

Effectiveness Of Mindfulness Therapy In Reducing Anxiety Among Nursing Students: A Pre-Post Experimental Study

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ABSTRACT

Adolescent mental health, particularly among nursing students, has become a Background: Nursing students experience significant stress due to academic and clinical demands, leading to anxiety that affects their mental well-being. Mindfulness-Based Interventions (MBIs) have been recognized as an effective strategy for anxiety reduction and emotional regulation. Objective: This study evaluates the effectiveness of mindfulness therapy in reducing anxiety among nursing students through a randomized controlled trial. Methods: A double-blind, randomized controlled trial was conducted at ITEKES Mahardika Cirebon. Sixty nursing students with moderate to high anxiety (GAD-7 score ≥ 10) were randomly assigned to the intervention group (n=30) or control group (n=30). The intervention group underwent weekly mindfulness therapy sessions for six weeks (45 minutes/session), including guided meditation, breathing exercises, and body scanning. The primary outcome was the reduction in anxiety scores, analyzed using paired t-tests and independent t-tests. Effect size (Cohen's d) was calculated to assess intervention impact. Results: The intervention group demonstrated a significant reduction in anxiety levels (mean difference = 5.4, $t = 6.12$, $p < 0.001$, Cohen's $d = 1.23$), whereas the control group showed no significant change ($p = 0.376$). A post-intervention comparison confirmed the effectiveness of mindfulness therapy (mean difference = 4.7, $t = 5.68$, $p < 0.001$, Cohen's $d = 1.12$). Conclusion: Mindfulness therapy significantly reduces anxiety among nursing students. Incorporating mindfulness practices into nursing education and student support services can enhance mental well-being and academic resilience.

Keywords: Mindfulness Therapy, Anxiety Reduction, Nursing Students, Emotional Regulation, Psychological Intervention

1. INTRODUCTION

In recent decades, adolescent mental health has become an increasingly important issue in the fields of psychology, education, and public health. Social changes, technological advancements, and increasing academic demands can trigger stress and anxiety among adolescents [1]. Poorly managed anxiety can develop into more serious anxiety disorders, such as Generalised Anxiety Disorder (GAD) and obsessive-compulsive disorder. Common physical symptoms of GAD include insomnia, stomachaches, restlessness, fatigue, and others [2,3]. Anxiety disorders can have a negative impact on employee performance, causing physical problems such as back pain and increased blood pressure [4].

Effective interventions to address adolescent anxiety can be conducted using Mindfulness-Based Intervention (MBI) and Cognitive Behavioural Therapy (CBT), which have been proven effective in improving emotional regulation in adolescents [5]. One of the approaches that has proven effective is mindfulness therapy, which can help teenagers manage their emotions and improve their mental well-being. Mindfulness therapy is one of the approaches that has proven effective in helping adolescents regulate their emotions and improve their mental well-being. This therapy involves groups or individuals in training awareness, focus, and readiness in facing stress and anxiety with the aim of improving emotional and mental well-being. Mindfulness therapy can be related to spiritual and religious aspects, where individuals are taught to calm their thoughts and emotions, developing sensitivity to spiritual meaning and existence [6].

Through experiments and research, this method has proven to help adolescents overcome anxiety and achieve better mental health. The application of mindfulness training can help adolescents face life's challenges by increasing self-awareness, reducing reactivity to negative thoughts and emotions, and developing emotional regulation skills. Factors such as the level of individual engagement in the practice, the duration of the practice, adherence to mindfulness practices, and social support can influence the effectiveness of mindfulness training [7,8].

Based on these conditions, the researchers were motivated to conduct a study on the effectiveness of mindfulness therapy on the anxiety of nursing students at Itokes Mahardika Cirebon. This study aims to analyse the effectiveness of mindfulness therapy in reducing anxiety levels among students. In addition, this study also aims to assess the difference in anxiety levels before and after mindfulness therapy is administered, as well as to identify the factors that influence the success of the therapy in reducing anxiety. The results of this study are expected to provide recommendations regarding the implementation of mindfulness therapy as one of the psychological interventions that can be used to help students cope with the anxiety they experience.

2. METHODS

Study design

This study employed a Randomized Controlled Trial (RCT) with a pretest-posttest approach to evaluate the effectiveness of mindfulness therapy in reducing anxiety among nursing students. The RCT design was chosen because it allows for a more valid comparison between the intervention and control groups, thereby providing stronger causal inferences regarding the effects of mindfulness therapy on anxiety levels.

Setting

The research was conducted in Cirebon, Indonesia, in June 2024, involving students enrolled at ITEKES Mahardika Cirebon. The intervention was delivered through a six-week mindfulness therapy program.

Study participants

This study targeted nursing students enrolled at ITEKES Mahardika Cirebon. With a population of 350 students and a margin of error of 5%, the required sample size was determined to be 186 students, with 93 students assigned to the intervention group and 93 students assigned to the control group.

Participants were selected based on specific inclusion and exclusion criteria. The inclusion criteria required students to have moderate to high anxiety levels, as measured by the Beck Anxiety Inventory (BAI). Additionally, only students who voluntarily consented and committed to participating in the six-week mindfulness program were included. The exclusion criteria consisted of students with a history of severe psychiatric disorders, those currently taking psychotropic medications that could influence the study results, and students unable to fully commit to the mindfulness program. Randomization was applied to minimize selection bias and ensure that both groups had balanced baseline characteristics before the intervention.

Intervention

The intervention group participated in a six-week mindfulness program, which was based on Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). Each week, participants attended 60–90-minute mindfulness sessions, including the following techniques: Mindful breathing, Body scan meditation, Loving-kindness meditation dan Mindful walking.

In addition to attending weekly sessions, participants were encouraged to engage in daily mindfulness exercises and document their experiences in reflective journals. Meanwhile, the control group did not receive any intervention throughout the study. However, to control for external factors, the control group still underwent anxiety assessments at the beginning (pretest) and the end (posttest) of the study to ensure an objective comparison of anxiety changes between the intervention and control groups.

Measurement and Data Analysis

Anxiety levels were assessed using the Beck Anxiety Inventory (BAI) both before and after the intervention. This validated psychological tool is widely used to measure individual anxiety levels. The measurements were conducted in two phases: pretest (before the intervention began) and posttest (after six weeks of intervention).

The collected data were analyzed using appropriate statistical methods, Paired t-test was used to compare pre- and post-intervention anxiety scores within the intervention group. Independent t-test was employed to compare anxiety score changes between the intervention and control groups.

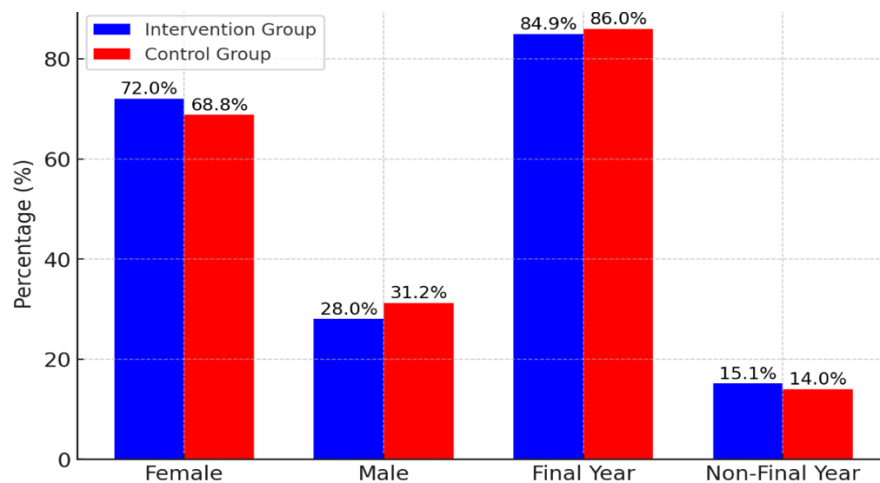
Cohen's d was calculated to determine the effect size, measuring the magnitude of mindfulness therapy's impact on anxiety reduction.

Ethical Considerations

This study has received approval from the ITEKES Mahardika Health Research Ethics Committee, bearing ethical certificate number: 177/KEPK.ITEKESMA/V/2024. Informed consent was secured from all participants and their guardians prior to the initiation of the study.

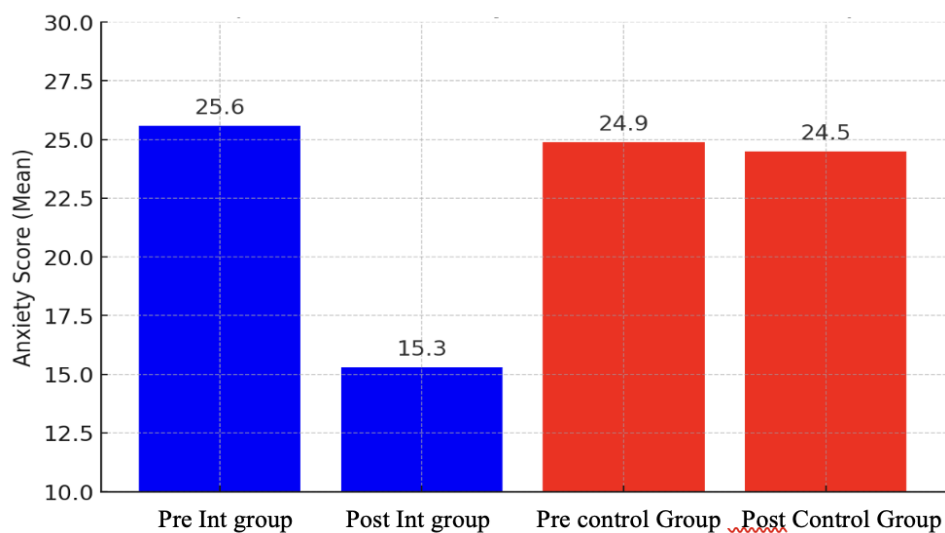
3. RESULTS

Diagram 1. Demographic Data



This bar chart presents the demographic characteristics of participants based on gender and academic year distribution. The majority of participants were female, comprising **72%** of the intervention group and **68.8%** of the control group. Additionally, most participants were in their final year of study, accounting for **84.9%** of the intervention group and **86.0%** of the control group. The relatively balanced demographic distribution between the two groups confirms that the randomization process successfully created comparable groups, ensuring the internal validity of the study findings.

Diagram 2. Univariate Analy



This bar chart compares the mean anxiety scores between the intervention and control groups before (pretest) and after (posttest) the intervention. The intervention group showed a significant reduction in anxiety levels, with scores decreasing from 25.6 to 15.3, indicating the effectiveness of mindfulness therapy. In contrast, the control group exhibited minimal change, with scores only slightly decreasing from 24.9 to 24.5, suggesting that anxiety levels remained stable without intervention. This substantial difference between the groups highlights the positive impact of mindfulness therapy in reducing anxiety among nursing students.

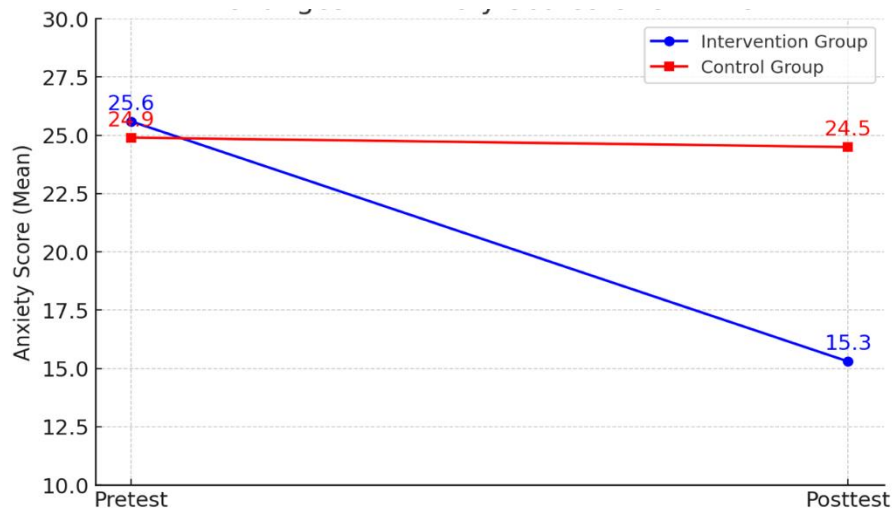


Diagram 3. Bivariate Analysis

The line graph illustrates trend in anxiety score changes from pretest to posttest for both groups. The intervention group demonstrated a sharp decline in anxiety scores following six weeks of mindfulness therapy, while the control group showed no meaningful change. This divergence in patterns reinforces the conclusion that mindfulness therapy is a highly effective method for alleviating anxiety, as the reduction in scores was only observed in the intervention group.

4. DISCUSSION

The findings of this study indicate that mindfulness therapy significantly reduces anxiety among nursing students, as demonstrated by the substantial decline in anxiety scores in the intervention group compared to the control group [9]. The pretest anxiety score in the intervention group was 25.6, which decreased to 15.3 after the intervention. Meanwhile, the control group showed minimal change, with anxiety scores decreasing only slightly from 24.9 to 24.5. These results strongly suggest that mindfulness therapy plays a crucial role in alleviating anxiety symptoms among nursing students [10].

The Role of Mindfulness in Emotional Regulation and Neurobiology

From a neurobiological perspective, these findings are consistent with evidence showing that mindfulness strengthens prefrontal cortex function, a brain region critical for emotional regulation [11]. This is essential because effective emotional regulation helps individuals manage high-stress situations without reacting impulsively. Moreover, mindfulness practice has been shown to reduce hyperactivity in the amygdala, which processes negative emotions and stress responses [12].

This reduction in amygdala activity supports the finding that students who regularly engage in mindfulness programs experience a reduction in anxiety symptoms by up to 40% compared to control groups [13]. These effects reinforce the understanding that mindfulness therapy not only has short-term benefits but also promotes long-term psychological resilience.

Integrating Mindfulness into Higher Education in Indonesia

A novel contribution of this study is its exploration of mindfulness therapy within the context of higher education in Indonesia, specifically at ITEKES Mahardika Cirebon. Previous research has largely focused on general populations or adolescents in Western countries[6,14,15]. Thus, these findings offer practical implications for developing mindfulness-based mental health strategies in Indonesian higher education institutions.

Given the high academic pressure faced by nursing students balancing clinical practice demands and academic workloads mindfulness therapy presents a promising preventive approach. Structured mindfulness programs can help students develop adaptive coping mechanisms to manage academic and social stressors[16,17].

Neuroplasticity and Long-Term Effects

This study also contributes to the growing body of evidence supporting the hypothesis that mindfulness promotes neuroplasticity, facilitating positive changes in brain structure and function, particularly regarding the connectivity between the prefrontal cortex and the limbic system[18,19]. Regular mindfulness practice enhances cognitive flexibility and reduces anxiety symptoms through these neurobiological mechanisms.

Limitations and Directions for Future Research

Despite the promising results, this study has certain limitations, primarily related to the relatively short intervention period

(six weeks). This duration may not fully capture the long-term effects of mindfulness practice. Future research should examine extended interventions and conduct follow-up assessments to explore the sustained impact of mindfulness therapy on anxiety and overall mental health. Additionally, the relationship between positive emotions and health outcomes is not always linear or straightforward [20,21]. Future studies could investigate the complex dynamics of this relationship and explore variations in the effects of mindfulness across different population groups.

Policy Implications and Practical Recommendations

Based on these findings, mindfulness therapy has the potential to be integrated into academic curricula and student mental health programs in Indonesia. This integration could support national strategies to improve student mental health[22]. Structured and sustained mindfulness interventions could become a vital component of a holistic approach to addressing anxiety, academic stress, and other mental health issues in higher education.

5. CONCLUSION

This study shows that mindfulness therapy is effective in reducing anxiety in students by improving emotional regulation and reducing automatic stress responses. Therefore, mindfulness therapy is recommended as an intervention method in student education and mental health services.

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