 1
Distribution of Demographic Characteristics of Pregnant Women with pe at Anna Medika Madura Hospital in 2022

Characteristics of Respondents	Treatment Group		Control Group		Homoge neity
	n=20	%	n=20	%	
Age					0,575
< 20 th	3	75	1	25	
20-35 th	17	50	17	50	
> 35 th	-	-	2	100	
Education					0,492
Elementary	7	70	3	30	
Junior High School	7	41,2	10	58,8	
Sen. High School	5	55,6	4	44,4	
Academy / University	1	25	3	75	
No schooling	-	-	-	-	
Job					0,380
House wife	17	50	17	50	
Farmer / factory worker	2	50	2	50	
Trader / private					
Civil Servant					
Other	1	50	1	50	
Gravida					0,366
Primigravida	9	42,9	12	57,1	
Multigravida	11	57,9	8	42,1	

III. RESULTS

A. CHARACTERISTICS OF RESPONDENTS

The results of the research conducted by the researcher are in TABLE 1 that for the treatment group, most were in the healthy reproductive age group (20-35 years), namely 50%, as well as in the control group, most were in the healthy reproductive age group (20-35 years), namely 50%.

The last education in both the control and treatment groups was mostly junior high school education, 41.2% in the treatment group and 58.8% in the control group. The employment characteristics of the treatment and control groups were mostly working as housewives, 50% each. Parity in the treatment group was mostly multigravida, 57.9%, while in the control group most of the primigravida were 57.1%. Respondents of both groups were homogeneous (significance value >0.05).

B. ANXIETY LEVEL OVERVIEW

TABLE 2 shows that at the beginning of the study (pre-test) both the treatment group and the control group both showed the highest level of momentary anxiety and basic anxiety in the moderate category with a percentage of 70% and 90% respectively. While the level of momentary anxiety at the end of the study (post-test) in the treatment group was more at the mild anxiety level, which was 70%, in contrast to the control group, which was still more at the moderate anxiety level, which was 85.0%. Likewise, the basic anxiety level, in the treatment group, most of them were 75% at the mild anxiety level, in the control group most of them were 90% at the moderate anxiety level.

TABLE 2
Frequency Distribution of Pre-Test and Post-Test Results of Anxiety Levels of Pregnant Women with Pe at Anna Medika Madura Hospital in 2022

Tingkat Kecemasan	Treatment		Control	
	n=20	%	n=20	%
Pre Test				
Momentary Anxiety				
Mild	2	10	1	5
Moderate	14	70	18	90
Severe	4	20	1	5
Basic anxiety				
Mild	2	10	1	5
Moderate	14	70	18	90
Severe	4	20	1	5
Post Test				
Momentary Anxiety				
Mild	14	70	2	10
Moderate	6	30	17	85
Severe	-	-	1	5
Basic anxiety				
Mild	15	75	2	10
Moderate	5	25	18	90
Severe	-	-	-	-

C. THE EFFECT OF THE COMBINATION OF PRENATAL YOGA AND SELF HYPNOSIS ON THE ANXIETY LEVEL OF PREGNANT WOMEN WITH PREECLAMPSIA

The control group have taken in yoga and self-hypnosis exercises held by researchers 3x in 12 days (once in 4 days). After gymnastics, anxiety levels were measured using the STAI measuring instrument. Here are the results of pretests and posts in the control and treatment groups:

TABLE 3
Results of Normality Test of Momentary Anxiety Data of Pregnant Women with at Anna Medika Madura Hospital in 2022

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre Test	Treatment	0,728	20	0,000
Post Test	Treatment	0,580	20	0,000
Pre Test	Control	0,448	20	0,000
Post Test	Control	0,545	20	0,000

TABLE 3 shows that the significant value at the beginning of the study (pre-test) obtained a p value of less than 0.05, namely 0.000 for the group given the intervention and the group that did not get the intervention. Likewise, at the end of the study (post-test), a significance value of less than 0.05 was obtained for the intervention group and the control group, namely 0.000. This means that the intervention and control groups at the beginning of the study and the intervention group at the end of the study have an abnormal data distribution. This indicates that the analysis used is non-parametric analysis because most of the data is not normally distributed.

TABLE 4
Results of Test Test Normality Data Basic Anxiety of Pregnant Women with in Anna Medika Madura Hospital in 2022

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre Test	Treatment	0,728	20	0,000
Post Test	Treatment	0,544	20	0,000
Pre Test	Control	0,448	20	0,000
Post Test	Control	0,351	20	0,000

TABLE 4 shows that the significant value at the beginning of the study (pre-test) obtained a p value of less

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than 0.05, namely 0.000 for the group given the intervention and the group that did not get the intervention. Likewise, at the end of the study (post-test), a significance value of less than 0.05 was obtained for the intervention group and the control group, namely 0.000. This means that the intervention and control groups at the beginning of the study and the intervention group at the end of the study have an abnormal data distribution. This indicates that the analysis used is non-parametric analysis because most of the data is not normally distributed.

TABLE 5 shows the average pre-test anxiety score in the treatment group (51.55) is higher than the post-test anxiety score (38.75). Whereas in the control group, the pretest anxiety score (48.35) was almost the same as the posttest (48.55). The results of the Wilcoxon sign rank test with a significance level of α = 0.05 obtained a value of ρ = 0.000 (0.000 <0.05), so Ho is rejected, which means that there is an effect of the combination of prenatal yoga and self-hypnosis on the level of momentary anxiety of pregnant women with preeclampsia. The table above also shows the average pre-test baseline anxiety score in the treatment group (50.85) is higher than the post-test anxiety score (37.90). While in the control group, the pretest anxiety score (48.55) was almost the same as the posttest (48.35). The results of the Wilcoxon sign rank test with a significance level of α = 0.05 obtained a value of ρ = 0.000 (0.000 <0.05), so Ho is rejected, which means that there is a combination effect of prenatal yoga and selfhypnosis on the level of momentary anxiety of pregnant women with preeclampsia.

D. *DIFFERENCES IN ANXIETY LEVELS OF PREGNANT WOMEN WITH PREECLAMPSIA IN THE TREATMENT GROUP AND CONTROL GROUP*

Data on the level of anxiety of pregnant women obtained were analyzed using the Mann Whitney U Test. Results differences in anxiety levels of pregnant women with preeclampsia in the treatment group and control group are presented in the TABLE 6 that showed the average pre-test instantaneous anxiety score in the treatment group and control group (49.95) is higher than the post-test anxiety score in the treatment group and control group (43.65). The results of the analysis using the Mann Whitney U Test, before the intervention obtained a significance value of 0.461 (p>0.05), meaning that there was no difference in the level of momentary anxiety between the treatment group and the control group, but after the intervention obtained a significance value of 0.000 (p<0.05), meaning that there was a significant difference in the level of momentary anxiety between the treatment group and the control group.

TABLE 6
Differences in Instantaneous Anxiety Levels of Pregnant Women with Preeclampsia in The Treatment Group and Control Group

Group	Mean±SD	ρ value
Before Intervention		
Treatment	49,95±7,919	0,461
Control		
After Intervention	43,65±8,170	
Intervention		0,000
Control		

TABLE 7 shows the average pre-test basic anxiety score in the treatment group and control group (49.70) is higher than the post-test anxiety score in the treatment group and control group (43.23). The results of the analysis using the Mann Whitney U Test, before the intervention obtained a significance value of 0.461 (p>0.05), meaning that there was no difference in the level of basic anxiety between the treatment group and the control group, but after the intervention obtained a significance value of 0.000 (p<0.05), meaning that there was a significant difference in the level of basic anxiety between the treatment group and the control group.

TABLE 7
Differences in Basic Anxiety Levels of Pregnant Women with Preeclampsia Pada Kelompok Perlakuan Dan Kelompok Kontrol

Group	Mean±SD	ρ value
Before Intervention		
Treatment	49,70±8,259	0,461
Control		
After Intervention	43,23±8,986	
Treatment		0,000
Control		

IV. DISCUSSION

A. *INTERPRATATION OF THE RESULTS*

The findings from this study revealed a statistically significant reduction in both momentary (state) and basic (trait) anxiety levels among pregnant women with preeclampsia who received the combined intervention of prenatal yoga and self-hypnosis. In contrast, the control group, which received standard antenatal care, exhibited no meaningful changes in anxiety scores pre- and post-test. The results suggest that the intervention was effective in reducing psychological distress in this high-risk population.

Anxiety reduction in the treatment group can be attributed to the physiological effects of both yoga and self-hypnosis. Prenatal yoga has been shown to reduce sympathetic nervous system activity and promote parasympathetic regulation, which results in lower cortisol levels and improved emotional regulation [37]. Similarly, self-hypnosis induces a state of focused attention and deep relaxation, which has been associated with reductions in anxiety and perceived stress [38]. The repeated sessions over 12 days likely facilitated neural adaptation, enabling participants to internalize and apply the techniques outside of the guided environment.

The mean reduction in momentary anxiety from 51.55 to 38.75 and trait anxiety from 50.85 to 37.90 in the treatment group (p = 0.000) underscores the efficacy of the combined intervention. These findings align with prior research that has highlighted the effectiveness of mind-body interventions for improving maternal mental health during pregnancy [39], [40]. The lack of significant change in the control group highlights the need for proactive and structured psychological support in antenatal care.

B. *COMPARISON WITH PREVIOUS STUDIES*

This study corroborates and expands upon previous research in maternal health and perinatal mental health interventions. Beddoe et al. [37] demonstrated that mindfulness-based yoga significantly improved psychological and physical outcomes among pregnant women, including reduced anxiety, sleep disturbances, and depressive symptoms. The current findings strengthen the

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TABLE 5
Effect of Combination of Prenatal Yoga And Self-Hypnosis on Anxiety Level of Pregnant Women with in Anna Medika Madura Hospital in 2022

Variable	Group	Pre Test (Mean±SD)	Min-Max	Post Test (Mean±SD)	Min-Max	ρ
Momentary Anxiety	Treatment	51.55±8.823	32-67	38,75±7,496	-52	0,000
	Control	48,35±6,746	36-61	48,55±5,501	-58	
Basic Anxiety	Treatment	50,85±10,343	24-66	37,90±8,705	-55	0,000
	Control	48,55±5,501	37-58	48,35±6,746	-61	

argument that yoga, when supplemented with self-hypnosis, offers an even more robust intervention.

Moreover, Vieten and Astin [38] found that mindfulness-based programs led to notable reductions in prenatal stress and mood disturbances. The present study builds on these findings by including self-hypnosis, which introduces a cognitive-behavioral element that enhances the emotional and physiological benefits already offered by yoga. Baijal and Chattopadhyay [41] emphasized that structured hypnotherapy could modulate autonomic nervous system responses and improve stress tolerance results that were similarly observed in the current sample of preeclamptic women.

Another study by Werner [39] validated the effectiveness of the State-Trait Anxiety Inventory (STAI) in assessing anxiety during pregnancy. In this study, STAI effectively captured the nuances in anxiety reduction following intervention, confirming its sensitivity and relevance in maternal mental health research.

It is worth noting that most previous interventions were implemented either in high-income settings or among general obstetric populations. By contrast, the current study targeted a specific high-risk group pregnant women with preeclampsia in a middle-income setting with limited mental health resources. This focus strengthens the external validity and applicability of the findings for broader antenatal care settings in similar health systems.

The integration of self-hypnosis is also consistent with the findings of Matsuzaki et al. [42], who reported that antenatal education programs incorporating guided relaxation significantly lowered anxiety and improved birth experiences. However, most studies investigated hypnosis or yoga in isolation. The present study is among the few to combine both, suggesting that a multimodal approach may offer synergistic benefits that surpass single-modality interventions.

Furthermore, the use of standard operating procedures and validated instruments ensured intervention fidelity and replicability, an element that is often underreported in similar trials [40]. This makes the current study particularly valuable for health facilities considering implementing such interventions at scale.

C. LIMITATIONS AND IMPLICATIONS

Despite the promising results, several limitations must be acknowledged. First, the sample size of 40 participants, while adequate for a pilot study, may limit the generalizability of the findings. Future studies with larger and more diverse populations are needed to confirm the replicability of the outcomes. Second, the study was conducted in a single healthcare facility, which may introduce site-specific biases. Conducting multi-center trials would enhance the representativeness of the findings.

Third, the intervention period was relatively short only three sessions across 12 days. Although significant reductions in anxiety were observed, a longer intervention duration might yield greater or more sustained effects. Additionally, follow-up assessments were not conducted, which limits the ability to assess the long-term impact of the intervention on anxiety levels, blood pressure stability, or birth outcomes.

Another potential limitation is the absence of blinding. Although the facilitators were trained and followed standard protocols, the participants were aware of their group allocation, which may have introduced response bias. Nonetheless, the use of a validated and standardized instrument (STAI) mitigated this risk to some extent.

From a practical standpoint, the study highlights the feasibility and effectiveness of integrating holistic, non-pharmacological interventions into routine antenatal care, especially in settings where pharmacological options may pose risks or be culturally unacceptable. Healthcare providers, particularly midwives and obstetric nurses, could be trained in the basics of prenatal yoga and self-hypnosis facilitation, thereby expanding access to these interventions without significantly increasing costs.

The physiological mechanisms underlying these interventions also provide a scientific rationale for their broader adoption. Yoga has been found to increase levels of gamma-aminobutyric acid (GABA), a neurotransmitter associated with reduced anxiety and improved mood regulation [43]. Self-hypnosis, on the other hand, has been linked with reduced activation in brain regions associated with fear and anxiety, such as the amygdala and anterior cingulate cortex [44].

The findings from this study have broader implications for maternal health policy. Given that preeclampsia contributes significantly to maternal morbidity and mortality in Indonesia and similar low- and middle-income countries [45], integrating low-cost, scalable mental health interventions into antenatal care could play a crucial role in improving maternal and neonatal outcomes. Moreover, such interventions support global goals related to mental health and well-being in pregnancy, as outlined in the WHO's Maternal Mental Health Framework [46].

Lastly, this study contributes to the growing body of literature advocating for a biopsychosocial model of maternal care. Psychological distress should not be treated as

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a secondary concern in obstetrics but as a primary determinant of health outcomes. Interventions like those tested in this study help bridge the gap between clinical care and mental health support in pregnancy.

V. CONCLUSION

This study aimed to evaluate the effectiveness of a combined intervention of prenatal yoga and self-hypnosis in reducing anxiety levels among pregnant women diagnosed with preeclampsia. The findings demonstrated a significant decrease in both state and trait anxiety among participants in the intervention group, who engaged in three guided sessions over a 12-day period. Quantitatively, the average score of momentary (state) anxiety was reduced from 51.55 ± 8.82 to 38.75 ± 7.50, while trait anxiety decreased from 50.85 ± 8.59 to 37.90 ± 7.41, with both changes achieving statistical significance ($p = 0.000$). In contrast, the control group, which received routine antenatal care, showed no significant change in anxiety levels. These results highlight the potential of incorporating structured, non-pharmacological approaches such as prenatal yoga and self-hypnosis into antenatal care protocols for high-risk pregnancies, particularly those complicated by preeclampsia. The physiological and psychological mechanisms underlying these techniques such as autonomic nervous system regulation, cortisol reduction, and enhanced self-efficacy provide a strong rationale for their continued exploration in maternal mental health care. Given the growing concern over the mental well-being of pregnant women and the associated risk of adverse pregnancy outcomes, this intervention model offers a promising and cost-effective solution, especially in low-resource healthcare settings where access to mental health specialists is limited. Future research should focus on expanding the sample size and geographic scope of the study, evaluating long-term outcomes, including blood pressure control, fetal development, and postpartum recovery. In addition, implementation research is needed to assess feasibility, cost-effectiveness, and training requirements for integrating such programs into standard midwifery or obstetric care. Qualitative studies exploring women's experiences during and after the intervention may also offer insights into cultural appropriateness and emotional responsiveness, enabling the refinement and contextualization of the intervention for broader use in national maternal health policy frameworks.

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DATA AVAILABILITY

No datasets were generated or analyzed during the current study.

AUTHOR CONTRIBUTION

All authors contributed significantly to the conceptualization, design, implementation, and writing of this research. D.T.P.T. was responsible for the study conception, intervention design, and supervision of fieldwork. Data collection and analysis were conducted by the research team under her guidance. All authors participated in drafting, revising, and approving the final manuscript. The entire team jointly ensured the integrity and accuracy of the data and take collective responsibility for the published content.

DECLARATIONS

ETHICAL APPROVAL

The authors declare that there are no conflicts of interest regarding the publication of this article. Ethical approval was obtained from the Research Ethics Committee of the Health Polytechnic of the Ministry of Health, Surabaya, and written informed consent was acquired from all participants prior to data collection. This study complies with all relevant ethical guidelines and standards for research involving human participants. No external funding was received for the conduct of this research.

CONSENT FOR PUBLICATION PARTICIPANTS.

Consent for publication was given by all participants

COMPETING INTERESTS

The authors declare no competing interests.

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