

The Effect of Rhythmic Breathing Distraction on The Anxiety Level of Preoperative Patients Under General Anesthesia at Wijayakusuma Hospital, Purwokerto

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Abstract.

Anxiety is a common psychological condition experienced by patients before undergoing medical procedures, especially surgical procedures, which can affect physiological stability, comfort, and patient readiness to receive the procedure. One non-pharmacological method to reduce anxiety levels is rhythmic breathing distraction, which has the potential to reduce the body's stress hormone levels, such as adrenaline and cortisol, in preoperative patients. This study aimed to analyze the effect of rhythmic breathing distraction on the anxiety levels of preoperative patients under general anesthesia. This study used a pre-experimental method with a one-group pretest-posttest design. The study was conducted at Wijayakusuma Hospital, Purwokerto, from October to November 2025, and included a total of 38 respondents. Data analysis was performed using the Wilcoxon signed-rank test with a significance level of $\alpha = 0.05$. The results showed a significant decrease in anxiety levels after the rhythmic breathing distraction intervention ($p < 0.001$). The average anxiety score before the intervention was 21.05 and after the intervention was 12.03. It can be concluded that rhythmic breathing distraction significantly influences preoperative anxiety levels in patients undergoing general anesthesia. This non-pharmacological intervention, rhythmic breathing distraction, can be used as an alternative for managing anxiety in preoperative patients.

Keywords: Rhythmic Respiratory Distraction; Anxiety; Preoperative and General Anesthesia.

I. INTRODUCTION

General anesthesia is used to eliminate pain, reduce consciousness, and create conditions that allow for safe and optimal surgical procedures. However, the experience of surgery and general anesthesia often elicits psychological responses, such as anxiety, in patients [1]. According to the World Health Organization (2020), the incidence of preoperative anxiety disorders in the United States, which reaches 28% or more, is higher in women than in men. Furthermore, an estimated 20% of the global population experiences anxiety before undergoing surgery, and data on the prevalence of anxiety in Indonesia range between 9% and 12% [2]. Preoperative anxiety is a common emotional state experienced by patients before surgery. This anxiety arises in response to procedural uncertainty, fear of pain, concerns about the outcome of the surgery, and the perceived risks associated with general anesthesia [3]. Patients undergoing general anesthesia tend to experience higher levels of anxiety due to concerns about losing consciousness and self-control during the surgical process [4]. Unmanaged Preoperative anxiety can negatively affect a patient's physiological condition. Clinically, anxiety can trigger activation of the sympathetic nervous system, characterized by increased blood pressure, pulse rate, and respiratory rate [5]. These physiological changes have the potential to disrupt a patient's hemodynamic stability, increase the need for anesthetic drugs, and affect the postoperative recovery process.

Therefore, managing preoperative anxiety is an important part of perioperative anesthesia nursing care [6]. One non-pharmacological intervention widely used to reduce anxiety is distraction techniques. Distraction techniques work by redirecting patients' attention from anxiety-provoking stimuli to other, more calming stimuli, thereby reducing the perception of fear and anxiety [7]. Distraction has been shown to be effective in reducing short-term anxiety, including anxiety that occurs in the pre-operative phase [8]. According to Nova (2024), distraction is a method that aims to reduce or eliminate anxiety by directing

the patient's attention to focus on something else, so that they forget the anxiety they are feeling. The use of distraction shows the most effective impact when applied to relieve anxiety in a short period, such as anxiety [9]. Rhythmic breathing distraction is a form of non-pharmacological intervention that combines attention diversion techniques with regular and rhythmic breathing patterns.

This technique aims to increase relaxation, reduce sympathetic nervous system activity, and help patients focus on the breathing process. Rhythmic breathing is known to reduce stress hormone levels and provide a calming effect physiologically and psychologically. A similar finding was also reported by Anantasari (2021), who found that rhythmic breathing distraction techniques are a non-pharmacological method for dealing with anxiety. This technique is a combination of attention diversion and deep breathing that creates a pattern [10]. However, research that specifically examines the effect of rhythmic breathing distraction on preoperative anxiety levels in patients undergoing general anesthesia, particularly in the context of military hospital care, is limited. This suggests the need for further research to strengthen the scientific evidence regarding the effectiveness of this intervention. This study makes an important contribution to the field of anesthesiology nursing, particularly in the application of non-pharmacological interventions in the management of anesthesia. Unlike conventional approaches that focus more on medical interventions, this study emphasizes the importance of rhythmic respiratory distraction as part of nursing care oriented towards the patient's psychological needs. This approach is expected to become a simple intervention alternative that is applicable and relevant for implementation in various health service facilities.

II. METHODS

a. Research Design

This study is a quantitative study with a pre-experimental design using a one-group pretest–posttest design approach. This design is used to assess the effect of an intervention by comparing the condition of research participants before and after treatment without using a control group [11].

b. Location and Time of Research

This research was conducted at the Wijayakusuma Army Hospital, Purwokerto in October – November 2025

c. Population and Sample

The study population comprised preoperative patients under general anesthesia. A sample of 38 respondents who met the inclusion criteria and provided written consent was selected. The study used a purposive sampling technique for all preoperative patients under general anesthesia who met the criteria and research objectives.

d. Instruments and Measurements

The instruments used in this study were the Anxiety, Pain, and Fear of Insomnia Scale (APIS) questionnaire and a breath-quill device to guide rhythmic breathing distraction. Measurements were made by filling out the anxiety level questionnaire before the rhythmic breathing distraction intervention was carried out, then the rhythmic breathing distraction intervention was carried out for 5 minutes using the breath quill device, after which the anxiety level was measured again by filling out the anxiety level questionnaire after the rhythmic breathing distraction was carried out.

e. Data Processing and Analysis

Data processing was conducted by entering all observation results from the APAIS questionnaire into statistical software, such as SPSS. Data analysis was conducted using the Wilcoxon signed-rank test because the data were paired and not normally distributed.

III. RESULT AND DISCUSSION

1.1 Univariate Analysis

The results of the univariate analysis consist of descriptive respondents regarding the variables in the study and the average distribution of pre-operative anxiety levels with general anesthesia before and after rhythmic breathing distraction intervention (Table 1).

Table 1. Frequency distribution of all respondents based on characteristics

Characteristics	Frequency	Percentage
Age	34	89.5%
18 - 59 Years (Adults)	4	10.5%
60 Years and Over (Elderly)		
Gender	26	68.4%
Female	12	31.6%
Male		
ASA	29	76.3%
ASA 1	9	23.7%
ASA 2		

Table 1 shows that the majority of respondents were in the 18–59 years age group (34 respondents, 89.5%). Based on sex, most respondents were female (26 respondents, 68.4%). Furthermore, based on the respondents' characteristics, the majority were classified as ASA 1 (29 respondents, 76%).

1.2 Bivariate Analysis

Bivariate analysis was used to measure the effect of rhythmic breathing distraction on preoperative anxiety levels in patients undergoing general anesthesia at the pre-test and post-test stages. The effect was analyzed using the Wilcoxon signed-rank test, which yielded a p-value. Mean and standard deviation values are also presented in Table 2.

Table 2. Bivariate Analysis

Variables	n	Wilcoxon test		Z	p-value
		Mean	Standard Deviation		
Pre-test	38	21.05	5.647		
Post-test	38	12.03	4.445	-5.379	0.001

The analysis results using the Wilcoxon test showed a Z value of -5.379 with a p-value = 0.001, which indicates a significant difference between the anxiety levels before and after the rhythmic breathing distraction intervention. The average anxiety score before the intervention (pretest) in 38 respondents was 21.05 ± 5.647 with a severe anxiety category, while after the intervention (posttest) it decreased to 12.03 ± 4.445 with a mild anxiety category. This average decrease confirms that rhythmic breathing distraction is effective in reducing the anxiety levels of preoperative patients with general anesthesia.

Discussion

The findings in Table 1 also show that respondent characteristics influence preoperative anxiety responses. Age factors indicate variations in individual abilities to manage stress and anxiety. Patients in younger age groups tend to have less stable emotional control, whereas in older age groups, anxiety can be influenced by concerns about physical conditions and the risks of anesthesia. These differences indicate that anxiety responses are individual and influenced by psychological developmental factors [12]. Sex also contributes to differences in preoperative anxiety levels. Female patients tend to exhibit higher anxiety levels than male patients, which may be attributed to biological and hormonal differences, as well as differences in how individuals process stress. This finding is consistent with numerous studies that suggest that women are more likely to express anxiety than men in healthcare settings [13]. In addition, the patient's physical status based on the ASA classification also influences preoperative anxiety. Patients with a better physical status tend to have a lower risk perception of anesthesia and surgery. Conversely, increased medical risk can increase patient anxiety due to concerns about possible complications during and after the procedure. This indicates that preoperative anxiety is influenced not only by psychological factors but also by the patient's clinical condition [14]. The results of this study indicate that masked respiratory stimulation reduces anxiety in preoperative patients under general anesthesia.

These findings indicate that non-pharmacological interventions focused on breathing regulation and attention diversion can help patients achieve a calmer psychological state before surgery. Preoperative anxiety is an emotional response that often arises due to uncertainty regarding anesthetic and surgical procedures; therefore, interventions that can reduce stress responses are important in perioperative nursing practice.[15] Rhythmic breathing distraction works through simultaneous physiological and psychological relaxation mechanisms. Structured breathing patterns help reduce sympathetic nervous system activity and

increase parasympathetic nervous system dominance, which plays a role in creating a state of relaxation in the body. In addition, the patient's focus on breathing rhythms and visual stimuli serves as a form of distraction from anxiety-provoking thoughts, such that negative emotional responses can be suppressed.(2) This mechanism explains why patients who receive rhythmic breathing distraction interventions show a more stable psychological state before the induction of anesthesia.[16]

The reduction in anxiety levels after rhythmic breathing distraction indicated that this intervention was effective in the preoperative phase. This finding aligns with previous research, which has found that breathing relaxation and distraction techniques can reduce anxiety in patients undergoing surgery. This intervention not only helps patients manage anxiety but also has the potential to improve their mental preparedness for anesthesia and surgery [17].Based on the results of the Wilcoxon test, the average pre-test score was 21.05 with a standard deviation of 5.647, while the average post-test score decreased to 12.03 with a standard deviation of 4.445. The obtained Z value was -5.379 with a p-value of 0.001 ($p < 0.05$), indicating a significant difference between the results before and after the intervention. These results indicate that the intervention provided had a significant effect on reducing the scores of the measured variables; therefore, it can be concluded that the treatment was effective in improving the expected conditions. Furthermore, some respondents were unfamiliar with using non-pharmacological methods or interventions, including rhythmic breathing distraction, to manage preoperative anxiety in patients undergoing general anesthesia. This resulted in sub-optimal management of anxiety. Therefore, prior to intervention, the majority of respondents tended to experience severe anxiety due to a combination of physiological and lifestyle factors, coupled with a lack of knowledge about effective anxiety management strategies.

IV. CONCLUSION

Based on the results of the data analysis using the Wilcoxon signed rank test, a significant p-value of 0.001 ($p < 0.05$) was obtained, indicating a significant effect on anxiety levels after being taught rhythmic breathing distraction to preoperative patients with general anesthesia at Wijayakusuma Hospital, Purwokerto. The average patient anxiety score before the intervention was recorded at 21.05 (severe anxiety) and was reduced to 12.03 (mild anxiety) after treatment. Thus, rhythmic breathing distraction can stimulate the parasympathetic nervous system and suppress the stress response that arises due to anxiety. This intervention is easy to implement and has minimal risks; therefore, it is recommended to be considered as part of the standard preoperative preparation procedure, especially for patients who will undergo general anesthesia.

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REFERENCES

- [1] Aisyiah S, Putri RM, Lestari D. Factors influencing preoperative patient anxiety. *Journal of Clinical Nursing*. 2021;10(2):85–92.
- [2] Hastuti W. Description of anxiety levels in pre-operative patients. *Nursing Journal*. 2024;6(2):249– 256.
- [3] Putri AN, Sari DP, Wahyuni T. Patient anxiety responses before surgery. *Journal of Medical-Surgical Nursing*. 2022;8(2):101–108.
- [4] Ilmi F, Faisal M. Differences in anxiety levels based on gender in hospitalized patients. *Journal of Health Psychology*. 2023;9(1):40–48.
- [5] Sitinjak R. Preoperative patient anxiety and its influencing factors. *Journal of Nursing Science*. 2022;6(1):55–63.
- [6] Karangan D, Putra AR, Wiyono J. Rhythmic breathing technique in anxiety management. *Journal of Holistic Nursing Science*. 2024;11(1):34–41.

- [7] Abdulloh AAG. Use of non-pharmacological therapies to reduce perioperative anxiety in children: a systematic review. *Journal of Nursing*. 2023;15(3):1189–1200.
- [8] Satriana, Feriani. Benson relaxation therapy and finger holding. *Journal of Nursing*. 2020;1(3):1731– 1737.
- [9] Nova E. The effectiveness of using auditory distraction and respiratory distraction on anxiety levels in mothers pre-cesarean section. *Journal of Professional Nursing Research*. 2024; e-ISSN 271.
- [10] Anantasari. The effectiveness of music distraction and rhythmic breathing distraction on labor pain in mothers in the first stage of labor in the delivery room of Ben Mari Pakisaji Hospital, Malang Regency. Majapahit Hospital. 2021;13(2):20–30.
- [11] Sari SG, Aulya D. Qualitative and quantitative research methods book. 2022.
- [12] Damayanti R, Hamid AYS. The relationship between age and preoperative anxiety levels of patients. *Indonesian Nursing Journal*. 2023;26(1):45–52.
- [13] Damayanti R, Hamid AYS. The relationship between age and preoperative anxiety levels of patients. *Indonesian Nursing Journal*. 2023;26(1):45–52.
- [14] Oh TK, Kim SH, Lee JH. Association between ASA physical status and preoperative anxiety. *BMC Anesthesiology*. 2024;24(1):112.
- [15] Wiyono J, Putra AR. Breathing exercise and physiological stability in preoperative patients. *Journal of Holistic Nursing*. 2022;9(2):77–84.
- [16] Haddad LG, Al-Mashaqbeh S, Hayajneh FA. Effect of visual distraction on preoperative anxiety in surgical patients. *J Perianesth Nurs*. 2024;39(2):123–130.
- [17] Mulki S, Sunarjo T. Effect of deep breathing relaxation on preoperative anxiety. *Nurse Media Journal of Nursing*. 2020;10(1):15–22.