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ORIGINAL ARTICLE

Effect of Mindfulness Meditation on Anxiety in Preoperative Patients Undergoing General Anesthesia: A Study at RSUD Wates.

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ABSTRACT

Introduction: *Surgical procedures often cause patients to experience anxiety. Anxiety is a feeling of unease, worry, tension, and fear triggered by situations perceived as threats, the actual source of which is unknown. Preoperative anxiety can affect surgical outcomes. The application of mindfulness meditation during the preoperative phase is used to reduce anxiety levels and provide a calming effect.* ***Objectives:*** *This study aims to determine the effect of mindfulness meditation techniques on pre-operative anxiety in patients with general anesthesia at RSUD (Regional General Hospital) Wates.* ***Methods:*** *This type of research employed quantitative study using a quasi-experimental research design with a non-equivalent control group. The number of samples was 34 respondents and was divided into an experimental group and a control group. Data collection techniques applied the Amsterdam Preoperative Anxiety and Information Scale (APAIS) questionnaire. Data analysis performed using the Wilcoxon Signed Rank Test and the Mann-Whitney test.* ***Results:*** *The results of this study indicate that there is a significant influence of the mindfulness meditation technique on the anxiety of pre-operative patients with general anesthesia of 0.000 <0.05, so Ha is accepted and H0 is rejected; this means that there is a significant influence on the level of anxiety of pre-operative patients.* ***Conclusions:*** *The mindfulness meditation technique in this study was effective in reducing anxiety levels in pre-operative patients with general anesthesia.*

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A. Introduction

Surgery is an invasive surgical procedure that opens a body part with an incision and closes it with stitches after treatment (Paat *et al*., 2023). This procedure is generally intended to treat or diagnose various conditions that cannot be treated with simple medicines (Putri & Martin, 2023). Before undergoing surgery, patients will go through a preoperative stage which is a time of preparation both physically and psychologically. One important aspect in this stage is maintaining the stability of the patient's mental state, especially before the administration of

anesthesia (Nugroheni *et al*., 2023). General anesthesia is often used in major surgery because it is able to remove consciousness in a controlled manner and allows patients not to feel pain during the procedure (Murni *et al*., 2024). However, this type of anesthesia also often causes anxiety in patients, especially for fear of not being able to wake up after the procedure (Priyonggo *et al*., 2024).

Preoperative anxiety is a common problem that affects both physical and psychological aspects of patients (Pratama & Pambayun, 2023). The World Health Organization (WHO) reports that globally, the prevalence of anxiety in preoperative patients ranges from 60 to 90%. In Indonesia alone, the preoperative anxiety rate reaches around 80% (Maulina *et al*., 2023). Preoperative anxiety may arise from various factors, including the patient's level of understanding about the procedure, previous medical experiences, perceived level of invasiveness, and the surrounding environment where the procedure is carried out (Julhana, 2024). Unaddressed anxiety can cause increased blood pressure, tightness in the chest, and emotional instability due to excessive production of the hormone cortisol (Wiyono & Putra, 2021). Even high anxiety before surgery can cause delays in surgery to an increased need for postoperative pain management (Bachtiar & Nur, 2023).

Anxiety in patients can be treated with pharmacological and non-pharmacological approaches. The use of anti-anxiety drugs (anxiolytic) as pharmacological therapy has indeed proven effective in reducing anxiety levels, but its use has the risk of causing dependence. Therefore, non-pharmacological therapy is an alternative that needs to be considered in anxiety management (Alini & Meisyalla, 2022). One of the non-pharmacological therapies that can be utilized in an effort to relieve anxiety is the mindfulness meditation technique (Fatmawati & Pawestri, 2021).

Mindfulness meditation is a form of therapy that integrates cognitive principles with meditative practices (Blum *et al*., 2021). This therapy was introduced and developed by Dr. Jon Kabat-Zinn through the Mindfulness-Based Stress Reduction (MBSR) approach, which was first introduced in 1977. While originally inspired by Buddhist meditation practices, it has been scientifically adapted for use in modern medical and psychological settings (Schuman-Olivier *et al*., 2020) Mindfulness meditation consists of two core components: full awareness of the present moment without judgment and the ability to accept all conditions (Dhamayanti & Yudiarso, 2020). In other words, mindfulness meditation allows a person to focus on living in the present, without worrying about the future or regretting the past (Sutanto & Immanuela, 2022). Mindfulness meditation works by reducing the activity of the amygdala-the part of the brain involved in anxiety responses-and increasing activation in the prefrontal cortex and anterior cingulate cortex, which play a role in controlling emotions and creating calmness (Aini, 2024). One of the practical methods in applying mindfulness meditation is the STOP technique (Stop, Take a breath, Observe, Proceed), which is easy to remember and can be applied even in stressful situations such as before surgery. This technique helps a person to pause, realize the breath, observe the state of self, and continue with a calmer and more adaptive response (Rachmawati, 2020). Through these stages, it is hoped that a person can lead a healthier life, not easily feel anxious or depressed, and have an increased immune function (Rohmawati & Helmi, 2020).

Initial studies conducted at RSUD Wates found that between September and November 2024, the number of patients undergoing surgery under general anesthesia reached an average of 495 patients. Most of them experienced moderate to severe anxiety. Anxiety management with a non-pharmacological approach is still limited to the usual deep breathing technique. Therefore, this study is important to determine the effect of mindfulness meditation techniques on the anxiety of preoperative patients with general anesthesia at RSUD Wates.

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B. Methods

This research is a quantitative research with a quasi-experimental approach using a nonequivalent control group design. In this design, the experimental group and control group were not randomly selected. This study was conducted at RSUD Wates, with a population of all preoperative patients under general anesthesia. The sampling technique used purposive sampling method, which is based on certain criteria set by the researcher. The sample in this study was 34 respondents, who met the inclusion criteria, namely general anesthesia preoperative patients with an age range of 17-45 years, conscious (composmentis), moderate-severe anxiety levels, and able to interact and communicate well. Exclusion criteria included emergency surgery patients, having a history of psychotic disorders characterized by hallucinations or delusions, and having a history of previous surgery. The sample was divided into two groups, namely the experimental group of 17 respondents and the control group of 17 respondents.

Data collection was carried out with a pretest through anxiety measurement using The Amsterdam Preoperative Anxiety and Information Scale (APAIS) questionnaire sheet before being given the intervention, with anxiety score categories: score 6 not anxious, score 7-12 mild anxiety, score 13-18 moderate anxiety, score 19-24 severe anxiety, score 25-30 panic. The mindfulness meditation intervention was conducted for 5 minutes using background music without lyrics with the help of headphones. The background music used was tailored to the patient's preferences, such as nature sounds, classical instruments, or binaural waves. After that, the researchers gave a posttest by measuring anxiety levels again. Meanwhile, in the control group, respondents were not given the intervention, and only the same anxiety level was measured at pretest and posttest. Data were analyzed using the Wilcoxon Signed Rank Test to determine the difference between pretest and posttest values in the same group, as well as the Mann-Whitney test to determine the difference between the experimental group and the control group.

This research has been declared ethically feasible by the Health Research Ethics Commission of RSUD Wates with ethical number No.KEPK/026/RS/III/2025.

C. Results and Discussion

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	Experiment Group		Control Group	
	f	%	f	%
Age				
17-25 years old (late teens)	1	5,9	2	11,8
26-35 years old (early adulthood)	10	58,8	9	52,9
36-45 years old (late adulthood)	6	35,3	6	35,3
Total	17	100	17	100
Gender				
Male	8	47,1	7	41,2
Female	9	52,9	10	58,8
Total	17	100	17	100

Table 1 shows that most respondents in the experimental group were in the age category of 26-35 years, as many as 10 people (58.8%), and in the control group most were in the same age category as many as 9 people (52.9%). Based on gender, most respondents in the experimental group were female, as many as 9 people (52.9%), and in the control group were also dominated by women as many as 10 people (58.8%).

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Table 2. Frequency Distribution of Anxiety of Experimental Group and Control Group

Characteristics	Experiment Group				Control Group			
	Pre		Post		Pre		Post	
	f	%	f	%	f	%	f	%
Not Anxious	0	0	0	0	0	0	0	0
Mild Anxiety	0	0	14	82,4	0	0	0	0
Moderate Anxiety	14	82,4	3	17,6	17	100	17	100
Severe Anxiety	3	17,6	0	0	0	0	0	0
Panic	0	0	0	0	0	0	0	0
Total	**17**	**100**	**17**	**100**	**17**	**100**	**17**	**100**

Table 2 shows that before mindfulness meditation, in the experimental group, 14 people (82.4%) were in the moderate anxiety category, and 3 people (17.6%) were in the severe anxiety category. After the intervention, the majority of respondents experienced a decrease in anxiety levels to mild anxiety, as many as 14 people (82.4%), and moderate anxiety as many as 3 people (17.6%). Meanwhile, in the control group, all respondents remained in the moderate anxiety category, as many as 17 people (100%).

Table 3. Effective of Mindfulness Meditation Technique on Preoperative Anxiety with General Anesthesia

Group		Frequency (n)	Mean	Wilcoxon Signed Ranks Test	Mann Whitney U-Test
Experiment	Pre	17	3,18	P = 0,000	
	Post	17	2,18		P = 0,000
Control	Pre	17	3,00	P = 1,000	
	Post	17	3,00		

Based on table 3, in the experimental group given the mindfulness meditation technique, there was a decrease in anxiety levels from before to after the intervention. The results of statistical tests using the Wilcoxon Signed Ranks Test showed a p-value = 0.000 (<0.05), so it can be concluded that there is a statistically significant effect of providing mindfulness meditation techniques on reducing preoperative anxiety. While in the control group that was not given the mindfulness meditation technique, the Wilcoxon test results showed a p-value = 1.000 (> 0.05), which means there is no significant effect on reducing anxiety levels. In addition, the results of the Mann-Whitney U Test between the experimental group and the control group showed a p-value = 0.000 (<0.05), which indicated that there was a significant difference in anxiety levels between the two groups.

Frequency Distribution of Respondent Characteristics

The results of this study indicate that the majority of respondents who experienced anxiety, both in the experimental and control groups, were in the early adult age category (26-35 years), namely in the experimental group as many as 10 people (58.8%), and in the control group as many as 9 people (52.9%). In line with this, research by Nasus *et al*. (2021)states that anxiety tends to be more dominantly experienced by individuals of early adulthood, and the majority of them experience high levels of anxiety. This condition is caused by limited experience in dealing with pressure, so that their coping skills have not been fully formed to the fullest. Another study by Anwar *et al*. (2024) also supports these results, where it is stated that in general, the older a person gets, the greater his ability to accept conditions and solve problems, so that anxiety levels in older individuals tend to be lower compared with those who are younger. Thus, age is an important factor affecting anxiety levels, where individuals aged 26-35 years tend to experience and realize anxiety more.

Based on gender, it was found that the majority of respondents were female, namely 9 people (52.9%) in the experimental group and 10 people (58.8%) in the control group. The results of

this study reinforce the understanding that gender can affect anxiety perception and reporting. This is in line with research conducted by Assyifa *et al*. (2023) which shows that women report more anxiety complaints than men, especially in preoperative patients. This is caused by several factors including biological and psychological factors. Biologically, hormonal differences such as estrogen in women can increase serotonin (5-HT) which regulates mood and inhibits GABA (gamma-aminobutyric acid) receptors to calm the brain. Women also rely more on their emotions to cope with problems and have higher brain activity in areas that regulate emotions and pain such as the cingulate gyrus. When experiencing sadness women tend to suppress feelings as a form of coping mechanism, which makes them more emotional. This finding is also reinforced by Gumilang *et al*. (2022) which shows a relationship between gender and preoperative anxiety levels, with a p-value of 0.007. In this case, anxiety in women is higher than men because of their more emotional nature, high sensitivity, and more reliance on feelings. On the other hand, men tend to prioritize logic and have a more rational thinking horizon.

Anxiety Level Before and After Giving Mindfulness Meditation Intervention in Experimental Group and Control Group

Based on the results of observations of 17 respondents in the experimental group, it is known that before being given the mindfulness meditation intervention, 14 people (82.4%) experienced moderate anxiety with varying anxiety scores from a score range of 13 to 18, and 3 people (17.6%) experienced severe anxiety with varying anxiety scores from a score range of 19 to 24. A total of 14 people (82.4%) experienced a decrease in anxiety levels from the moderate anxiety category to the mild anxiety category, and as many as 3 people (17.6%) experienced a decrease in anxiety levels from the severe anxiety category to the moderate anxiety category.

This finding is in line with research by Trisnawati *et al*. (2022) which states that mindfulness meditation intervention is proven to be effective in reducing anxiety levels by suppressing sympathetic nervous system activity and reducing stress hormones such as adrenaline, noradrenaline, and cortisol. This technique stimulates the prefrontal cortex to regulate emotions more adaptively, and activates the hippocampus and amygdala in calming emotional responses. Activation of these brain areas helps individuals release negative thoughts and resist overreaction. As a result, individuals are better able to accept themselves, manage stress, and respond calmly to situations.

The results of research in the control group that was not given mindfulness meditation intervention, all 17 respondents (100%) experienced moderate anxiety at pretest. After the posttest, the anxiety level of all respondents still remained in the moderate anxiety category, as many as 17 people (100%). These results reinforce the importance of considering the use of non-pharmacological interventions such a mindfulness meditation, because without this intervention, the patient's sympathetic nervous system continues to be stimulated, so that physiological symptoms of stress such as rapid heartbeat, shallow breathing, and muscle tension continue and make the patient's anxiety level not subside.

Effectiveness of Mindfulness Meditation Technique on Preoperative Anxiety with General Anesthesia

Based on the results of statistical tests using the Wilcoxon Signed Ranks Test in the experimental group, the p value = 0.000 (<0.05) was obtained. This shows that there is a significant effect after being given a mindfulness meditation intervention on reducing preoperative anxiety levels. Meanwhile, the control group showed a p value = 1.000, (>0.05), so it can be concluded that there was no significant change in anxiety levels in the group that did not get mindfulness meditation. The results of the analysis using the Mann-Whitney U Test between the two groups showed a p value = 0.000 (<0.05), which indicated that there was a

statistically significant difference between the group that received the mindfulness meditation intervention and the group that was not given the intervention. Thus, it can be concluded that mindfulness meditation intervention is effective in reducing preoperative anxiety.

This study demonstrates the effectiveness of mindfulness meditation intervention in reducing anxiety levels. In the mindfulness process, there is an interaction between several important aspects such as the experience of being present, awareness, acceptance, and attention. Mindfulness is the ability to focus attention on the present, with full awareness of past experiences, and acceptance without rejection. Awareness helps to manage re-emerging experiences in a healthy way, acceptance means accepting without denying, and attention is focused on the ongoing moment. Through this process, mindfulness helps a person know themselves more deeply so that they can find new understanding, experience positive changes, and feel calmer or emotionally healed (Rohmawati & Helmi, 2020).

The results of this study indicate that without additional interventions such as mindfulness meditation, the anxiety level of respondents in the control group tends not to change. In line with research Yuliana *et al*. (2022) who reported that the group of patients who were not given mindfulness meditation intervention showed relatively fixed anxiety scores and did not experience significant changes. This shows the importance of active intervention in helping to manage the perception of anxiety in patients.
Mindfulness meditation technique is one of the effective meditation techniques in helping to control and reduce anxiety, especially in preoperative patients. In its implementation, this technique can be guided using tools such as headphones or headsets to play audio such as classical instruments, so that patients can more easily follow the stages of meditation in a directed manner. Although it requires simple tools, mindfulness meditation is still easy to practice and does not require close supervision, and can be done individually or with the guidance of health workers. Thus, mindfulness meditation can be used as an effective non-pharmacological method to reduce anxiety in preoperative patients.

D. Conclusion

Based on the results of this study, it can be concluded that mindfulness meditation techniques can reduce preoperative anxiety levels in patients undergoing general anesthesia. This can be seen from the decrease in anxiety levels in patients who were given the intervention, while patients who were not given the intervention showed no change. These results prove that this mindfulness meditation technique has the potential to be used as a nonpharmacological intervention in preoperative anxiety management.

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