

Review

## The Influence of Slow Deep Breathing Technique on Inpatient Anxiety



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Article Info	Abstract
Article history: Received: 24 May 2023 Accepted: 25 July 2023	<p><b>Introduction:</b> Previous studies have shown that slow deep breathing techniques provide benefits in reducing anxiety in general, but there has been no specific review investigating its benefits in inpatient populations. This study aims to provide strong and up-to-date evidence on the effectiveness of slow deep breathing technique as a potential intervention in reducing anxiety in the inpatient population.</p> <p><b>Methods:</b> This study is a literature review conducted during April-May 2023 using Google Scholar, PubMed, and ScienceDirect. The keywords used were "nafas dalam", "kecemasan", and "rawat inap" in Indonesian, and "slow deep breathing," "anxiety," and "inpatient care" in English.</p> <p><b>Results:</b> The literature review identified eight articles that examined the anxiety of patients undergoing surgery and treatment in hospitals in Indonesia. These articles highlighted internal and external factors influencing anxiety. The dominant research approach employed experimental designs with pre-test and post-test measurements involving more than ten respondents. The study found that internal factors influencing anxiety included age, gender, education, health condition, and prior hospitalization experiences, while external factors included access to information, therapeutic communication, environment, and healthcare facilities.</p> <p><b>Conclusion:</b> The implementation of slow deep breathing techniques is a major factor in reducing anxiety in inpatient populations. Further research is expected to emphasize the use of slow deep breathing techniques as a primary intervention in reducing anxiety levels in patients prior to undergoing surgery.</p>
Keywords: anxiety, inpatient, slow deep breathing, literature review	

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## INTRODUCTION

The Anxiety and Depression Association of America assesses that anxiety affects one person in every 25 British people. Women have more anxiety than men and usually occurs between the ages of 35-55 years. The American Psychiatry Association (APA) reports that 8.3% of the population experience anxiety which usually occurs in women 55-60%. Community survey also shows 3-5% of adults experience anxiety with a lifetime prevalence of more than 25%. Approximately 15% of patients who operate are anxious, and 25% occur while seeking treatment. Disturbance Anxiety usually begins in early adulthood, between the ages of 15 and 25, and increases by the age of 35 years old [1].

Inpatient care is a hospital treatment process that often triggers stress and anxiety in patients [2]. Anxiety is a common emotional response experienced by inpatients and can affect their physical and psychological recovery. Excessive anxiety can worsen patients' health conditions, increase pain levels, disrupt sleep, weaken the immune system, and prolong the recovery period [3].

Anxiety needs attention and intervention because the patient's emotional state affects the patient's bodily functions. High stress can affect the physiological part of the body, which is characterized by increased blood pressure, increased pulse frequency, and increased respiratory rate. The role of the nurse is needed to intervene in patients. Nurses can do therapy such as relaxation therapy, distraction, recovery, and imagination [1].

One of the non-pharmacological approaches being considered is the use of a breathing technique known as Slow Deep Breathing [4]. This technique involves taking slow and deep breaths, as well as exhaling slowly. Slow Deep Breathing is associated with the activation of the parasympathetic nervous system, which plays a role in reducing stress and calming the autonomic nervous system [5]. In the context of inpatients, this breathing technique has the potential to reduce anxiety and improve patient well-being [6].

Previous studies conducted on various patient populations, such as surgical patients, patients with cardiovascular diseases, and patients with anxiety disorders, have shown the benefits of Slow Deep Breathing in reducing anxiety levels [7]. However, a comprehensive literature review is still needed to evaluate the specific impact of this breathing technique on inpatients.

Research on the effects of Slow Deep Breathing on the anxiety of inpatients will provide valuable information for healthcare practitioners, such as nurses, doctors, and therapists, in designing effective interventions to manage patients' anxiety during the hospitalization period [8]. If this breathing technique proves to be effective, it can be implemented as part of routine inpatient care to reduce anxiety, improve sleep quality, accelerate recovery, and enhance patient satisfaction with the received treatment [9].

Therefore, through this literature review, we will gather, evaluate, and synthesize existing research on the influence of slow deep breathing on anxiety in

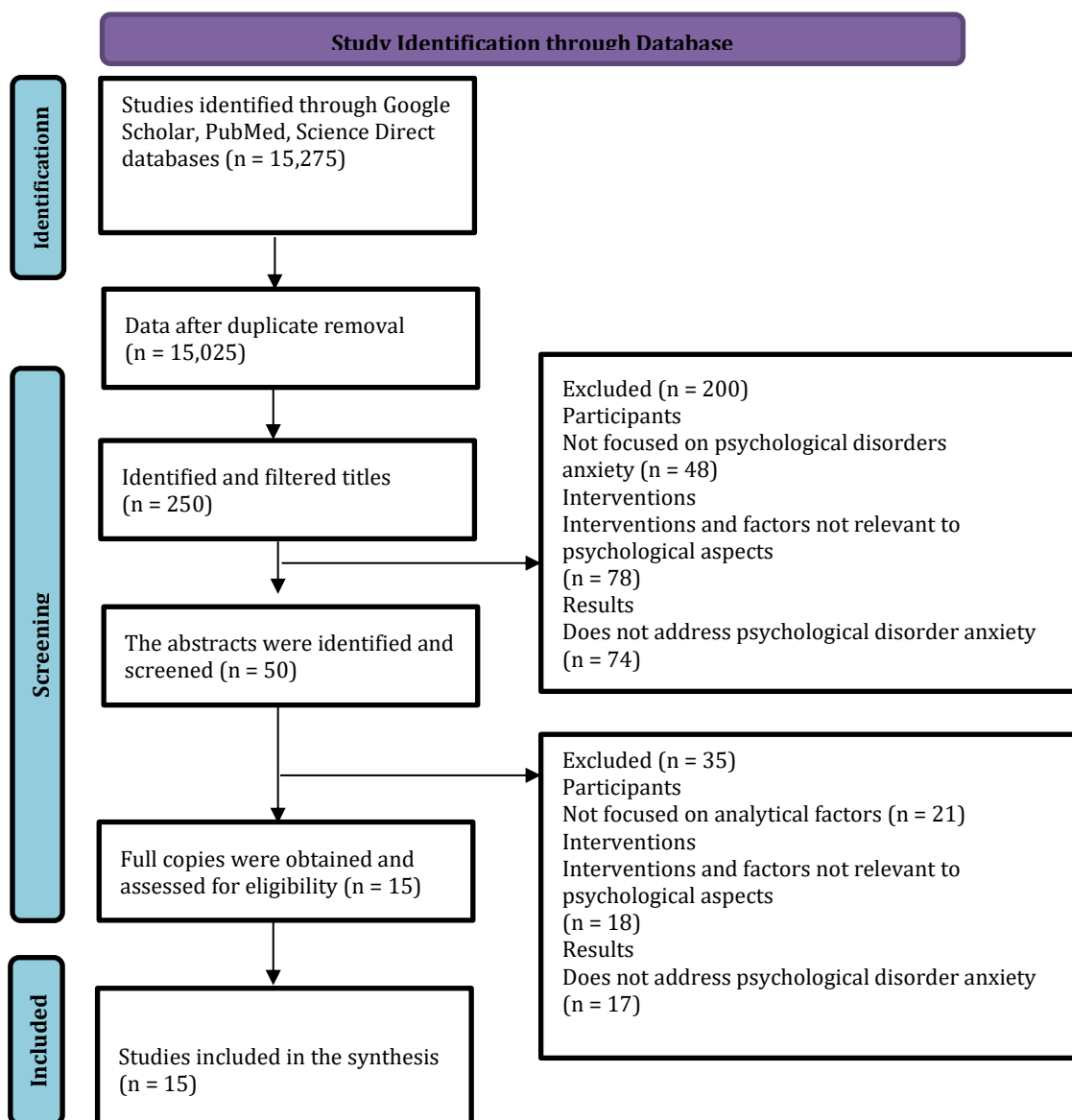
inpatients. Our goal is to provide strong and up-to-date evidence on the effectiveness of slow deep breathing techniques as a potential intervention in reducing anxiety in the inpatient population.

## **METHODS**

The design of this research is a literature review. We conducted a summary of research studies based on a specific theme using secondary data from previous studies. The literature search was conducted in April - May 2023. The secondary data sources we used were reputable national and international journal articles. We searched for literature through Google Scholar, PubMed, and ScienceDirect. The selected databases had high and moderate quality criteria to ensure the reliability and relevance of the data we found. In searching for articles or journals, we used keywords, boolean operators, and Medical Subject Headings (MeSH) to broaden or narrow down the search to facilitate the identification of relevant articles or journals. The keywords we used included "nafas dalam", "kecemasan", and "rawat inap" in Indonesian language. We also used English keywords such as "slow deep breathing," "anxiety," and "inpatient care" to search for relevant literature.

Based on literature search using a database and customized MeSH keywords, a

total of 15,275 relevant articles were found. After removing duplicates, 15,025 articles were deleted, leaving a total of 250 identified titles. Out of the 250 identified titles, 200 titles were excluded after screening. The reasons for rejecting these titles were as follows: participant aspect - 48 titles were not focused on psychological anxiety disorders and thus not relevant to the research objective, intervention aspect - 78 titles had irrelevant factors to the psychological aspect being investigated, outcome aspect - 74 titles did not discuss the targeted psychological anxiety disorders. Therefore, after the selection and removal of titles that did not meet the criteria, 50 abstracts remained that met the criteria. The obtained abstracts underwent further screening, and 35 studies were excluded from this research. The reasons for excluding these studies were as follows: participant aspect - 21 studies did not focus on the analysis factors that are part of this research, intervention aspect-11 studies revealed factors unrelated to the psychological aspect being investigated, and outcome aspect - 10 other studies did not discuss the targeted psychological anxiety disorders. Thus, after the screening process, a total of 15 studies remained that met the criteria and were considered suitable for use in this research. The results of the article study selection can be illustrated in a Flow Diagram (Figure 1).



**Figure 1** Article Search Process

## RESULTS

Eight articles met the inclusion criteria (Figure 1) of the two main factors influencing anxiety, namely internal factors and external factors. Generally, this research predominantly utilizes an experimental design with a one-group pre-test and post-test approach. The average number of respondents is more than ten individuals. Overall, the studies discuss the psychological

impact experienced by patients during surgery and hospital care, as well as the influence of slow deep breathing intervention in reducing anxiety levels. Studies relevant to this systematic review were predominantly conducted in Indonesia. From the synthesis of these studies, two main factors influencing anxiety were identified. The internal factors include age, gender, education, health condition, and prior hospitalization experience. The external factors

encompassed access to information, therapeutic communication, environment, and healthcare facilities, which may include the respective advantages of each hospital's services in addressing anxiety in the context of this research, specifically the implementation of slow deep breathing relaxation techniques. Within the journal, there were studies on the Slow Deep

Breathing method conducted for a duration of 15 to 30 minutes. During these exercises, participants were instructed to practice slower and deeper breathing rhythms. The training was carried out for a maximum of 3 days to achieve the desired effects. A comprehensive summary of the research can be found in Table 1.

**Table 1**

Summary of the Eight Included Studies

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Aziz et al., 2020) [10]	<p><b>Research Design:</b> Pre-experiment with a one-group pretest-posttest design.</p> <p><b>Sample:</b> 26 respondents selected using purposive sampling method.</p> <p><b>Variables:</b> Anxiety levels in preoperative Caesarean Section patients.</p> <p><b>Instruments:</b> Questionnaire sheets and interviews using the HARS (Hospital Anxiety and Depression Scale) scale.</p> <p><b>Analysis:</b> Wilcoxon Sign Rank Test.</p>	<p>There is an influence of Deep Breathing Exercise on the anxiety levels of preoperative Caesarean Section patients at Lavalette Hospital in Malang City, with a p-value of 0.001.</p>	<p>The research results indicate that Deep Breathing Exercise is an effective method for reducing anxiety in preoperative Caesarean Section patients.</p>
(Yuliana, 2018) [11]	<p><b>Research Design:</b> True experimental design with a control group and a pretest-posttest approach.</p> <p><b>Sample:</b> 70 clients (treatment group: n=35, control group: n=35) selected using consecutive sampling method.</p> <p><b>Variables:</b> Independent variable: Combination of music therapy with deep breathing exercise. Dependent variables: Anxiety, Blood pressure, Mean Arterial Pressure (MAP), Pulse rate, Respiratory rate, and SaO2 (Oxygen Saturation).</p> <p><b>Instruments:</b> State Trait Anxiety Inventory (STAI) form-Y questionnaire: Measures anxiety levels. Measurement devices for blood pressure, MAP, Pulse rate, Respiratory rate, and SaO2 to measure physiological parameters.</p> <p><b>Data Analysis:</b> Paired T-Test,</p>	<p>Additional findings: Age, psychology, stressors, and individual coping mechanisms can affect anxiety levels.</p> <p>There was a significant difference between the treatment group and the control group in terms of anxiety levels (p=0.000), pulse rate (p=0.000), and respiratory rate (p=0.001). However, no significant differences were found between the two groups in systolic blood pressure (p=0.459), diastolic blood pressure (p=0.901), MAP (p=0.461), and SaO2 (p=0.717).</p>	<p>The combination of music therapy with deep breathing exercise is an effective relaxation technique for reducing anxiety and impacting the physiological parameters of clients with mechanical ventilation. This technique is safe to use for clients with minimal risk.</p>

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Yilmaz & Bulut, 2020) [12]	<p>Wilcoxon Test, Manova Test, and Mann-Whitney U Test.</p> <p><b>Research Design:</b> Randomized controlled trial</p> <p><b>Sample:</b> 78 participants</p> <p><b>Variables:</b> Independent Variable: Progressive breathing and slow deep breathing Dependent Variable: Anxiety levels Instrument: Anxiety scale (state anxiety scale - SAI)</p> <p><b>Analysis:</b> Independent t-test or Mann-Whitney U test.</p>	<p>The difference in anxiety scores between the two groups is not significant (<math>p &gt; 0.05</math>).</p> <p>Additional findings: Access to information, therapeutic communication, and the environment can influence anxiety levels.</p>	<p>Training in progressive breathing and slow deep breathing has a positive effect in reducing surgical stress responses and anxiety.</p>
(Wiyono & Putra, 2021) [13]	<p><b>Research Design:</b> Pre-experimental design with a one-group pretest-posttest design.</p> <p><b>Sample:</b> 27 patients selected using consecutive sampling.</p> <p><b>Variables:</b> Independent variable; Breathing exercise, Dependent variable; Anxiety levels.</p> <p><b>Analysis:</b> The Wilcoxon statistical test was used to analyze the difference before and after the implementation of breathing exercise on anxiety levels.</p>	<p>There is an influence of breathing exercise on reducing anxiety levels in preoperative patients, with a obtained p-value of 0.000.</p> <p>Additional findings: Age, gender, and education can affect anxiety levels.</p>	<p>Breathing exercises can be applied by healthcare professionals as anxiety therapy for preoperative patients at dr. Doris Sylvanus Regional General Hospital in Palangka Raya.</p>
(Nipa et al., 2021) [14]	<p><b>Research Design:</b> Experimental time-series</p> <p><b>Sample:</b> 30 patients in the hemodialysis ward</p> <p><b>Variables:</b> Independent Variable: Deep breathing exercises as the intervention Dependent Variable: Anxiety scores</p> <p><b>Instrument:</b> Hamilton Anxiety Rating Scale (HARS): Used to assess anxiety scores</p> <p><b>Analysis:</b> Independent t-test statistical test</p>	<p>The intervention group showed a statistically significant reduction in anxiety compared to the control group (<math>P &lt; 0.001</math>). After two weeks of intervention, the intervention group demonstrated lower anxiety scores (1.4 vs 26.07) compared to the control group.</p> <p>Additional findings: Age and gender can influence anxiety.</p>	<p>Deep breathing exercises can help reduce anxiety levels in patients undergoing hemodialysis. Therefore, these exercises are recommended as a method for managing anxiety in hemodialysis patients.</p>
(Pardede et al., 2018) [15]	<p><b>Research Design:</b> Quasi-experimental with a one-group pretest-posttest design.</p> <p><b>Sample:</b> A total of 31 respondents selected using purposive sampling technique.</p> <p><b>Variables:</b> The independent variable is deep breathing relaxation technique combined with five-finger hypnosis therapy, while the dependent variable is the level of patient anxiety before surgery.</p>	<p>There is a significant influence of the deep breathing relaxation technique combined with five-finger hypnosis therapy on preoperative anxiety (<math>p &lt; 0.1</math>). The obtained p-value is 0.000.</p> <p>Additional findings: Age, education, gender, occupation, marital status,</p>	<p>The deep breathing relaxation technique combined with five-finger hypnosis therapy can be used as an effective method to reduce</p>

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Mulki et al., 2020) [1]	<p><b>Instrument:</b> Questionnaire measuring the level of patient anxiety before and after the intervention.</p> <p><b>Analysis:</b> Wilcoxon statistical test.</p> <p><b>Research Design:</b> Quasi-experimental, pretest, and posttest with non-equivalent groups.</p> <p><b>Sample:</b> 42 patients divided into two groups: intervention group (n=21) and control group (n=21).</p> <p><b>Variables:</b> Independent Variables: Deep breathing relaxation technique and music therapy. Dependent Variable: Anxiety levels.</p> <p><b>Instrument:</b> Questionnaire.</p> <p><b>Analysis:</b> Independent t-test.</p>	<p>and financing are factors that affect anxiety.</p> <p>There is a significant difference with a p-value of 0.000, indicating that the intervention group is better at reducing anxiety levels compared to the control group. Additionally, an analysis of the mean difference in anxiety levels between the intervention and control groups was conducted, yielding the same p-value (p = 0.000).</p> <p>Additional findings: Age, education, gender, occupation, marital status, and financing can influence anxiety.</p>	<p>preoperative anxiety in patients.</p> <p>Deep breathing relaxation technique and music therapy are effective in reducing preoperative anxiety levels in patients.</p>
(Widowati et al., 2022) [16]	<p><b>Research Design:</b> Quasi-experimental with Non-equivalent Control Group Pre-test Post-test.</p> <p><b>Sample:</b> Two groups: treatment group (receiving deep breathing relaxation therapy and five-finger hypnosis) and control group (not receiving the therapy), the number is not specified.</p> <p><b>Variables:</b> Independent Variable: Deep breathing relaxation therapy and five-finger hypnosis. Dependent Variable: Preoperative anxiety levels in patients.</p> <p><b>Instrument:</b> Not specified.</p> <p><b>Analysis:</b> Not specified.</p>	<p>There is a significant difference between the pre-test and post-test anxiety levels in the intervention group with a p-value of 0.000 (p &lt; 0.05).</p> <p>Additional findings: Age, education, and occupation have the potential to influence anxiety.</p>	<p>The research findings indicate that there is an influence of deep breathing on anxiety levels in the control group, whereas in the intervention group, there is no influence.</p>
(Karagos & Sayilan 2023)	<p><b>Research Design:</b> Randomized controlled, semi-experimental</p> <p><b>Sample:</b> 74 Sample divided into two groups: treatment group (receiving deep breathing relaxation therapy) (n=37) and control group (not receiving therapy) (n=37)</p> <p><b>Variables:</b> Independent variabel: breathing exercise Dependent variabel: pain and anxiety</p> <p><b>Instrument:</b> Visual Analog Scale (VAS) used to</p>	<p>There is a significant effect in the application of breathing exercise on reducing pain and anxiety scores in postoperative patients with p value = 0.001 &lt; 0.05</p> <p>Additional findings: Respondents who experienced high anxiety were reported to be influenced by external</p>	<p>The findings of this study indicate that the application of breathing exercise gives positive results for reducing pain and anxiety scores in patients in the postoperative period.</p>

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Srimook da et al., 2021)	<p>asses score of pain, and State Trait Anxiety Inventory (STAI) used to asses score of anxiety</p> <p><b>Analysis:</b> independent sample t-test and spearman correlations analysis</p> <p><b>Research Design:</b> Quasi Experiment with two groups</p> <p><b>Sample:</b> 96 patients with AHF divided into two groups: treatment group (receiving deep breathing realxion therapy) (n=48) and control group (not receiving therapy) (n=48)</p> <p><b>Variables:</b> Independent variabel: breathing training Dependent variabel: Dyspnea and anxiety</p> <p><b>Instrument:</b> Dyspnea Visual Analog Scale (DVAS) used to ases score of dyspnea, and Anxiety Visual Analog Scale (AVAS) used to asses score of anxiety</p>	factors including threats and the environment	The application of breathing training includes physical and psychological management of patients who have benefits in dyspnoea conditions and reduce anxiety.
(Nurjana & Syamsir 2023)	<p><b>Analysis:</b> independent sample t-test</p> <p><b>Research Design:</b> Quasi Experiment with pretest-posttest without control group design</p> <p><b>Sample:</b> 31 post appendectomy patients</p> <p><b>Variables:</b> Independent variabel: slow deep breathing exercise Dependent variabel: anxiety</p> <p><b>Instrument:</b> Hamilton Anxiety Rating Scale (HARS): Used to assess anxiety scores</p> <p><b>Analysis:</b> independent sample t-test</p>	<p>There is an effect of breathing training on dyspnea and anxiety in AHF patients with p value on DVAS and AVAS is 0.000 &lt;0.05</p> <p>Additional findings: Deep breathing through the diaphragm along with mindful breathing promotes a smooth, normal breathing pattern through increased sense of control and muscle relaxation. Anxiety related to dyspnea can be reduced after applying breathing training. After being given the slow deep breathing intervention, the anxiety score decreased with a p value of 0.001 &lt;0.05, which means H0 was rejected so that there was an effect of slow deep breathing on anxiety in patients</p> <p>Additional findings: Anxiety that occurs after surgery is a subjective emotional response that can be influenced by compliance with surgical procedures, attitudes of health workers and perceptions of postoperative healing.</p>	The application of slow deep breathing according to the procedure where the patient feels more comfortable and the pain intensity is more stable will have a significant effect on reducing anxiety in postoperative patients.
(Iyer et al., 2020)	<p><b>Research Design:</b> experimental study with pretest and posttest</p> <p><b>Sample:</b> 20 patients with burn</p> <p><b>Variables:</b> Independent variabel: rhythmic deep breathing Dependent variabel: pain and anxiety</p> <p><b>Instrument:</b> Visual Analog Scale (VAS) used to asses pain and Pain Anxiety Symtomp</p>	<p>There is a significant effect on the application of rhythmic deep breathing on pain and anxiety in burn patients with p value 0.000 &lt;0.05</p> <p>Additional findings: Slow and deep breathing can stimulate hormones</p>	The findings of this study conclude that rhythmic deep breathing can reduce anxiety in burn patients. All types of relaxation techniques for

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Mindarsih et al., 2019)	<p>Scale (PASS): Used to assess anxiety scores</p> <p><b>Analysis:</b> Friedman test and wilcoxon sign rank test</p> <p><b>Research Design:</b> Quasi experiment with the pre and post test non equivalent control group design</p> <p><b>Sample:</b> 32 pregnant women in the third trimester were divided into two groups: the prenatal yoga group and the deep breathing exercise group</p> <p><b>Variables:</b> Independent variabel: prenatal yoga and deep breathing Dependent variabel: anxiety</p> <p><b>Instrument:</b> Not spesified.</p> <p><b>Analysis:</b> independent t-test</p>	<p>that make you feel better including the hormones endorphins, serotonin, and dopamine so that it can reduce the increase in the hormone cortisol which this hormone will increase when anxiety occurs.</p> <p>After the prenatal yoga group was given prenatal yoga, there was a decrease in anxiety scores in third trimester pregnant women with a p-value of 0.001 &lt;0.05, while the deep breathing exercise group received therapy, there was a decrease in anxiety with a p-value of 0.004 &lt;0.05.</p> <p>Additional findings: The mean from anxiety score obtained deep breathing scores is lower than prenatal yoga, meaning that deep breathing exercise is more effective in reducing anxiety in third trimester pregnant women.</p>	<p>patients will work well if accompanied by the right steps for understanding the patient, and repeating and focusing on action.</p> <p>Deep breathing exercise can be used as the first choice to reduce anxiety in patients because the steps are easy to do, and can be done independently.</p>
(Zarneshan et al., 2022)	<p><b>Research Design:</b> Randomized Controlled Trial with double blinded trials</p> <p><b>Sample:</b> 50 patients were devided into two groups: treatment group (n=25) and control group (n=25)</p> <p><b>Variables:</b> Independent variabel: stretching with slow deep breathing Dependent variabel: anxiety</p> <p><b>Instrument:</b> Faces Anxiety Scale (FAS) Used to asses anxiety scores</p> <p><b>Analysis:</b> independent t-test, chi square test, and Mann Whitney U Test</p>	<p>After being given the intervention for 6 days with 2 sessions, including the morning session and the afternoon session, there were differences in the results between the intervention group and the control group on days 4, 5 and 6 (p &lt;0.05). significantly stretching combined with slow deep breathing can reduce anxiety in CABG (Coronary Artery Bypass Grafting) patients</p> <p>Additional findings: Differences in anxiety levels in the morning and evening can be influenced by several factors such as family visits</p>	<p>Stretching combined with slow deep breathing gets positive results so it can be used as a therapy to reduce anxiety in patients</p>

Author and Year	Analysis Research Design, Sample, Variables, Instruments, Analysis	Results of Factor Analysis	Summary of Findings
(Alfikrie et al., 2020)	<p><b>Research Design:</b> Quasi experiment with non equivalent control group pre test and post test design</p> <p><b>Sample:</b> 30 patients were divided into two groups: treatment group (n=15) and control group (n=15)</p> <p><b>Variables:</b> Independent variabel: slow deep breathing Dependent variabel: anxiety</p> <p><b>Instrument:</b> Zung Self Rating Anxiety Scale used to asses anxiety scores</p> <p><b>Analysis:</b> independent t-test</p>	<p>during the day and crowded environments.</p> <p>After being given deep breathing relaxation therapy for 3 days to the intervention group, there was a significant difference in value between the control group and the intervention group with a p value of <math>0.002 &lt; 0.05</math></p> <p>Additional findings: In this study, anxiety can be influenced by several factors, one of which is the environment of the hemodialysis room, there is no influence between gender and anxiety level.</p>	<p>Deep breathing exercises produce positive and effective results to reduce anxiety levels in patients at certain periods. The results of various studies state that this is an intervention with low risk and low cost.</p>

## DISCUSSION

### *External Factors that Influence Anxiety*

Slow deep breathing intervention can be categorized as an external factor influencing anxiety [14],[16]. The success of slow deep breathing in reducing anxiety has been proven through several literature studies mentioned in Table 1. Slow deep breathing is a relaxation technique that involves deep and slow breathing, which can help reduce autonomic nervous system activity and stimulate the parasympathetic nervous system [15]. In various journal articles, research results on the slow deep breathing method were conducted within a range of 15 to 30 minutes. In this exercise, participants were instructed to practice breathing at a slower and deeper rhythm. The exercise was performed for a maximum of 3 days to achieve

the desired effect [11],[13],[10],[1],[14],[16]. Therefore, slow deep breathing intervention can influence anxiety by reducing physiological responses associated with anxiety, such as blood pressure, heart rate, and respiratory rate [16].

In the context of the research studies mentioned in Table 1, the analysis results indicate a significant influence of slow deep breathing intervention on reducing anxiety levels in inpatients (undergoing hemodialysis) [14] or in specific conditions such as preoperative cesarean section patients [10]. Therefore, it can be concluded that slow deep breathing intervention is an external factor that can positively affect anxiety by producing a relaxation effect on individuals who experience it.

Adequate access to information, good therapeutic communication, and a comfortable environment are also external factors that can influence patients' anxiety

levels [12]. Uncertainty and lack of knowledge about medical conditions, procedures to be performed, and recovery expectations can lead to high levels of anxiety in patients. Therefore, providing sufficient access to clear, accurate, and understandable information about health conditions, medical procedures, and the recovery process can help reduce patient anxiety. Open and transparent information can provide a sense of control and trust in patients, thereby reducing perceived anxiety [17].

In addition, therapeutic communication that is empathetic between patients and healthcare professionals also plays an important role [12]. Active listening, providing emotional support, and responding to patients' questions and concerns clearly can create a safe and comfortable environment for patients [18]. Through effective therapeutic communication, patients can feel heard, understood, and supported, thus reducing anxiety. Therapeutic communication also helps patients understand medical procedures and prepare themselves mentally and emotionally, which ultimately can reduce anxiety before and during hospitalization or prior to surgery [19].

Furthermore, the physical and social environment in hospitals or care facilities also has an impact on patient anxiety [12]. A comfortable, peaceful, and disturbance-free environment provides a sense of security and comfort for patients, which in turn can reduce anxiety levels [20]. Factors such as excessive noise, lack of privacy, or unclean conditions can increase patient anxiety. Additionally, positive social interactions with healthcare

staff and support from family and friends can also contribute to reducing patient anxiety [21]. Paying attention to and creating a supportive environment can help reduce factors that can increase anxiety in inpatient and preoperative patients [22].

With adequate access to information, good therapeutic communication, and creating a supportive environment, we can reduce the levels of anxiety in inpatient and preoperative patients. This holistic approach helps patients feel more prepared, informed, and supported during their treatment period, which ultimately can enhance their experience and minimize any anxiety they may experience.

### ***Internal Factors that Influence Anxiety***

Age, gender, education, health condition, and prior hospitalization experience are internal factors that can influence the level of anxiety in inpatient and preoperative patients [10],[15],[1],[16],[14]. The age of the patient can affect the perceived level of anxiety, with older patients possibly experiencing higher anxiety due to physical limitations, concerns about slower recovery, or previous experiences with medical procedures [23]. On the other hand, younger patients may experience anxiety related to concerns about the procedure's outcome, long-term impact, or limitations in activities they will face [24].

Furthermore, studies indicate that gender can also play a role in patients' anxiety, with women tending to have higher levels of anxiety than men in the context of healthcare [25]. Hormonal differences, social roles, or

differing perceptions of health and recovery may be factors influencing these differences [26].

Education level can also influence patient anxiety [13]. Patients with higher education levels may feel more prepared and have a better understanding of their medical condition and the procedures to be performed, leading to lower levels of anxiety [27]. On the other hand, patients with lower education levels may feel less confident or have difficulty understanding the information provided to them, which can increase their anxiety levels [28].

The patient's health condition itself can also contribute to the level of anxiety [12]. Patients with serious or chronic illnesses tend to experience higher levels of anxiety due to concerns about complications, changes in their daily lives, or the long-term impact of their condition [29]. Additionally, patients with a history of mental illnesses, such as anxiety disorders or depression, may be at a higher risk of experiencing more intense anxiety [30].

One of the internal factors that affect the patient's anxiety level is hormones. In a state of anxiety, there is activation of the limbic system. This system will stimulate the release of hormones from the hypothalamus, namely corticotropin-releasing hormone (CRH). This hormone directly inhibits hypothalamic GnRH secretion from its production site in the arcuate nucleus. This process likely occurs through the augmentation of endogenous opioid secretion. Increased CRH will stimulate the release of endorphins and adrenocorticotropic hormone (ACTH) into the blood. Increased ACTH levels will cause an

increase in blood cortisol levels which causes anxiety [31]

Endorphins are hormones known as happiness triggers that are produced in the central nervous system. Endorphin hormones can reduce blood pressure, pulse, and respiratory rate and can create a happy atmosphere and provide positive feelings so as to minimize feelings of fear and anxiety (10). In addition, the central nervous system will also produce phenylethylamine which will affect the midbrain to secrete GABA (Gama-aminobutyric acid) and beta-endorphins to eliminate pain neurotransmitters which can cause analgesic effects and affect mood which eventually results in relaxation. After the body experiences relaxation, the body's vital energy becomes balanced, fatigue decreases and the mind and emotions become calm.

Previous experiences in healthcare or hospitalization can also influence the level of patient anxiety [11]. Negative experiences, such as complications or unsatisfactory care, can lead to increased anxiety and distrust towards medical procedures during subsequent visits [31]. Conversely, positive experiences and support received during previous care can help reduce anxiety during future visits [32].

It is important to consider these internal factors in planning patient care, as understanding these factors can help reduce patient anxiety and create a supportive environment for their recovery.

## **CONCLUSION**

Based on the synthesis of fifteen articles, this

study highlights two main factors that influence the level of anxiety in patients during surgery and hospitalization: internal factors including age, gender, education, health condition, and previous experience with care, and external factors including access to information, therapeutic communication, environment, and healthcare facilities, particularly the non-pharmacological intervention of slow deep breathing technique. It is expected that hospitals can also help alleviate anxiety by providing quality healthcare facilities, including the implementation of slow deep breathing. Future researchers are encouraged to focus on the use of slow deep breathing technique as a primary intervention to reduce patient anxiety before undergoing surgery, in order to obtain specific insights.

#### CONFLICT OF INTEREST

The author states that there is no conflict of interest in writing this article.

#### AUTHOR CONTRIBUTIONS

All authors contributed to the review process. First author conducted article search and literature review. After completing the manuscript, each author reviewed the findings.

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