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The Effect of Mindfulness on Reducing Anxiety Levels in Third-Trimester Primigravida Pregnant Women in the Working Area of Margorejo Public Health Center, Pati Regency

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Abstract, Anxiety during pregnancy, particularly in third-trimester primigravida mothers, can affect both maternal and fetal well-being. If not properly managed, anxiety poses a risk of complications during pregnancy, labor, and the postpartum period. One non-pharmacological intervention that can be used to reduce anxiety is mindfulness. Mindfulness is a technique that focuses on enhancing an individual's awareness of the present moment fully and non-judgmentally, which is believed to reduce anxiety symptoms and improve emotional regulation. This study aims to examine the effect of mindfulness on anxiety levels in third-trimester primigravida pregnant women in the working area of Margorejo Public Health Center, Margorejo Subdistrict, Pati Regency. This study employed a pre-experimental design with a one-group pretest-posttest approach. A total of 12 respondents participated in the mindfulness intervention, and anxiety levels were measured before and after the intervention using the validated Hamilton Anxiety Rating Scale (HARS). The analysis showed that the mean anxiety level before the intervention was 22.25 with a standard deviation of 5.529 and a standard error of 1.596. After the intervention, the mean anxiety level decreased to 17.92 with a standard deviation of 3.502 and a standard error of 1.011. Statistical testing yielded a p-value of 0.03, indicating a significant difference in anxiety levels before and after the intervention. Therefore, it can be concluded that the mindfulness intervention had a significant effect in reducing anxiety levels among third-trimester primigravida pregnant women.
Keywords: mindfulness, anxiety, pregnancy, primigravida, third trimester

INTRODUCTION

Anxiety is a common emotional response that occurs when an individual faces situations perceived as threatening or challenging. It is characterized by unpleasant feelings such as tension, worry, and restlessness, which can interfere with a person's cognitive and physiological functions (American Psychiatric Association., 2022). Anxiety is also closely related to a narrow, reactive, and judgmental mindset toward internal experiences, which leads individuals to become trapped in a strong urge to avoid certain experiences or situations perceived as threatening (Watkins and Roberts 2020). This condition not only affects the quality of life but can also impact overall productivity and mental health (WHO., 2023).

Pregnancy is a crucial phase in a woman's life, accompanied by various physical, hormonal, and psychological changes. One of the common psychological challenges experienced by pregnant women is anxiety. Anxiety during pregnancy may arise from concerns about the baby's health, the childbirth process, changes in the maternal role, as well as social and economic pressures. The psychological causes of anxiety in third-trimester pregnant women are related to the well-being of both the mother and the unborn baby, previous miscarriage experiences, feelings of safety and comfort during pregnancy, and preparations for parenthood(Sandy Pratiwi et al. 2023).

According to data from the World Health Organization (WHO), in 2023, approximately 260,000 women died due to complications during pregnancy and childbirth. This figure is equivalent to more than 700 maternal deaths per day, or one death every two minutes (WHO., 2023). Approximately 92% of global maternal deaths occur in low- and lower-middle-income countries. Sub-Saharan Africa accounts for about 70% of these deaths, while South Asia contributes around 17%. Although there has been a 40% global reduction in maternal mortality since the year 2000, the rate of decline has significantly slowed since 2016(WHO., 2023). The prevalence of anxiety and depression in developed countries ranges from 7% to 20%, while in developing countries it exceeds 20%. Anxiety in pregnant women is generally related to concerns about their own well-being and that of the fetus they are carrying(Rora et al., 2023).

In Indonesia, the prevalence of anxiety among pregnant women reaches 28.7%, indicating that nearly one-third of expectant mothers experience mental stress as they approach childbirth(Kemenkes RI 2023). In Central Java, this number is even higher, with a prevalence of 42.8% of pregnant women experiencing anxiety (DinKes Provinsi Jawa Tengah., 2019). In Kudus Regency, an observational study at the Kaliwungu Public Health Center found that 38.7% of pregnant women experienced moderate to

severe anxiety, which significantly increased the risk of preeclampsia by up to 32.8 times compared to pregnant women who did not experience anxiety(Maulida., 2022).

Anxiety in pregnant women, especially during the third trimester, is a psychological condition that should not be overlooked, as it can have serious impacts on both maternal and fetal health. Poorly managed anxiety can trigger the release of stress hormones such as cortisol and adrenaline, which affect uterine muscle activity and the mother's cardiovascular system. This condition carries the risk of causing early contractions, increased blood pressure, and placental disorders. Several complications that may arise from excessive anxiety include preeclampsia, miscarriage, preterm birth, and low birth weight (LBW) in infants, all of which require special attention to prevent further complications(Saputri and Yudianti., 2020).

The treatment of anxiety in pregnant women using pharmacological therapy carries risks such as gestational hypertension, spontaneous abortion, low birth weight (LBW), and low Apgar scores in newborns. Therefore, it is important to consider non-pharmacological approaches as a safer alternative, such as psychological counseling, relaxation therapy, and social support, in order to maintain the mother's mental health without posing risks to the fetus(Lee et al., 2023). Mindfulness, as part of non-pharmacological therapy, has been proven effective in reducing anxiety, depression, and stress through improved emotional regulation and full awareness of the present moment (Dhillon, Sparkes, and Duarte., 2017).

Mindfulness is a meditation-based emotional management technique that helps individuals become fully aware of their thoughts, feelings, and bodily sensations in the present moment without judgment and without reacting to the experiences they are going through (Pascoe, M. C., Thompson, D. R., Jenkins, Z. M., & Ski 2022). Technically, the practice of mindfulness is carried out through a series of exercises that focus on three main components: intentional attention, present-moment awareness, and a non-reactive or non-judgmental attitude toward emerging experiences. These three components serve as the foundation for developing a stable and adaptive full awareness in everyday situations (Tang, Hölzel, and Posner., 2020). The techniques used include breath awareness practice, which involves gently and consistently directing attention to the breathing process; body scan, which is the mindful observation of bodily sensations from head to toe; loving-kindness meditation, which cultivates compassion toward oneself and others; and the application of mindfulness in daily activities, such as walking, eating, or doing household chores (Tang, Hölzel, and Posner., 2020).

The systematic practice of mindfulness, whether in group sessions or individual exercises, has been proven to enhance emotional regulation, reduce stress, anxiety, and depression, and improve psychological well-being by increasing prefrontal cortex activity and decreasing amygdala response. Mindfulness also lowers stress hormone levels and activates the parasympathetic nervous system, which functions to calm the body (Taren et al., 2020). Various studies have shown that consistent mindfulness practice can reduce stress responses, enhance executive brain functions, strengthen prefrontal cortex activity, and decrease amygdala activity, which plays a role in processing negative emotions (Trapani S, Caglioni M, Villa G, Manara DF., 2024).

According to data from the Pati District Health Office, the number of pregnant women in 2024 was recorded at 14,397, distributed across 29 public health centers in the Pati District area. Among them, Juwana Health Center ranked the highest with 1,072 pregnant women, followed by Margorejo Health Center with 698 women. Specifically in Margorejo Health Center, the number of third-trimester pregnant women reached 263 (DKK Pati 2024). The preliminary study conducted by the researcher on four third-trimester pregnant women in the working area of Margorejo Public Health Center using the Hamilton Anxiety Rating Scale (HARS), questionnaire revealed that three respondents experienced severe anxiety and one respondent experienced moderate anxiety. These findings indicate the presence of anxiety among pregnant women approaching childbirth. This condition became the basis for the researcher's interest in conducting a study at Margorejo Public Health Center, due to the high number of third-trimester pregnant women and the indication that most of them experience anxiety disorders. Based on this background, the research problem is formulated as follows: What is the effect of mindfulness on reducing anxiety levels in third-trimester primigravida pregnant women at Margorejo Public Health Center, Margorejo District, Pati Regency?. This study aims to determine the effect of mindfulness on reducing anxiety levels in third-trimester primigravida pregnant women at Margorejo Public Health Center, Margorejo District, Pati Regency. This study is expected to contribute to early detection and management efforts of anxiety disorders during pregnancy, particularly among third-

trimester primigravida mothers. Moreover, non-pharmacological approaches such as mindfulness have not yet been widely implemented in primary healthcare facilities in the area. In fact, several studies have shown that mindfulness is effective in helping manage anxiety during pregnancy.

METHODS

This research is a quantitative study using a pre-experimental approach. The design used is a one-group pretest and posttest design, in which a single group of respondents is given a pretest before the intervention and a posttest after the intervention. This design aims to determine the effect of mindfulness therapy on anxiety levels in third-trimester primigravida pregnant women. The study was conducted in the working area at Margorejo Public Health Center, Margorejo District, Pati Regency. The research was carried out over a two-week period, from April 3 to April 17, 2025. The population in this study consisted of all third-trimester pregnant women receiving prenatal care at Margorejo Public Health Center, Margorejo District, Pati Regency. The sample consisted of 12 participants selected using purposive sampling, a technique in which samples are chosen based on specific criteria established by the researcher. The inclusion criteria were as follows: (1) third-trimester primigravida pregnant women with mild, moderate, or severe anxiety levels; (2) able to communicate verbally well; (3) having a minimum education level of junior high school to support material comprehension; (4) have never previously participated in a mindfulness-based intervention; (5) no history of severe biological or psychological disorders; (6) not currently taking anti-anxiety medication; and (7) willing to participate as respondents. The exclusion criteria in this study were pregnant women experiencing pregnancy complications, either obstetric or medical in nature. Data were collected in two stages, namely pretest and posttest, using the Hamilton Anxiety Rating Scale (HARS) questionnaire to measure respondents' anxiety levels. The questionnaire was completed before and after the mindfulness intervention. The mindfulness intervention procedure consisted of four sessions, each lasting 60 minutes, conducted twice a week. The session materials included: breathing awareness, body scan, loving-kindness meditation, and the application of mindfulness in daily activities. Each session was directly guided by the researcher and an enumerator. The data obtained were statistically analyzed using the Wilcoxon Signed Rank Test, as the data were ordinal and not normally distributed. This test was used to determine the difference in anxiety levels before and after the mindfulness intervention in the same group.

RESULTS

Below are the characteristics of the respondents and the average anxiety levels experienced by third-trimester primigravida pregnant women before and after the intervention.

Table 1. Respondent Characteristics Based on Age, Education, and Family Income Among Primigravida Pregnant Women in the Working Area of Margorejo Public Health Center, Margorejo District, Pati Regency

Characteristics	F	%
Age		
1. 20 – 35 years old	9	75 %
2. > 35 years old	3	25 %
Education		
1. Junior High School	4	33,3 %
2. Senior High School / Vocational High School	6	50 %
3. Higher Education	2	16,7 %
Family Income		
1. < 2,5 million IDR	3	25 %
2. 2,5 – 5 million IDR	9	75 %
3. > 5 million IDR	0	0 %

Based on Table 1, the majority of pregnant women were in the age range of 20–35 years, totaling 9 individuals (75%), while 3 individuals (25%) were over 35 years old. In terms of education, most respondents had completed Senior High School/Vocational High School, totaling 6 individuals (50%). Meanwhile, 4 individuals (33.3%) had completed Junior High School, and only 2 individuals (16.7%)

had attained higher education. Regarding family income, the majority of respondents had a monthly income between IDR 2,500,000 and IDR 5,000,000, totaling 9 individuals (75%). Three individuals (25%) had an income of less than IDR 2,500,000, and no respondents had an income of more than IDR 5,000,000.

Table 2. Average Anxiety Level Before Mindfulness Therapy in Third-Trimester Primigravida Pregnant Women in the Working Area of Margorejo Public Health Center, Margorejo District, Pati Regency

Variable	n	Mean	SD	Min	Max
Pre-test	12	22,25	5,729	15	30

Based on Table 2, it is known that the anxiety level of third-trimester primigravida pregnant women before receiving mindfulness therapy had an average score of 22.25 with a standard deviation of 5.729. The lowest anxiety score was 15, while the highest was 30, with a total of 12 respondents. These results indicate a variation in anxiety levels among the respondents prior to the intervention, and the average score suggests that most respondents were in the moderate anxiety category.

Table 3. Average Anxiety Level After Mindfulness Therapy in Third-Trimester Primigravida Pregnant Women in the Working Area of Margorejo Public Health Center, Margorejo District, Pati Regency

Variable	n	Mean	SD	Min	Max
Post-test	12	17,92	3,502	13	25

Based on Table 3, it is shown that the anxiety level of third-trimester primigravida pregnant women after receiving mindfulness therapy had an average score of 17.92 with a standard deviation of 3.502. The lowest anxiety score was 13, while the highest was 25, with a total of 12 respondents. These results indicate a decrease in anxiety levels following the intervention and show that the data distribution became more homogeneous compared to the condition before the therapy.

Table 4. The Effect of Mindfulness on Anxiety Levels in Third-Trimester Primigravida Pregnant Women in the Working Area of Margorejo Public Health Center, Margorejo District, Pati Regency

Group	N	Mean	SD	Std error	P-Value
Pre-test	12	22,25	5,529	1,596	0,03
Post-test	12	17,92	3,502	1,011	

Table 4 shows the effect of the mindfulness intervention on the anxiety levels of pregnant women. Before the intervention (pretest), the average anxiety level of the respondents was 22.25 with a standard deviation of 5.529 and a standard error of 1.596. After the mindfulness intervention was given (posttest), the average anxiety level decreased to 17.92 with a standard deviation of 3.502 and a standard error of 1.011. A p-value of 0.03 indicates a significant difference between anxiety levels before and after the intervention. Therefore, mindfulness is proven to have a significant effect in reducing anxiety levels among third-trimester pregnant women in the working area of Margorejo Public Health Center.

DISCUSSION

Maternal age is one of the important determinants of anxiety levels during pregnancy. A study conducted in Iran involving 432 pregnant women showed that each one-year increase in age was correlated with a 6% reduction in the risk of prenatal anxiety disorders ($\beta = 0.94$; $p = 0.003$) (Shariatpanahi et al. 2023). These findings suggest that as age increases, there is a corresponding improvement in emotional maturity and an individual's ability to manage stress and adapt to changes during pregnancy. Although age is a non-modifiable risk factor, pregnancy planning can still be optimized by choosing the ideal age range, which is between 20 and 35 years. According to the 2022 recommendation from the American College of Obstetricians and Gynecologists (ACOG), pregnancy at age ≥35 is categorized as advanced maternal age, as it is associated with an increased risk of

complications such as pregnancy-induced hypertension, gestational diabetes, and the need for obstetric interventions. These risks increase significantly after the age of 40 (Gantt et al. 2022). A meta-analysis conducted in Ethiopia in 2023 reported that this age group had a 1.6 times higher risk of perinatal death compared to the 20–34 age group. Conversely, pregnancy under the age of 20 also carries a high risk of various complications, such as anemia, preeclampsia, preterm birth, and low birth weight infants. (Bekele et al. 2023). In addition, pregnancy at an age <20 years is often accompanied by psychosocial stress, which can further worsen anxiety levels. Therefore, planning pregnancy within the age range of 20 to 35 years is a rational preventive measure. Within this age range, physical condition, psychological readiness, and the ability to adapt to stress are generally at an optimal level, thereby reducing the risk of anxiety and complications during pregnancy (Bekele et al. 2023).

The educational level of pregnant women plays an important role in determining health-seeking behavior and psychological well-being during pregnancy. According to a recent meta-analysis conducted in 26 developing countries, pregnant women with a secondary education were six times more likely to complete antenatal visits, while those with higher education were fourteen times more likely compared to women with no formal education (Gube et al., 2024). This finding is supported by the results of the Basic Health Survey in Indonesia, which showed that higher education is one of the most significant predictors of adherence to prenatal check-ups, with nearly twice the likelihood compared to the low-education group(Idris and Sari., 2023). Conversely, low levels of education are closely associated with an increased risk of emotional disorders during pregnancy. A study conducted by Yang et al. (2023) in Jiangsu Province, China, found that the prevalence of anxiety reached 27.9% and was higher among pregnant women with an education level of junior high school or below(Yang et al. 2023). Similar findings were reported by Haruyama et al. (2022) in Japan, revealing that low levels of communicative and critical health literacy, which are strongly influenced by educational attainment, are associated with an increased risk of prenatal anxiety(Haruyama et al. 2022). Mothers with a high level of literacy are 23% less likely to experience anxiety compared to those with low literacy. In addition, the provision of structured and easy-to-understand information has been proven to reduce psychological stress during pregnancy. Therefore, improving access to formal education as well as need-based health education becomes an important strategy in efforts to reduce anxiety levels in pregnant women and to promote better health-seeking behaviors.

Income-generating employment plays an important role in improving pregnant women's access to healthcare services and essential information during pregnancy. A systematic review of 51 studies conducted in developing countries showed that women from the highest economic group were six times more likely to complete antenatal visits compared to those from the poorest group (Gube et al., 2024). This reinforces the understanding that adequate income can ensure better health maintenance for both mother and fetus. The correlation between economic status and mental health was also demonstrated in a population-based cohort study in Ontario, Canada. The study found that pregnant women living in low-income areas had a 24% higher risk of prenatal anxiety compared to those in higher-income neighborhoods(Miao et al., 2024). Thus, income plays a significant role in the quality of care and psychological stability during pregnancy. Therefore, interventions aimed at improving economic capacity such as health insurance programs, financial literacy training, and conditional cash assistance have the potential to be effective strategies in reducing prenatal anxiety among pregnant women in general.

The study results indicate that the mindfulness intervention had a significant effect on reducing anxiety levels in third-trimester pregnant women. Before the intervention, the average anxiety level of the respondents was 22.25 (SD = 5.529; SE = 1.596), while after the intervention, the average decreased to 17.92 (SD = 3.502; SE = 1.011). A p-value of 0.03 indicates a statistically significant difference between pre- and post-intervention scores ($p < 0.05$), suggesting that mindfulness is effective in reducing anxiety during pregnancy.

The reduction in anxiety levels observed in this study is consistent with a wide range of empirical evidence supporting the effectiveness of mindfulness-based interventions in maintaining the mental health of pregnant women. Mindfulness-Based Interventions (MBIs), which include approaches such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), have been scientifically proven to reduce symptoms of emotional disorders, including stress, anxiety, and depression during pregnancy. Taylor et al., through a meta-analysis of dozens of studies, stated that MBIs consistently succeeded in reducing anxiety and stress scores in pregnant women. The effectiveness

of these interventions becomes even more prominent when applied during the third trimester of pregnancy, which is a period characterized by high psychological pressure(Taylor, Cavanagh, and Strauss 2016). During this phase, pregnant women generally experience increasingly complex physical changes, accompanied by concerns about the childbirth process, the responsibilities of becoming a new parent, and the safety of the unborn baby. These psychological conditions can trigger the activation of both physiological and emotional stress responses, which, if not properly managed, may pose risks to maternal health and fetal development. Therefore, mindfulness intervention serves as a relevant and adaptive non-pharmacological strategy for managing stress during pregnancy, particularly in the third trimester.

Mindfulness works through the mechanism of focused attention on the present moment and non-judgmental acceptance of experienced events. This practice helps individuals develop greater self-awareness, reduce emotional reactivity, and avoid negative or ruminative thought patterns that often exacerbate anxiety. Mindfulness practice can enhance activity in the prefrontal cortex the brain region responsible for emotional regulation and decision-making while reducing activation in the amygdala, which is involved in processing fear and threats. Additionally, the physiological effects of mindfulness also contribute to anxiety reduction. Activation of the parasympathetic nervous system during mindfulness practice induces a calmer physical state, such as lowered blood pressure, heart rate, and cortisol (stress hormone) levels. This reduction in stress response is directly associated with increased relaxation and emotional well-being in pregnant women. The results of a randomized controlled trial (RCT) showed that a group of third-trimester pregnant women who received eight sessions of Mindfulness-Based Cognitive Therapy (MBCT) over a two-week period experienced a significant reduction in anxiety levels. The mean anxiety score in the intervention group was recorded at 16.40 (SD = 4.01), which was lower than that of the control group, which had a mean score of 23.60 (SD = 7.37), with a p-value of 0.015 indicating a statistically significant difference. The mechanism of action of this intervention is associated with the activation of the parasympathetic nervous system, which promotes relaxation, and the decreased activation of the limbic system, particularly the amygdala, which is closely linked to anxiety responses(Li et al., 2023).

The positive effects of mindfulness practice are believed to be closely linked to its ability to help individuals fully focus their attention on the present moment (present moment awareness). By enhancing concentration on what is happening within the self and in the surrounding environment, individuals become more aware of their thoughts, emotions, and bodily sensations without becoming trapped in negative judgments or impulsive reactions. This awareness plays a crucial role in reducing cognitive tendencies toward perceived threats, such as excessive worry about the future or uncertainties surrounding childbirth, which are major triggers of anxiety in pregnant women. In addition, mindfulness practice trains individuals to observe their internal experiences without avoiding or rejecting uncomfortable emotions. By fostering an attitude of acceptance toward emotional experiences, pregnant women are better able to manage psychological stress adaptively. This contrasts with maladaptive responses, such as avoidance or denial, which can worsen mental health in the long term. From a neurophysiological perspective, improved emotional regulation through mindfulness may enhance functional connectivity between the prefrontal cortex and the limbic system, thereby reducing stress reactivity and strengthening self-control. Therefore, mindfulness is not merely a relaxation technique, but a comprehensive therapeutic approach to enhancing psychological well-being during pregnancy.

CONCLUSION

This study demonstrated that the mindfulness intervention had a significant effect in reducing anxiety levels among third-trimester primigravida mothers at Margorejo Public Health Center, Margorejo District, Pati Regency. Therefore, mindfulness can be utilized as a non-pharmacological strategy in managing anxiety during pregnancy.

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