

EFFECTIVENESS OF A MINDFULNESS-BASED INTERVENTION IN REDUCING ANXIETY AMONG TEACHER-EDUCATION STUDENTS: A QUASI-EXPERIMENTAL STUDY

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ABSTRACT. *Anxiety is one of the most prevalent mental health concerns among university students and may adversely affect academic performance, concentration, study habits, and psychological well-being. Although mindfulness-based interventions have been widely recognized for reducing anxiety, empirical evidence on their effectiveness among Filipino university students remains limited. This study evaluated the effectiveness of a mindfulness-based intervention in reducing anxiety among teacher-education students enrolled in a state university in Mindanao, Philippines. A quasi-experimental one-group pretest-posttest design was employed involving 17 students who exhibited anxiety symptoms. Participants completed a six-session mindfulness program consisting of breathing exercises, grounding techniques, progressive muscle relaxation, and thought-stopping techniques. Anxiety levels were measured using the Beck Anxiety Inventory before and after the intervention. Descriptive statistics, paired-samples t-test, and Cohen's d were used to analyze the data. Results revealed that participants' mean anxiety score decreased from 35.06 before the intervention to 16.29 after completing the mindfulness program. The paired-samples t-test indicated a statistically significant reduction in anxiety, $t(16) = 10.44$, $p < .001$, while the effect size ($d = 2.57$) demonstrated a very large practical effect. These findings indicate that the mindfulness program effectively reduced anxiety symptoms among the participants and supports the integration of mindfulness-based interventions into university mental health and student wellness programs to promote psychological well-being and academic success.*

Keywords— anxiety, Beck Anxiety Inventory, teacher-education students, mindfulness, mindfulness-based intervention, quasi-experimental research

INTRODUCTION

Anxiety has become one of the most prevalent mental health concerns among university students, affecting not only their psychological well-being but also their academic performance, motivation, concentration, and overall quality of life. While mild anxiety may serve as a normal adaptive response that prepares individuals to respond to challenging situations, persistent or excessive anxiety can impair cognitive functioning, reduce learning efficiency, and negatively influence students' academic achievement and personal development [1], [2]. The transition to higher education exposes students to numerous academic, social, and personal demands, making them particularly vulnerable to anxiety-related problems.

The increasing prevalence of anxiety among college students has become a growing public health concern worldwide. International reports indicate that anxiety disorders are among the most common mental health conditions affecting young adults, with university students experiencing substantially higher levels of psychological distress than the general population [3]. In the Philippines, anxiety has likewise emerged as a significant mental health concern among young people. Previous studies have reported elevated levels of anxiety among university students, particularly during and following the COVID-19 pandemic, owing to disruptions in learning, social isolation, and uncertainty about the future [4], [5]. These findings underscore the need for accessible and evidence-based interventions that support students' mental health within higher education institutions.

Anxiety is not limited to higher education but has also been reported among students at earlier educational levels, where stress, anxiety, and depression have been associated with academic demands and other psychosocial challenges. These

findings underscore the importance of preparing future teachers with not only pedagogical knowledge but also the emotional resilience and self-regulation skills needed to maintain their own well-being and effectively support the mental health of their future learners. Consequently, promoting psychological well-being during teacher education has become an important component of preparing competent and resilient educators [6].

Among the various non-pharmacological approaches for managing anxiety, mindfulness has gained considerable attention because of its effectiveness in promoting emotional regulation, psychological resilience, and overall well-being. Mindfulness refers to intentionally focusing one's attention on present-moment experiences with openness, acceptance, and without judgment [7]. Rather than attempting to suppress distressing thoughts or emotions, mindfulness encourages individuals to acknowledge their experiences objectively, allowing them to respond more adaptively to stressful situations. Previous research has demonstrated that mindfulness-based interventions can reduce anxiety, depression, stress, and emotional distress while improving attention, self-awareness, and psychological functioning among adolescents and adults [8], [9].

Within educational settings, mindfulness-based interventions have shown promising outcomes in enhancing students' emotional well-being and academic functioning. Previous studies reported significant reductions in anxiety and stress among university students following mindfulness training, with participants demonstrating improved concentration, emotional regulation, and coping strategies [10]. Likewise, systematic reviews have concluded that mindfulness programs provide meaningful psychological benefits across diverse educational contexts, supporting their integration into

school- and university-based mental health initiatives [11]. Despite these encouraging findings, much of the existing evidence has been generated in Western countries, and relatively few studies have examined the effectiveness of structured mindfulness interventions among Filipino university students, particularly using quasi-experimental designs within teacher education programs.

Addressing this gap is particularly important because teacher education students encounter unique academic and professional demands that may increase their vulnerability to anxiety. These students are expected to balance rigorous academic requirements, classroom demonstrations, field experiences, and preparation for future teaching responsibilities. Consequently, interventions that strengthen psychological well-being may contribute not only to improved mental health but also to better academic engagement and future professional competence.

To address this need, the present study evaluated the effectiveness of a six-session mindfulness-based intervention among teacher-education students enrolled in a state university in Mindanao, Philippines. The intervention

incorporated breathing exercises, grounding techniques, progressive muscle relaxation, and thought-stopping techniques to help participants manage symptoms of anxiety. By examining changes in anxiety levels before and after the intervention, this study contributes empirical evidence regarding the applicability of mindfulness as an accessible mental health strategy within Philippine higher education institutions.

This study aimed to evaluate the effectiveness of a mindfulness-based intervention in reducing anxiety among teacher-education students enrolled in a state university in Mindanao, Philippines. Specifically, it addressed the following research questions:

1. What are the pretest and posttest anxiety levels of the participants as measured by the Beck Anxiety Inventory?
2. Is there a significant difference between the participants' pretest and posttest anxiety scores?
3. Is the mindfulness-based intervention effective in reducing anxiety among the participants?

LITERATURE REVIEW

Anxiety Among University Students

Anxiety is one of the most prevalent mental health concerns among university students worldwide. Although moderate anxiety may motivate students to prepare for academic tasks, persistent and excessive anxiety negatively affects concentration, memory, decision-making, academic performance, and overall psychological well-being [12], [13]. University students experience multiple stressors, including academic workload, examinations, financial concerns, interpersonal relationships, and uncertainties regarding future careers, making them particularly vulnerable to anxiety disorders [14].

The COVID-19 pandemic further intensified these concerns by disrupting traditional learning environments and increasing feelings of uncertainty, isolation, and academic pressure. Studies conducted during and after the pandemic consistently reported elevated anxiety levels among university students, with many experiencing moderate to severe symptoms that affected both learning and emotional well-being [5], [15]. In the Philippine context, anxiety has likewise become an increasing concern among college students, highlighting the need for effective mental health interventions within higher education institutions [4].

These findings demonstrate that anxiety is not merely an individual psychological concern but also an educational issue that influences students' academic engagement, persistence, and overall success. Consequently, universities are increasingly encouraged to implement preventive and supportive mental health programs that promote resilience and emotional well-being.

Mindfulness as a Psychological Intervention

Mindfulness has emerged as one of the most widely studied non-pharmacological interventions for managing anxiety and promoting psychological well-being. It is commonly defined

as intentionally directing one's attention to present-moment experiences while maintaining an attitude of openness, acceptance, and nonjudgment [7]. Rather than eliminating unpleasant emotions, mindfulness enables individuals to recognize their thoughts and feelings objectively, reducing automatic emotional reactions and improving self-regulation. Research suggests that mindfulness produces both psychological and physiological benefits. Regular mindfulness practice has been associated with improved attention, emotional regulation, cognitive flexibility, stress management, and resilience [16], [17]. Emerging neuroscientific evidence suggests that mindfulness enhances emotion regulation through neurobiological mechanisms [18]. Because mindfulness requires minimal resources and can be implemented individually or in groups, it has become increasingly applicable within educational settings as a practical strategy for supporting students' mental health.

Mindfulness-Based Interventions in Higher Education

The application of mindfulness within higher education has gained considerable attention because university students experience unique academic and developmental challenges. Mindfulness-based interventions implemented in colleges and universities have consistently demonstrated positive effects on reducing anxiety, stress, depression, and emotional exhaustion while improving concentration, academic engagement, and overall well-being [11], [19].

Meta-analyses and systematic reviews likewise conclude that mindfulness-based interventions produce moderate to large reductions in anxiety symptoms among college students across different educational contexts [20]. Programs incorporating breathing exercises, body awareness, grounding techniques, relaxation exercises, and reflective practices have been shown to strengthen students' coping abilities and psychological resilience, allowing them to respond more effectively to academic stressors [21].

Beyond psychological outcomes, mindfulness interventions may also contribute to healthier classroom environments by promoting emotional awareness, empathy, and self-management. These broader educational benefits make mindfulness a valuable complement to existing university guidance and wellness services.

Research Gap

Although the effectiveness of mindfulness-based interventions has been well documented internationally, empirical evidence from Philippine higher education institutions remains relatively limited. Existing local studies have primarily focused on describing students' mental health conditions or examining anxiety during the COVID-19 pandemic, while relatively few have evaluated structured mindfulness programs using quasi-experimental designs. Moreover, limited research has specifically examined teacher education students, whose academic and professional preparation exposes them to unique stressors that may increase vulnerability to anxiety.

Addressing these gaps is important because culturally relevant evidence is necessary to guide university mental health initiatives and student wellness programs. By evaluating a structured six-session mindfulness intervention among teacher-education students enrolled in a state university in Mindanao, Philippines, the present study contributes empirical evidence on the effectiveness of mindfulness in reducing anxiety within the Philippine higher education context.

METHODOLOGY

This study employed a quasi-experimental one-group pretest-posttest design to evaluate the effectiveness of a mindfulness-based intervention in reducing anxiety among teacher-education students enrolled in a state university in Mindanao, Philippines. Quasi-experimental designs are appropriate when researchers seek to determine the effect of an intervention in naturally occurring groups where random assignment is not feasible while still allowing the comparison of outcomes before and after treatment [22], [23]. The study measured participants' anxiety levels before and after the implementation of the mindfulness program to determine whether significant changes occurred following the intervention.

Participants consisted of 17 teacher-education students enrolled in a state university in Mindanao, Philippines. Initially, 20 students who exhibited anxiety symptoms were recruited through purposive sampling based on the results of the Zung Self-Rating Anxiety Scale. Purposive sampling is appropriate when participants are intentionally selected because they possess characteristics relevant to the phenomenon or intervention being investigated [24]. Three participants did not complete all intervention sessions and were excluded from the final analysis to ensure consistency in evaluating the intervention's effectiveness.

The intervention consisted of six structured mindfulness sessions conducted over one month. The program incorporated evidence-based mindfulness practices, including diaphragmatic breathing, grounding exercises, progressive muscle relaxation, and thought-stopping techniques. These strategies have been widely recognized as effective mindfulness practices that promote present-moment awareness, emotional regulation, and anxiety reduction by helping individuals respond more adaptively to stressful experiences [7], [25], [26]. Each session provided guided activities that encouraged participants to develop practical coping strategies for managing anxiety symptoms within an educational setting.

Anxiety levels were measured using the Beck Anxiety Inventory (BAI), a 21-item self-report instrument developed to assess the severity of anxiety symptoms [27]. Prior to the intervention, the Zung Self-Rating Anxiety Scale served as the screening instrument for participant selection. The BAI was administered before and after the intervention to determine changes in participants' anxiety levels following completion of the mindfulness program. Demographic information was likewise collected to describe the study participants. The BAI has demonstrated strong psychometric properties across diverse populations and remains one of the most frequently used instruments for measuring clinical and non-clinical anxiety [27], [28].

The study adhered to established ethical principles governing research involving human participants. Ethical approval was obtained from the Institutional Ethics Review Committee before the conduct of the study. Participation was voluntary, and informed consent was obtained from all participants before data collection. Confidentiality and anonymity were maintained throughout the research process, and participants were informed of their right to withdraw from the study at any stage without penalty. These procedures are consistent with internationally accepted ethical guidelines for research involving human participants [29], [30].

Descriptive and inferential statistics were used to analyze the data. Means and standard deviations summarized participants' anxiety levels before and after the intervention. A paired-samples *t*-test was employed to determine whether significant differences existed between the pretest and posttest anxiety scores. Because the study involved repeated measurements obtained from the same participants, the paired-samples *t*-test was the appropriate statistical procedure for evaluating changes following the intervention [31]. In addition, Cohen's *d* was computed to determine the magnitude of the intervention effect, with effect sizes interpreted using the conventional criteria for small (0.20), medium (0.50), and large (0.80) effects [32]. Statistical significance was evaluated at the .05 level.

RQ 1. Pretest and post-test mean scores of the participants as measured by Beck Anxiety Inventory (BAI)

Table 1: Pretest and Posttest Anxiety Levels of the Participants

Variable	Pretest Mean (SD)	Interpretation	Posttest Mean (SD)	Interpretation
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Anxiety Level	35.06 (8.39)	Moderate	16.29 (6.05)	Low
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RESULTS AND DISCUSSION

The descriptive results indicate that the participants had a moderate level of anxiety before participating in the mindfulness intervention, with a mean score of 35.06 ($SD = 8.39$). Following the six-session mindfulness program, the mean anxiety score decreased to 16.29 ($SD = 6.05$), corresponding to a low level of anxiety. These findings demonstrate a notable reduction in anxiety symptoms after the implementation of the intervention.

Mindfulness encourages individuals to focus attention on present experiences while accepting thoughts and emotions without judgment. This process strengthens attentional control, decreases cognitive rumination, and promotes adaptive emotional regulation, thereby reducing anxiety symptoms [25], [26]. The structured activities incorporated in the intervention, including diaphragmatic breathing, grounding exercises, progressive muscle relaxation, and thought-stopping techniques, likely enabled participants to regulate physiological and psychological responses to stressful situations more effectively. The findings support the Mindfulness-to-Meaning Theory, which proposes that

mindfulness promotes positive emotional regulation by enhancing awareness and facilitating cognitive reappraisal of stressful experiences [33]. Rather than reacting automatically to anxiety-provoking thoughts, participants may have developed greater psychological flexibility and the ability to respond more adaptively to perceived stressors.

The observed reduction in anxiety levels is consistent with previous evidence showing that mindfulness-based interventions effectively reduce anxiety, stress, and emotional distress among university students and other young adult populations [34], [35]. Similar improvements have also been reported in educational and clinical settings where structured mindfulness programs enhanced emotional regulation, attention, and coping abilities while reducing anxiety symptoms [25], [26]. These findings reinforce the growing body of evidence supporting mindfulness as an effective and accessible intervention for promoting student mental health.

RQ 2. Significant difference in the participants' pretest and post-test score

H_1 : There is a significant difference between the participants' pretest and posttest anxiety scores.

Table 2: Paired-Samples t-Test Results for the Difference Between the Pretest and Posttest Anxiety Scores

Comparison	Mean Difference (SD)	t	p	Decision
Pretest – Posttest	18.77 (2.34)	10.44	< .001	Accept H_1

The paired-samples t -test revealed a statistically significant difference between the participants' pretest and posttest anxiety scores ($t(16) = 10.44, p < .001$). The mean difference of 18.77 indicates that anxiety levels significantly decreased following the mindfulness intervention. Therefore, H_1 is accepted, indicating that participation in the mindfulness program significantly reduced anxiety among the participants.

The significant reduction suggests that the observed improvement was unlikely to have occurred by chance and instead reflects the effectiveness of the intervention. Mindfulness-based approaches improve emotional regulation by encouraging individuals to observe internal experiences with acceptance while reducing maladaptive cognitive patterns such as worry and rumination [20]. These mechanisms enable individuals to respond more calmly and

adaptively to stressful situations, resulting in lower anxiety levels.

The present findings are consistent with previous studies reporting statistically significant reductions in anxiety following mindfulness-based interventions across educational, community, and clinical settings [36], [37], [38]. Evidence from systematic reviews further indicates that mindfulness-based interventions consistently improve psychological well-being through reductions in anxiety, depression, and stress while enhancing adaptive coping strategies [25]. Collectively, these findings provide strong empirical support for the effectiveness of mindfulness-based interventions as an evidence-based strategy for anxiety management.

RQ 3. Is the mindfulness-based intervention effective in reducing anxiety among the participants

Table 3: Effect Size of the Mindfulness Intervention

Variable	n	Cohen's d scores		Interpretation
		d	Effect size	
Anxiety Symptoms	17	2.57	0.80	Large

The effectiveness of the mindfulness intervention was evaluated using Cohen's d . The computed effect size of 2.57 greatly exceeded Cohen's criterion for a large effect ($d = 0.80$), indicating that the intervention produced a large effect on reducing anxiety symptoms. This finding demonstrates that the mindfulness program was not only statistically significant but also highly effective in producing meaningful improvements in participants' psychological well-being.

The large effect size observed in this study is consistent with previous mindfulness intervention studies that likewise reported substantial treatment effects across anxiety-related outcomes [25], [26]. Meta-analytic evidence has also demonstrated that mindfulness-based interventions produce moderate to large effects in reducing anxiety symptoms while improving emotional well-being across diverse populations [36], [37], [38]. The present findings therefore provide additional evidence that structured mindfulness interventions

represent an effective non-pharmacological approach for reducing anxiety among university students [20], [35, 38]. Overall, the findings across the three research questions consistently demonstrate that the six-session mindfulness program effectively reduced anxiety among teacher-education students. Participants exhibited lower anxiety levels following the intervention, the reduction was statistically significant, and the intervention produced a very large practical effect. These findings support the integration of mindfulness-based programs into university mental health initiatives to promote psychological well-being and strengthen students' capacity to cope with academic and personal stressors.

LIMITATIONS

This study has several limitations that should be considered when interpreting the findings. The use of a one-group quasi-experimental pretest-posttest design without a control group limits the ability to attribute the observed reduction in anxiety solely to the mindfulness intervention. In addition, the study involved a relatively small purposively selected sample of 17 teacher-education students from a single university, which may limit the generalizability of the findings. Anxiety levels were also measured using self-report instruments, and the absence of a follow-up assessment prevented the evaluation of the long-term effects of the intervention. Future studies employing randomized controlled designs, larger and more diverse samples, and longitudinal follow-up are recommended to strengthen the evidence on the effectiveness of mindfulness-based interventions.

CONCLUSIONS

This study examined the effectiveness of a mindfulness-based intervention in reducing anxiety among teacher-education students. Grounded in the Mindfulness-to-Meaning Theory, the intervention aimed to enhance participants' emotional regulation and reduce anxiety through structured mindfulness practices. The findings demonstrated that participants' anxiety levels decreased from a moderate to a low level after completing the six-session mindfulness program. The intervention also produced a statistically significant reduction in anxiety levels and yielded a very large practical effect, indicating that the observed improvements were both statistically and practically meaningful.

The findings support the growing body of evidence that mindfulness-based interventions are effective in reducing anxiety and promoting psychological well-being among university students. The structured mindfulness activities enabled participants to develop greater awareness of their thoughts and emotions, strengthen adaptive coping strategies, and respond more effectively to academic and personal stressors. Overall, the study provides evidence that mindfulness-based interventions can serve as an effective, practical, and accessible mental health strategy for higher education institutions seeking to support students' emotional well-being and resilience.

RECOMMENDATIONS

Based on the findings of the study, several recommendations are proposed for educational institutions, mental health

practitioners, and future researchers. Higher education institutions are encouraged to integrate mindfulness-based activities into student wellness and mental health programs to help students manage anxiety and cope with academic stress. Guidance counselors, psychologists, and student affairs personnel may also incorporate structured mindfulness interventions as part of preventive mental health services and student support initiatives.

Future researchers are encouraged to conduct randomized controlled trials involving larger and more diverse student populations to strengthen the generalizability of the findings. Longitudinal studies are likewise recommended to determine the long-term effectiveness of mindfulness interventions and to examine whether improvements in anxiety are sustained over time. Additionally, future investigations may compare different mindfulness approaches or examine their effects on other psychological outcomes such as stress, depression, resilience, academic performance, and overall well-being.

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