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The effectiveness of a mindfulness intervention in reducing anxiety levels among vocational high school students

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Abstract

Background: Anxiety is one of the most frequently reported psychological problems among adolescents, particularly among Vocational High School students who are required to meet both academic and career readiness demands. Mindfulness has been widely recognized for its effectiveness in reducing anxiety across various populations; however, empirical studies focusing on Indonesian vocational education settings remain limited.

Purpose: To evaluate the effect of mindfulness intervention on anxiety levels among students and to identify variations in effectiveness based on gender and baseline anxiety levels.

Method: A quasi-experimental pre-test-post-test design with a control group was employed. Participants were selected through purposive sampling, and anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS). Statistical analysis was conducted using the Wilcoxon test and Two-Way ANOVA.

Results: A significant decrease in anxiety levels was found in the intervention group ($p < 0.001$), whereas no significant change occurred in the control group. Effectiveness varied according to gender and initial anxiety level.

Conclusion: Mindfulness intervention is effective in reducing anxiety among students and may yield greater benefits when tailored to individual characteristics.

Keywords: Adolescents; Anxiety; Mental Health; Mindfulness; Vocational Education.

INTRODUCTION

Anxiety is a form of psychological disorder commonly experienced by adolescents, especially during the transition period to prepare for the world of work. Vocational High School students have a relatively greater burden of pressure compared to public school students, as they are required to master both academic learning and vocational skills. This condition can have implications for learning focus, motivation, and readiness to face career challenges (Artika, Sunawan, & Awalya, 2021).

One intervention that is widely used to reduce anxiety is mindfulness, an approach that emphasizes full awareness of experiences in the present moment without judgment (Ahmed, 2018). The application of

mindfulness in education has been reported to improve emotional regulation and help individuals respond to pressure in a more adaptive manner (Alvarado-García, Soto-Vásquez, Infantes Gomez, Guzman Rodriguez, & Castro-Paniagua, 2025). Although the results of mindfulness interventions have been widely studied in various contexts, research testing the effectiveness of this approach in vocational education settings, particularly among vocational high school students in Indonesia, is still limited (Atika & Purnamasari, 2023).

This study aims to provide a more comprehensive explanation of the role and effectiveness of mindfulness as a form of

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psychological intervention in reducing anxiety levels in vocational high school students. In addition, this study is expected to fill the gap in empirical studies, which have so far been minimal in discussing the application of mindfulness in the context of vocational education in Indonesia (Field, 2024). With this explanation, the results of this study are expected to provide a clearer picture for schools, educators, and counselors in considering mindfulness as a relevant and applicable approach to support students' mental health and improve their readiness to face academic and work demands (Dantes, Asril, Liem, Suwastini, Keng, & Mahayanti, 2024).

RESEARCH METHOD

A quasi-experimental design with a pre-test and post-test model and a control group was used to evaluate the effect of mindfulness on the anxiety levels of vocational high school students ahead of the new school year. The research location was the Bhakti Kencana Cimahi Health Vocational High School, and the study was conducted in October 2025. The research population consisted of all 228 students in grade X. The sample was selected using purposive sampling, resulting in 60 students in the

intervention group and 60 students in the control group, aged 15–18 years. The dependent variable was anxiety levels, while the independent variable was mindfulness intervention. Anxiety was assessed using the Hamilton Anxiety Rating Scale (HARS), which consists of 14 items of anxiety symptoms with a score range of 0–4, so that the total interpretation is divided into mild anxiety (0–17), moderate (18–24), and severe (25–≤30).

The research procedure for the intervention group began with a pre-test, followed by the implementation of mindfulness intervention once a week for four weeks, with each session lasting 30 minutes per class, and ended with a post-test. The control group only received an assessment without additional intervention. Data were obtained through observation and questionnaire completion. Statistical analysis used the Wilcoxon test to detect differences in anxiety scores before and after intervention within the group, as well as Two-Way ANOVA to assess differences based on gender and initial anxiety levels. This study has passed the ethical feasibility of the Health Research Ethics Commission (KEPK) of Bhakti Kencana University with number: 276/09.KEPK/UBK/X/2025.

RESEARCH RESULTS

Table 1. Demographic Characteristics of Participants (N=120)

Variable	Intervention	Control
Gender (n/%)		
Male	15/12.0	10/8.0
Female	105/88.0	110/92.0

Based on the table, the characteristics of respondents based on gender show that women are the largest group in both research groups. In the intervention group, most respondents were women, namely 105 people (88.0%), while in the control group, women were also the most dominant group, namely 110 people (92.0%). This shows that the majority of respondents in this study were female, both in the intervention group and the control group.

Table 2. Changes in Anxiety Levels Before and After Intervention

Group	Before Intervention (Mean±SD)	After Intervention (Mean±SD)	P-Value
Intervention	15.2 ± 3.4	10.5 ± 2.7	<0.001
Control	14.8±3.2	14.5±3.0	0.65

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Based on the table, the intervention group experienced a decrease in the mean value from 15.2 ± 3.4 before the intervention to 10.5 ± 2.7 after the intervention, and this change showed a statistically significant difference with a p -value < 0.001 . Meanwhile, in the control group, the mean value before the intervention was 14.8 ± 3.2 and after the intervention it was 14.5 ± 3.0 , which shows a very small change and is not statistically significant with a p -value of 0.65. These results show that the most prominent change occurred in the intervention group.

DISCUSSION

The results of the study indicate that there was a significant decrease in anxiety levels in the intervention group compared to the control group. Based on Table 2, the average anxiety score in the intervention group decreased from 15.2 ± 3.4 to 10.5 ± 2.7 ($p < 0.001$). In contrast, the control group experienced only a very small decrease from 14.8 ± 3.2 to 14.5 ± 3.0 ($p = 0.65$), which was not statistically significant. This difference indicates that the decrease in anxiety did not occur naturally over time, but was a direct result of the mindfulness intervention provided (Ashar, Chang, & Wager, 2017).

When linked to Table 1, gender characteristics show a predominance of female participants in both groups (88% in the intervention and 92% in the control). This gender proportion influenced the response to the intervention. The literature states that women tend to be more responsive to emotion regulation-based interventions because they are more open in expressing and reflecting on their emotional state than men (Pristianto, Tyas, Muflikha, Ningsih, Vanath, & Reyhana, 2022). The fact that most participants were female may help explain why the reduction in anxiety in the intervention group was evident, and at the same time why the change in the control group remained low even though some female participants were also in that group but did not receive mindfulness stimuli (Cahyani & Wahyuni, 2023).

In addition to general effectiveness, the pattern of anxiety score reduction was also related to participants' initial anxiety levels. The average pre-test scores in both groups were in the mild-to-moderate anxiety category according to HARS interpretation, reflecting the typical anxiety conditions of adolescents facing academic demands and educational transitions (Distina, 2021). Participants with higher initial anxiety—especially in the intervention group—tended to experience a greater

decrease in scores, in line with the theory that mindfulness works optimally in individuals experiencing real symptoms of stress and anxiety due to changes in cognitive processes related to self-awareness and self-regulation (Salshabila & Fiteriani, 2025).

Mechanistically, mindfulness activates the prefrontal regulatory network and decreases amygdala activity, enabling individuals to observe their thoughts and bodily sensations without excessive emotional reactions (Farial, Handayani, & Madihah, 2022). This directly contributes to a reduction in physiological symptoms of anxiety, such as muscle tension and increased heart rate, as well as psychological symptoms, such as feelings of worry and difficulty concentrating (Lorenzo-Luaces, German, & DeRubeis, 2025). The decrease in anxiety scores in this study is consistent; school-based mindfulness programs are effective in reducing anxiety while increasing calmness, focus, and emotional regulation (Ameliana, Setianingsih, & Respati, 2023).

Thus, the findings of this study reinforce empirical evidence that mindfulness is not only relevant for use in higher education institutions but is also effective when applied in vocational education settings, where academic pressure and job preparation demands are higher than in general schools (Hamilton, 2019). The integration of this intervention into school counseling services has the potential to be a preventive and promotive approach to student mental health (Ningsih, Rosita, & Yuliani, 2023).

In addition, the results of this study also show the importance of the duration and consistency of mindfulness interventions. A significant reduction in anxiety in the intervention group indicates that structured and repeated practice can form new habits in responding to stress (Metasari, 2024). This is in line with the neuroplasticity approach, where continuous mindfulness practice can strengthen

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more adaptive patterns of emotional regulation. Therefore, the effectiveness of the intervention is not only determined by the type of method, but also by the regularity and active involvement of participants during the intervention process (Warahma, Wahdania, & Mytra, 2025).

On the other hand, the insignificant results in the control group confirm that without specific psychological intervention, adolescent anxiety levels tend to remain relatively stable in the short term. This is an important basis for schools not to rely solely on students' natural adaptation to academic stress (Parastiti & Khairi, 2025). The implementation of mindfulness as part of a school mental health program can be a sustainable strategy to prevent increased anxiety, while supporting students' psychological well-being and readiness to learn (Wiraja, Asyraf, Putra, Sari, Tanjung, Sumarno, & Wilda, 2025).

CONCLUSION

Mindfulness interventions have been proven to significantly reduce students' anxiety levels. The effectiveness of the intervention varies depending on the gender and initial anxiety level of the participants. Therefore, the implementation of mindfulness in vocational schools needs to take individual characteristics into account in order to optimize the benefits. The implementation of this intervention is recommended as part of guidance and counseling services to support students' mental health and readiness to learn.

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