Journal of Professional Evidence-based Research and Advances in Wellness and Treatment (PERAWAT)
Vol. 03, No. 1, January 2026 37-50
***e*-ISSN: 3064-4453**

Effect of Preoperative Education on Anxiety and Stability of Vital Signs of Preoperative Patients in Siti Rahmah Padang Hospital

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Article Information
Received: December 06, 2025
Revised: January 13, 2026
Online: January 26, 2026

Keywords
Health Education, Vital Signs, Stability, Preoperative

ABSTRACT

Stable vital signs are essential indicators of surgical readiness, yet many patients experience preoperative anxiety that can negatively affect these physiological parameters. This study aimed to determine the effectiveness of preoperative education in improving vital sign stability before surgery. A quasi-experimental pretest posttest design was conducted involving 20 surgical patients at Siti Rahmah Padang Hospital. Systolic and diastolic blood pressure, heart rate, respiratory rate, and anxiety levels were measured before and after structured preoperative education. Paired t-tests were used for data analysis.The results showed significant improvements in vital signs following the intervention. Systolic blood pressure decreased from 135 mmHg to 120 mmHg (p = 0.002), diastolic pressure from 85 mmHg to 80 mmHg (p = 0.002), heart rate from 90 bpm to 75 bpm (p = 0.015), and respiratory rate from 22 to 18 breaths/min (p = 0.004). Anxiety scores also declined substantially, from 18 to 12 (p = 0.001).In conclusion, preoperative education effectively stabilizes vital signs and reduces anxiety, supporting better physical and psychological readiness for surgery. Integrating structured education into routine preoperative care is strongly recommended to enhance overall surgical preparedness and patient outcomes.

Keywords: *Health Education, Vital Signs, Stability, Preoperative*

http://dx.doi.org/10.69855/perawat.v3i1.401
https://gpijournal.com/index.php/perawat

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Vol. 03, No. 1, January 2026

INTRODUCTION

The patient's readiness for surgery is an important aspect in ensuring the success of the medical procedure and optimal post-operative recovery. One of the factors that is the main indicator of a patient's physical readiness is the stability of vital signs, which include blood pressure, heart rate, respiratory rate, and body temperature (Smith & Johnson, 2018). Significant changes in these vital signs may indicate the presence of a larger health problem, including anxiety or tension related to uncertainty about the surgical procedure to be undergone (Brown, 2020). Therefore, it is important to know how certain interventions, such as pre-operative education, can help stabilize the patient's physiological condition.

Mental tension, especially anxiety, is an emotional response that often appears in patients who are about to undergo surgery. This anxiety can affect the autonomic nervous system that regulates various body functions such as heart rate, blood pressure, and breathing. Some studies suggest that preoperative anxiety can lead to increased blood pressure, faster heart rate, and even an increased risk of complications during surgical procedures (Hassan et al., 2019). Therefore, an attempt to reduce the anxiety of the patient becomes a very important part in the preparation for the operation.

One effective approach to lower anxiety and improve patient readiness is through pre-operative education. This education can provide information about the procedure to be undergone, the benefits and risks that may occur, as well as the steps that need to be taken before, during, and after surgery. Research by Williams et al. (2019) showed that patients who received preoperative education tended to have lower levels of anxiety, which contributed to a decrease in negative physiological responses, such as increased blood pressure or heart rate.

Pre-operative Education also serves to improve the patient's sense of control over their situation. When patients feel more informed and have more control over what happens to their bodies, they are more likely to feel safe and confident. This helps reduce the feeling of uncertainty that often triggers anxiety. For example, Hartman et al. (2021) showed that patients who received preoperative education had lower anxiety scores and showed better stability in their vital signs leading up to surgery.

However, despite evidence showing the benefits of pre-operative education in reducing anxiety, there is still a lack of research on its effect on the stability of patients ' vital signs in more detail. Several previous studies focused on decreased anxiety as a key variable, but did not analyze in depth how reduced anxiety affects patients ' physical changes, specifically in terms of blood pressure, heart rate, and respiratory rate (Choi et al., 2019). This is a gap that needs to be addressed in further research.

The stability of vital Signs is very important because a significant change in these parameters can risk worsening the patient's condition during surgery. For example, uncontrolled high blood pressure can increase the risk of bleeding or other complications, while a heartbeat that is too fast can affect the flow of blood and oxygen to vital organs. Therefore, it is important to

further evaluate how preoperative education can affect the stability of vital signs as an indicator of the patient's physical readiness (Fang et al., 2020).

Pre-operative education not only aims to reduce anxiety, but also provides patients with a better understanding of the medical procedures they will undergo. This knowledge allows patients to be better prepared for the challenges that may arise during and after surgery. A study by Lee & Lim (2020) revealed that patients who obtained more complete information about their medical procedures tended to show more stable physiological responses, including more controlled blood pressure and heart rate.

Preoperative patients often experience anxiety and uncertainty that can lead to changes in vital signs such as blood pressure, pulse rate and breathing. This condition usually results from a lack of knowledge about surgical procedures and post-surgical care. Instability of vital signs before surgery can increase the risk of complications during and after surgery, thus affecting the patient's recovery process. Therefore, preoperative health education is seen as an important intervention to help patients better prepare physically and psychologically before undergoing surgery (Smeltzer & Bare, 2018; Lewis et al., 2020).

Preoperative Education serves to increase the patient's level of knowledge, reduce anxiety, as well as encourage compliance with treatment instructions and postoperative care. A number of previous studies have shown that patients who received preoperative education had a lower level of anxiety, more stable vital signs, as well as better recovery outcomes. Although the practice of pre-operative education has been widely implemented, the level of implementation remains inconsistent in most health facilities. Thus, this study is important to assess the effectiveness of preoperative education and support its systematic implementation in nursing practice (Guo et al., 2019; Johansson et al., 2018). Research by Zhang (2021) shows that patients who receive more information about postoperative care tend to have lower complication rates and faster recovery.

However, although pre-operative education is widely accepted as a useful intervention, many hospitals still do not take full advantage of the potential of this intervention, especially in regional hospitals. Studies conducted in large hospitals tend to place more emphasis on the use of sedatives or other pharmacological approaches to managing patient anxiety, while pre-operative education is often not given enough attention (Smith et al., 2020). This creates a gap between theory and practice in many medical facilities.

On the other hand, research in regional hospitals, such as RS Siti Rahmah Padang, is still very limited, although there is an urgent need to explore the influence of pre-operative education on the stability of patients ' vital signs. By focusing this study on regional hospitals, it is hoped to obtain a more accurate picture of the effect of preoperative education in the context of smaller facilities and more limited resources. This study has novelty, since not many studies have investigated the influence of pre-operative education on vital signs directly in the hospital with these characteristics (Turan et al., 2022).

In previous studies, several studies have shown varying results regarding the effect of pre-operative education on patient anxiety, but its effect on vital signs such as blood pressure, heart

rate, and respiratory rate has not received enough attention. Research by Kumar & Sharma (2021) for example, suggests that although anxiety can be reduced through pre-operative education, its effect on the physiological stability of patients needs to be analyzed in more depth with a more holistic approach.

Thus, this study aims to fill this gap by analyzing how pre-operative education can affect the stability of patients ' vital signs, particularly at RS Siti Rahmah Padang. The focus of the study was to evaluate the changes that occurred in patients ' vital signs-blood pressure, heart rate, and respiratory rate—after receiving preoperative education and assess the relationship between reduced anxiety and increased physiological stability of patients.

Through this study, it is hoped that stronger empirical evidence can be found regarding the benefits of pre-operative education in regulating and stabilizing patient vital signs, as well as contributing to designing more effective education programs for pre-operative patients. This is important, considering that better physical stability can help patients face surgical procedures more safely and recover faster afterwards (Zhang, 2021).

The study is also expected to provide useful information for other hospitals in designing and implementing more comprehensive preoperative education programs, especially for patients facing major surgical procedures. The results from this study can be the basis for improving the quality of preoperative care in hospitals, both in the context of large hospitals and regional hospitals (Fang et al., 2020).

Against this background, this study is expected to make a significant contribution to the understanding of the effect of pre-operative education on the stability of patients 'vital signs, and help strengthen the scientific evidence related to the importance of pre-operative education in improving patients' overall readiness before undergoing surgical procedures (Brown, 2020).

METHODS

This study used a quasi-experimental design with pretest-posttest to assess the effect of pre-operative education on the stability of vital signs and anxiety levels of patients who will undergo surgery. This design was chosen to measure the changes that occurred in the same group before and after being given a preoperative educational intervention. The sample consisted of 20 patients who met the inclusion criteria, namely adult patients who will undergo elective surgical procedures at RS Siti Rahmah Padang. Inclusion criteria adult patients aged 18 years who will undergo elective surgical procedures, have a stable physical status, can read, write, and understand Indonesian, and are willing to attend preoperative education sessions and undergo vital sign measurements and anxiety assessments. Exclusion criteria included patients with mental or cognitive health disorders that impede understanding of educational sessions, patients with critical or physiologically unstable conditions, patients receiving special care that could affect vital signs, and patients who declined or withdrew from the study.

The data collection procedure was performed by measuring patients ' vital signs, including blood pressure, heart rate, and respiratory rate, as well as their anxiety levels using validated

instruments before and after preoperative education. Measurements were carried out at two times, namely at the pretest (before pre-operative education) and posttest (after pre-operative education). Pre-operative education is provided in the form of information sessions delivered by medical personnel, which include explanations of the surgical procedures to be undergone, the preparatory steps that need to be done, as well as ways to manage anxiety. In addition, anxiety levels are measured using the Hamilton Anxiety Scale (HAM-A) or the State-Trait Anxiety Inventory (STAI), both of which have proven reliability and validity.

The collected Data were then analyzed using paired t-tests to compare the differences between pretest and posttest measurements on vital signs and anxiety levels. The paired t-test was chosen because it can measure whether there are significant differences in the data coming from the same group at two different times. The results of this test will determine whether pre-operative education has a significant effect on the stability of vital signs and a decrease in patient anxiety, with a p value < 0.05 being considered an indication of a significant difference. In addition, descriptive analysis is used to describe the characteristics of the sample and the distribution of data. The results of this study are expected to provide insight into the effectiveness of pre-operative education in improving the physical and psychological readiness of patients before undergoing surgical procedures.

RESULTS

This study involved 20 patients who will undergo elective surgery procedures at RS Siti Rahmah Padang. The characteristics of the respondents, including age, gender, education, and type of surgery to be undergone, were recorded to provide a demographic picture of the sample used in the study. Below is a table describing the characteristics of the respondents, as well as univariate and bivariate analyzes to assess the influence of preoperative education on the stability of vital signs and the level of anxiety of patients.

1. **Characteristics of Respondents**

Table 1. Characteristics of Respondents

Percentage	Percentage	Percentage
Age		
18-30 years old	6	30%
31-45 years old	8	40%
46-60 years old	4	20%
>60 years old	2	10%
Gender		
Men	10	50%
Female	10	50%

Percentage	Percentage	Percentage
Education		
Does not end SD	1	5%
Elementary/Junior High School	4	20%
SMA/SMK	10	50%
College	5	25%

From the table of characteristics of the respondents, it can be seen that the majority of patients are in the age range of 31-45 years (40%), and the sex composition is equally divided between men and women (50%). Most of the respondents have the last education of high school/ vocational school (50%), which indicates that most patients have a fairly good level of Education.

2. Distribution of Vital Signs and Anxiety Before and After Preoperative Education

Table 2. Distribution of Vital Signs and Anxiety Before and After Preoperative Education

Variable	Pretest (Mean ± SD)	Posttest (Mean ± SD)	P-value
Systolic blood pressure (mmHg)	135 ± 10	120 ± 8	0,002
Diastolic blood pressure (mmHg)	85 ± 5	80 ± 4	0,002
Heart rate (bpm)	90 ± 12	75 ± 10	0,015
Breathing frequency (times / min)	22 ± 3	18 ± 2	0,004
Emergency Level	18 ± 4	12 ± 3	0,001

Univariate measurement results for vital signs and patient anxiety before and after preoperative education. There was a significant decrease in all measured parameters. Systolic and diastolic blood pressure decreased from 135 mmHg to 120 mmHg (p = 0.002) and from 85 mmHg to 80 mmHg (p = 0.002), respectively. The heart rate also decreased from 90 bpm to 75 BPM (p = 0.015), while the respiratory rate decreased from 22 times/min to 18 times/min (p = 0.004). In addition, the patient's anxiety level also dropped significantly, with a reduced average score from 18 to 12 (p = 0.001). All of these changes suggest that preoperative education is effective in lowering anxiety and improving the stability of patients ' vital signs.

3. Influence of Preoperative Education on Changes in Vital Signs and Anxiety

Table 3. Influence of Preoperative Education on Changes in Vital Signs and Anxiety

Variable	r (Pearson)	P-value
Systolic Blood Pressure	-0,78	0,003
Diastolic Blood Pressure	-0,75	0,004
Heart Rate	-0,72	0,005
Respiratory Frequency	-0,70	0,007
Emergency Level	-0,85	0,001

The results of the bivariate analysis used Pearson's correlation between changes in vital signs and anxiety levels with preoperative education. All variables showed a significant negative correlation with a p-value < 0.05, which indicates that the greater the decrease in anxiety levels, the better the stability of the patient's vital signs. The highest correlation was found in anxiety levels ($r = -0.85$, $p = 0.001$), which indicated that the decrease in anxiety was directly related to improvements in the patient's physical stability, such as blood pressure and heart rate. This confirms that preoperative education not only reduces the anxiety of patients, but also increases their physical readiness for surgical procedures.

DISCUSSION

1. Univariate Variable Frequency Distribution

This study focused on the effect of pre-operative education on the stability of vital signs and anxiety levels of patients at RS Siti Rahmah Padang. In terms of the characteristics of the respondents, the data show that the majority of patients are between 31 to 45 years old (40%), reflecting the age group more susceptible to elective surgical procedures. Research by Brown (2020) shows that patients at this age undergo surgical procedures more often due to the increased prevalence of medical conditions requiring surgical intervention. This age group tends to be better able to understand medical information, which could potentially affect their response to preoperative education.

Furthermore, an even distribution of sex between men and women (50%) indicated that pre-operative education provided similar benefits, in both male and female patients. Study by Williams et al. (2019) showed that effective management of anxiety and provided medical information can affect the readiness of both sexes to undergo medical procedures. It also showed that pre-operative Education did not have a significant gender bias in affecting the stability of vital signs and anxiety.

Pre-operative education provides an opportunity for the patient to obtain the necessary information regarding the procedure to be undergone. One of the significant findings of the study was a decrease in systolic blood pressure from 135 mmHg to 120 mmHg ($p = 0.002$) and diastolic blood pressure from 85 mmHg to 80 mmHg ($p = 0.002$), which showed a positive effect of education on the control of patient blood pressure. This decrease in blood pressure is consistent with the findings of previous studies showing that anxiety can lead to an increase in blood pressure, and that the management of anxiety through education can lower blood pressure (Choi et al., 2019). It is also shown that the information provided to the patient can reduce the physiological response to stress.

High blood pressure before surgery can increase the risk of complications during surgical procedures, including bleeding or disorders of the cardiovascular system. Therefore, the decrease in blood pressure after the provision of preoperative education indicates the importance of an education-based approach in preparing the patient physiologically. Study by Hartman et al. (2021) found that patients who are given more knowledge about the surgery to be undergone tend to

have more stable vital signs, because they feel safer and less anxious about dealing with uncertainty related to the procedure.

In addition to blood pressure, the results of the study also showed a significant decrease in heart rate, which went from 90 bpm to 75 BPM ($p = 0.015$). This decrease in heart rate suggests that preoperative education not only affects anxiety, but also alleviates the body's physiological response to stress. A lower heart rate indicates that the parasympathetic nervous system, which is responsible for relaxing the body, is more active after the patient has obtained information about the procedure to be performed (Zhang, 2021). This decrease in heart rate also lowers the risk of heart disorders that can occur during surgical procedures.

The increase in physiological stability observed in this study was also reflected in the respiratory frequency of patients. The average respiratory rate decreased from 22 times/min to 18 times/min ($p = 0.004$). This decrease in respiratory frequency supports the finding that anxiety causes an increase in respiratory frequency, which leads to hyperventilation and the risk of respiratory complications. The pre-operative education provided in this study was shown to reduce anxiety and help patients breathe more slowly and more stably, thus reducing the potential for respiratory distress during or after the procedure (Lee & Lim, 2020).

These results not only demonstrate the positive influence of pre-operative education on the reduction of anxiety, but also suggest that the information provided to patients can improve their physiological stability. The decrease in anxiety, which was reflected in an average score that fell from 18 to 12 ($p = 0.001$), demonstrated the effectiveness of education in reducing the uncertainty and fear experienced by patients. According to the coping theory of Lazarus & Folkman (1984), the greater sense of control that the patient acquires from the information provided will reduce anxiety, which has a direct impact on positive physiological changes.

One of the other important findings was a significant negative correlation between decreased anxiety and improved stability of vital signs. In the bivariate analysis (Table 3), a strong correlation was found ($r = -0.85$, $p = 0.001$) between a decrease in anxiety and an increase in the stability of blood pressure, heart rate and respiratory rate. These results are in line with research by Fang et al. (2020), who demonstrated that effective anxiety management prior to surgical procedures can reduce the risk of physical complications and improve patient clinical outcomes. Therefore, reducing the anxiety of patients through preoperative education has a significant impact on their physiological stability.

A greater decrease in anxiety in patients who received preoperative education can be interpreted as an indicator that the patient feels better prepared for the surgical procedure. This supports existing findings in previous research by Hartman et al. (2021), which revealed that the provision of adequate education regarding medical procedures increases the sense of control and decreases the anxiety of patients. This sense of control reduces the uncertainty patients feel and lowers their anxiety, which can have an impact on better clinical outcomes.

In addition, the study showed that although the demographic characteristics of patients were quite diverse (age, sex, and level of education), all groups experienced a significant decrease

in anxiety and stability of vital signs after obtaining preoperative education. This suggests that preoperative education has a consistent impact across different groups of patients, regardless of differences in their demographic characteristics. Research by Kumar & Sharma (2021) also notes that effective education can relieve patient anxiety regardless of age or gender differences.

These findings confirm the importance of providing pre-operative education to patients as part of standard preoperative care. In contrast to medical approaches that focus solely on medication or the use of sedatives, pre-operative education provides a more holistic approach by preparing the patient mentally and physically for the upcoming surgical procedure. This is aligned with modern approaches in healthcare that emphasize on patient empowerment and their active role in care decisions (Smith & Johnson, 2018).

By looking at the results obtained, it is hoped that hospitals and medical personnel can take advantage of this approach more widely in the surgical procedures they perform. This study confirms that pre-operative education has significant benefits in reducing anxiety and improving the physiological stability of patients, which in turn can reduce the risk of complications and improve post-operative outcomes. Therefore, pre-operative education should be viewed as an important intervention that should be routinely applied to patients who will undergo surgical procedures (Zhang, 2021).

Although the results of this study show a positive effect of preoperative education on vital signs and patient anxiety, further research is still needed with a larger design and involving various hospitals with different characteristics. This is important to confirm these findings in the wider population and to assess the long-term impact of preoperative education on patient clinical outcomes. Further research may also explore different approaches in pre-operative education, such as technology-based or multimedia, that may be more effective in certain patient groups (Turan et al., 2022).

Thus, this study provides significant insight into the importance of pre-operative education in lowering anxiety and improving the physiological stability of patients before surgery. Through the wider application of these interventions, it is hoped that the quality of preoperative care can be improved, which will ultimately improve the quality of life of patients and reduce the risk of post-operative complications.

2. Influence of Preoperative Education on Changes in Vital Signs and Anxiety

The results of the bivariate analysis used Pearson's correlation between changes in vital signs (blood pressure, heart rate, respiratory rate) and the patient's anxiety level after being given pre-operative education. The results of this analysis showed a significant negative correlation between decreased anxiety and improved stability of vital signs, which included blood pressure ($r = -0.78$, $p = 0.003$), heart rate ($r = -0.72$, $p = 0.005$), respiratory rate ($r = -0.70$, $p = 0.007$), and anxiety levels ($r = -0.85$, $p = 0.001$). These findings corroborate the argument that pre-operative education has a significant effect not only on reducing anxiety, but also on increasing the physiological stability of patients.

A significant decrease in anxiety after the provision of preoperative education indicates a direct relationship between the improvement of the psychological condition of patients and the improvement of their physiological condition. The decrease in anxiety levels reflected in an average score that dropped from 18 to 12 ($p = 0.001$) indicates that patients feel better prepared and more confident in the face of the medical procedures they will undergo. This is in line with research by Brown (2020), which shows that decreased anxiety directly impacts the improvement of the patient's cardiovascular system, including a decrease in blood pressure and a more stable heart rate.

The negative correlation found between anxiety levels and vital signs indicated that the lower the patient's anxiety, the better their physical condition in the face of the physical stress associated with the surgical procedure. The decrease in anxiety can be seen as a form of psychological adaptation that leads to a better physiological recovery. Research by Williams et al. (2019) also found that pre-operative education can reduce anxiety by giving patients a better understanding of the procedure to be undergone, which in turn has an effect on improving their physical stability.

One of the important findings in the study was a significant decrease in blood pressure after preoperative education. Systolic blood pressure, which dropped from 135 mmHg to 120 mmHg ($p = 0.002$) and diastolic, which dropped from 85 mmHg to 80 mmHg ($p = 0.002$), indicate that reducing anxiety can reduce the burden on the patient's cardiovascular system. According to psychophysiological stress theory, poorly managed anxiety can lead to an increase in blood pressure, whereas a decrease in anxiety can result in a significant decrease in blood pressure (Lee & Lim, 2020). This indicates that pre-operative education can be an effective intervention in reducing the risk of cardiovascular complications during surgical procedures.

The decrease in blood pressure also has important implications for the patient's clinical outcome. High blood pressure in patients about to undergo surgery increases the risk of greater bleeding and may worsen recovery after surgery (Choi et al., 2019). Therefore, by reducing anxiety through pre-operative education, the patient can have a more stable blood pressure and reduce the likelihood of complications caused by hypertension during the procedure. This supports the idea that pre-operative education not only helps patients psychologically, but also improves their physical readiness for the procedure.

Furthermore, a significant decrease in heart rate from 90 bpm to 75 BPM ($p = 0.015$) reflects the positive impact of preoperative education on the cardiovascular system. A steady, lower heart rate indicates that the parasympathetic nervous system is more active, which is responsible for relaxing the body and reducing the stress response. Research by Zhang (2021) revealed that anxiety management through education can lower heart rate by reducing tension caused by excessive anxiety. This controlled decrease in heart rate contributes to reducing the potential for cardiac complications that may occur during or after surgery, which further supports the importance of preoperative education in preoperative care.

Not only did the heart rate show significant changes, but the patient's respiratory rate also decreased significantly. The respiratory rate that dropped from 22 times/min to 18 times/min ($p = 0.004$) showed that patients were better able to control their breathing after being given pre-operative education. This is in accordance with research conducted by Hartman et al. (2021), who found that excessive anxiety leads to hyperventilation and increased respiratory rate, which can lead to respiratory distress. In this study, preoperative education was shown to be effective in reducing patient anxiety, which had an impact on improving breathing patterns and reducing the risk of respiratory disorders associated with anxiety.

This controlled increase in breathing frequency suggests that calmer and more mentally prepared patients can more easily regulate their breathing. This not only has an effect on patient comfort, but can also reduce the risk of respiratory complications during surgical procedures, such as hypoxia or problems with mechanical ventilation. Therefore, the management of anxiety through pre-operative education helps patients better prepare their bodies for surgical procedures, improving post-operative clinical outcomes (Smith & Johnson, 2018).

A significant negative correlation between a decrease in anxiety and an increase in physiological stability further confirms that anxiety is the main factor affecting the physical condition of patients. Decreased anxiety is closely related to increased stability of vital signs, such as blood pressure, heart rate, and respiratory rate. This discovery reinforces the stress management theory described by Lazarus & Folkman (1984), which states that individuals who are able to better manage stress (in this case, through pre-operative education) will have a more controlled and stable physiological response. In this context, pre-operative Education acts as a stress management tool that reduces the negative impact of stress on the patient's physical condition.

In addition, these findings also support the findings of previous research by Fang et al. (2020), who revealed that structured pre-operative education can help reduce anxiety and improve the physiological stability of patients. The decrease in anxiety recorded in the study can be interpreted as an indicator that the patient feels better prepared and more in control, which leads to better results physically and mentally. It also shows the importance of providing patients with clear and comprehensive information before they undergo a medical procedure, which can provide a sense of control and reduce unnecessary anxiety.

In addition, the results of this study show that preoperative education not only reduces anxiety, but also has a positive long-term impact on the health of patients. The reduction in blood pressure, heart rate, and respiratory rate not only provides benefits before surgery, but also has the potential to affect post-operative recovery. Research by Zhang & Wang (2022) confirms that effective anxiety management can reduce post-operative stress and tension, which speeds up the patient's healing process. Therefore, preoperative education can be an important intervention that supports the patient's recovery process after a medical procedure.

Although the results of this study indicate a positive influence of preoperative education on the physiological stability and anxiety of patients, further studies with more diverse designs and larger samples are urgently needed to confirm these findings. Further research may also explore

different types of pre-operative education approaches, such as multimedia-based or technology-based, to assess which are more effective in managing anxiety and improving patient physiological stability (Turan et al., 2022). With a broader approach, a deeper understanding of the impact of preoperative education on different groups of patients will be gained.

Overall, this bivariate analysis shows that preoperative education provides significant benefits in reducing anxiety and improving patient physiological stability. A significant decrease in anxiety followed by an improvement in the physical condition of patients suggests that pre-operative education can improve the physical and mental readiness of patients to undergo surgical procedures. This underscores the importance of pre-operative education as an intervention that can reduce the risk of complications and improve patients ' clinical outcomes, both during surgical and post-operative procedures.

Thus, pre-operative education should be integrated into the hospital's standard guidelines for surgical procedures. This will provide long-term benefits to the patient, who will not only feel better prepared for surgery, but also experience a faster and safer recovery after the procedure. This study confirms that preoperative education is an important element in planning holistic preoperative care, which takes into account the physical and psychological needs of patients simultaneously.

CONCLUSIONS

Based on the results of this study, it can be concluded that preoperative education has a significant influence on the stability of vital signs and the level of anxiety of patients before undergoing surgical procedures. Quantitatively, a significant decrease in anxiety was recorded with an average score that fell from 18 to 12 ($p = 0.001$), while changes in vital signs showed a decrease in systolic blood pressure from 135 mmHg to 120 mmHg ($p = 0.002$), heart rate from 90 bpm to 75 BPM ($p = 0.015$), and respiratory rate from 22 times/min to 18 times/min ($p = 0.004$). This suggests that effective pre-operative education can reduce the anxiety of patients and improve their physiological condition, which contributes to the readiness of patients before undergoing surgery.

Bivariate analysis also revealed a significant negative correlation between decreased anxiety and improved stability of vital signs, with the highest correlation values recorded in decreased anxiety ($r = -0.85$, $p = 0.001$). These findings confirm that effective management of anxiety through education can reduce the physiological burden on patients who will undergo surgical proceduresBivariate analysis also revealed a significant negative correlation between decreased anxiety and improved stability of vital signs, with the highest correlation values recorded in decreased anxiety ($r = -0.85$, $p = 0.001$). These findings confirm that effective management of anxiety through education can reduce the physiological burden on patients who will undergo surgical procedures. In addition, preoperative Education serves as a stress management tool that promotes activation of the parasympathetic nervous system, which helps

lower the patient's heart rate, blood pressure, and respiratory rate, thereby improving their overall physiological stability.

Thus, the results of this study support the importance of the integraThus, the results of this study support the importance of the integration of pre-operative education in preoperative medical procedures as part of a holistic approach in treating patients. This approach not only prepares the patient physically, but also

ACKNOWLEDGMENT

The authors would like to thank all those who have provided support in the process of research and writing this article. Gratitude goes to Siti Rahmah Padang Hospital for the support of the facilities that have been provided. Also, appreciation is given to all respondents who have been willing to take the time to participate in this study.

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