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The role of mindfulness programs in reducing student anxiety and stress

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Abstract

Introduction: In recent years, mindfulness programs have gained increasing attention as effective interventions for managing anxiety and stress among students. The aim of the study is to explore the impact of mindfulness-based practices on student mental health, with a focus on reducing anxiety and stress levels in educational settings.
Aim: To evaluate the effectiveness of various mindfulness interventions, including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), and to identify the mechanisms through which mindfulness influences mental well-being.
Methods: The methodology involves a mixed-methods study, where the same subjects were tested prior and after the intervention to investigate the impact of a mindfulness-based intervention on university students' perceived stress, coping strategies, and mental well-being measured by the Perceived Stress Scale (PSS), Brief Cope Inventory (BCI) and Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS).
Results: The results demonstrated that the mindfulness program was effective in improving students' psychological wellbeing and promoting healthier coping strategies, particularly by reducing their reliance on maladaptive coping and increasing the use of adaptive coping strategies.

Keywords: Anxiety; Education; Mindfulness; Stress; Students

Introduction

Rising levels of stress and anxiety among students have become a major concern worldwide, as academic, social, and personal demands intensify. In response, mindfulness-based practices, particularly Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), have gained recognition as effective approaches for enhancing emotional wellbeing and resilience. This paper reviews the impact of these interventions on reducing student anxiety and stress, examining the mechanisms through which mindfulness improves wellbeing and its applicability across student populations.

Research on subjective wellbeing (Diener, 1984; Diener et al., 2018; Jovanović et al., 2024) and psychological wellbeing (Disabato et al., 2025) has expanded, especially in high-stress contexts such as academic environments (Klainin-Yobas et al., 2016; Schmidt and Hansson, 2018; Smith and Yang, 2017). Graduate students, in particular, experience high levels of distress due to advisor conflicts, limited institutional resources, workload pressures, and the demands of research and publication (Faro, 2013; Farrer et al., 2016; Marais et al., 2018; Mendes and Iora, 2014; Peixoto et al., 2022).

Wellbeing is strongly linked to emotion regulation (Gross and John, 2003; Santana and Gondim, 2016), and mindfulness has been shown to improve regulation processes and reduce psychological distress (Bullis et al., 2014; MacDonald and Baxter, 2017; Mahmoudzadeh et al., 2015; Mandal et al., 2017; Roemer et al., 2015). By encouraging open and accepting awareness of emotional experiences (Bishop et al., 2004; Iani et al., 2019; Kabat-Zinn, 2017; Shapiro et al., 2006), mindfulness fosters healthier coping and has been associated with better wellbeing outcomes (Baer et al., 2006; Ford et al., 2018; Mitmansgruber et al., 2009).

Understanding stress in the university context: a theoretical and empirical analysis

Stress is one of the most prominent mental health concerns among university students and is understood as a psychophysiological response that emerges when individuals perceive a situation as threatening and believe they lack sufficient resources to cope (Lazarus and Folkman, 1984). Research consistently shows that academic workload, pressure to succeed, financial difficulties, lifestyle changes, and the absence of familiar support systems contribute to elevated stress levels in this population.

Beiter et al. (2015) found that U.S. undergraduate students reported high levels of stress related to academic performance, expectations for success, and post-graduation uncertainty, with transfer students, off-campus students, and seniors the most affected. Similar trends appear elsewhere: Bayram and Bilgel (2008) reported that Turkish students experienced high rates of stress (71%), anxiety (47.1%), and depression (27.1%), with first year and female students particularly vulnerable. In Australia, Stallman (2010) observed that nearly one-fifth of students met criteria for a mental disorder and that factors such as full-time enrollment, financial strain, female gender, and advanced study year increased distress.

Overall, the evidence aligned with the transactional stress model of Lazarus and Folkman (1984), indicating that stress in university settings is a persistent and widespread issue with significant consequences for students' emotional, social, and academic functioning.

Theoretical models of coping with stress: psychological foundations and application in the university setting

In the university context – where students frequently encounter academic pressure, social uncertainty, and transitional challenges – understanding the psychological models of coping is essential for analyzing both vulnerability and resilience.

The most influential and widely used model for understanding coping is the Transactional Model of Stress and Coping by Lazarus and Folkman (1984). This model views stress as a dynamic interaction between the individual and their environment.

The model identifies two major categories of coping strategies:
- *Problem-focused coping*, which aims to alter the source of stress (e.g., planning, seeking help, solving the problem).
- *Emotion-focused coping*, which targets emotional regulation and psychological adjustment (e.g., avoidance, cognitive reappraisal, seeking emotional support).

Complementing this framework, Bandura's (1977) theory of self-efficacy offers a critical perspective on coping. In university settings, self-efficacy is closely linked to academic persistence, help-seeking behavior, and stress resilience. As Schwarzer and Jerusalem (1995) point out, self-efficacy not only reduces the perceived threat of stress but also facilitates faster recovery after exposure to stressful situations.

Another influential perspective is Hobfoll's Conservation of Resources (COR) theory (1989), which conceptualizes stress as a reaction to the actual or threatened loss of valuable personal, social, or material resources. Students who face financial difficulties, lack of time, or insufficient social support experience higher stress due to perceived resource depletion.

Research has shown that students who engage in active, problem-focused coping and have high self-efficacy tend to report lower levels of stress and higher academic achievement (Mahmoud et al., 2012; Park and Adler, 2003). In contrast, those who rely on avoidance, rumination, or self-blame are at greater risk of anxiety and depression (Compas et al., 2001). Therefore, promoting adaptive coping strategies and strengthening psychological and social resources are key priorities in student mental health interventions.

Effectiveness of psychological and social interventions in university students

Over the past two decades, growing empirical evidence has highlighted that while university students are among the most vulnerable groups to psychological distress, only a small percentage receive adequate mental health support.

One of the most comprehensive investigations into the effectiveness of interventions for university students was conducted by Regehr et al. (2013) through a meta-analysis of 24 studies involving 1,431 students. The interventions analyzed included cognitive, behavioral, and mindfulness-based approaches. The results indicated that all three modalities significantly reduced symptoms of anxiety. Secondary outcomes included reductions in depression and physiological stress markers such as cortisol.

In addition to psychological strategies, social interventions play a vital role in stress reduction. Theoretical frameworks such as Cohen and Wills' (1985) buffering hypothesis suggest that social support moderates the relationship between stressors and negative health outcomes. Research has shown that students with stronger social networks report lower stress levels and higher resilience (Thoits, 2011).

Moreover, the integration of digital tools and online interventions has gained traction in recent years.

Therefore, when evidence-based and contextually adapted, psychological and social interventions can significantly reduce the burden of stress among university students.

Psychological techniques for coping with stress among university students: an integrated theoretical review

Mindfulness, perhaps the most popular meditation technique in recent years, is defined as the practice of maintaining present-moment awareness with an attitude of openness and non-judgment (Kabat-Zinn, 1990). It functions by disrupting automatic negative thinking patterns and facilitating a shift toward conscious, non-reactive observation of thoughts and emotions. Mindfulness also strengthens self-regulation mechanisms, as supported by Gross's (1998) emotion regulation theory, and promotes neuroplastic changes associated with emotional control (Hölzel et al., 2011).

Alongside mindfulness, Progressive Muscle Relaxation (PMR), developed by Jacobson (1938), focuses on the body as a gateway to reducing stress. By sequentially tensing and relaxing muscle groups, PMR lowers physiological arousal and builds somatic awareness.

Diaphragmatic breathing, or deep breathing, targets autonomic balance by stimulating the parasympathetic nervous system. Jerath et al. (2006) highlight how this technique promotes autonomic regulation and reduces sympathetic hyperarousal, commonly associated with exam anxiety and academic overload.

Guided imagery and visualization involve the creation of calming mental images to induce a relaxation response. These techniques are effective in reducing intrusive thoughts and fostering a sense of safety and calm, particularly in students prone to rumination (Lang et al., 2012). When combined with mindfulness or breathing exercises, imagery enhances attentional focus and emotional control.

Autogenic training, pioneered by Schultz (1932), leverages verbal self-suggestions (e.g., "my body is heavy and warm") to promote mind-body relaxation. Though not as mainstream as other techniques, studies suggest its potential in regulating physiological stress responses and improving sleep and mood among university students (Kanji et al., 2006).

Materials and methods

Research design

This study employed a mixed method design, where the same subjects were tested prior and after the intervention to inves-

tigate the impact of a mindfulness-based intervention on university students' perceived stress, coping strategies, and mental well-being. The primary aim was to measure the differences in these psychological constructs before and after participation in a mindfulness program.

Participants

A total of 162 university students voluntarily participated in the pre-intervention phase of the study. However, 154 students completed both pre- and post-intervention assessments, representing the final sample. Participants were students enrolled at the university from various academic departments and were selected through convenience sampling. Participation was voluntary, and informed consent was obtained from all individuals prior to data collection.

Instruments

Three standardized self-report instruments were used in this study:

1. *Perceived Stress Scale (PSS):* A widely used psychological instrument measuring the degree to which situations in one's life are appraised as stressful. The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The PSS showed acceptable internal homogeneity ($r = 0.40$–0.50), good reliability ($\alpha = 0.664$), and strong validity (KMO and Bartlett's test = 0.82). The tool, while originally developed in 1983 by Cohen et al., remains a popular choice for helping us understand how different situations affect our feelings and perceived stress.

2. *Brief COPE Inventory* (Carver, 1997): This tool assesses a broad range of coping responses and strategies that individuals typically use in response to stress. The Brief COPE is a 28-item self-report questionnaire designed to assess different coping strategies used in response to stressful situations. Cronbach's α showed good reliability ($\alpha = 0.70$) and KMO and Bartlett's test strong validity (0.71). It measures 14 different coping mechanisms, each represented by two items. Coping strategies were separated into adaptive coping mechanisms (active coping, planning, positive reframing, acceptance, humour, religion, using emotional support, using instrumental support, self-distraction) and non-adaptive ones (denial, substance use, behavioral disengagement, and self-blame).

3. *Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)* (Tennant et al., 2007): A scale designed to monitor mental well-being in the general population and evaluate the effectiveness of interventions that aim to improve mental well-being. Cronbach's α showed acceptable reliability ($\alpha = 0.63$) and KMO and Bartlett's test proper validity (0.623). The WEMWBS is a 14-item scale of positively worded statements covering feeling and functioning aspects of mental wellbeing. The 14 statements have five response categories from 'none of the time' to 'all of the time'. Children and young people are asked to describe their experiences over the past two weeks.

Each of these instruments has demonstrated good reliability and validity in previous research.

Procedure

The mindfulness intervention was conducted over a period of three weeks. Prior to the intervention, all participants completed the three questionnaires (PSS, Brief COPE, and WEMWBS) as a baseline assessment (Time 1). Following the initial assessment, students participated in weekly mindfulness sessions, which consisted of guided meditation, breathing exercises, and brief reflective practices. Each session lasted approximately 30–45 minutes and was facilitated by a trained mindfulness practitioner.

At the end of the three-week intervention, participants completed the same set of questionnaires again as the post-intervention assessment (Time 2). All sessions and assessments took place in a university setting, and students were encouraged to engage with the mindfulness practices outside of the sessions as well.

Intervention content and structure

The intervention was based on guided mindfulness and meditation practices, specifically "Meditim dhe Mindfulness me Zë" (Meditation and Mindfulness with Voice). The program lasted for three consecutive weeks, with one session per week. Each session lasted approximately 30–45 minutes and was facilitated by a trained mindfulness practitioner.

Session format: Each session followed a standardized structure that included:

1. *Introduction (2–3 minutes):* The facilitator welcomed students and guided them to adopt a comfortable seated posture on a chair, with feet resting on the ground and the back kept straight. Participants were invited to close their eyes if they felt comfortable.

2. *Breathing exercises (5–6 minutes):* Students were guided through slow, deep breathing techniques – inhale through the nose, short pause, and exhale through the mouth – while being encouraged to notice the sensation of air entering and leaving the body.

3. *Mindfulness practice (15–20 minutes):* Attention was directed to the present moment, with the facilitator inviting participants to observe thoughts without judgment, treating them as passing "clouds in the sky". Short pauses were integrated to allow internal reflection.

4. *Body scan relaxation (10–12 minutes):* Students were progressively guided to focus on different body parts, beginning from the head and moving down to the shoulders, arms, chest, and legs, releasing tension and promoting calmness.

5. *Closure (3–4 minutes):* The session concluded with a deep breathing cycle and a gradual return to full awareness, encouraging students to carry the sense of calmness into their daily routine.

Data analysis

The collected data were entered and analyzed using IBM SPSS Statistics (20). To determine whether there were statistically significant changes in stress levels, coping strategies, and mental well-being before and after the intervention, a paired samples t-test was conducted for each variable. Effect sizes were calculated to evaluate the magnitude of change. Specifically, Cohen's d was computed by dividing the mean difference between pre- and post-test scores by the standard deviation of the difference scores. Because Cohen's d can be slightly biased in small to moderate samples, we also reported Hedges' g, which applies a correction factor to provide a less biased estimate of the population effect size.

Only the data from the 154 participants who completed both assessments were included in the final analysis to maintain internal validity and ensure accurate pre/post comparisons.

Results

A total of 154 students participated in this study, consisting of 101 females and 53 males, with ages ranging from 18 to 26 years. All participants were enrolled as university students at the time of the intervention.

The study used a pre-post design to examine the effectiveness of a mindfulness-based intervention. Questionnaires were administered at two time points: prior to the first mindfulness session (Time 1) and after the completion of the third session (Time 2).

Participants were organized into groups based on their existing class allocations. Within these groups, mindful-

ness-based techniques were delivered in their regular classroom settings by psychologists, who were also the authors of this study. The intervention consisted of three sessions, each lasting approximately 30 minutes.

The program was conducted over three consecutive weeks, with one session per week, allowing students to integrate mindfulness practices between sessions. After the third session, participants completed the same set of questionnaires to assess changes in stress, well-being, and coping strategies following the intervention.

Table 1 shows the variables means and standard deviation for two different time points.

Table 1. Paired samples statistics		Mean	*N*	Std. deviation	Std. error mean
Pair 1	STRESSTIME1	3.2338	154	0.55944	0.04508
	STRESSTIME2	3.3357	154	0.54301	0.04376
Pair 2	WELLBEINGTIME1	3.0622	154	0.38093	0.03070
	WELLBEINGTIME2	3.3882	154	0.71498	0.05761
Pair 3	NOTADAPT	3.1169	154	0.43262	0.03486
	NOTADAPT2	2.4870	154	0.32231	0.02597
Pair 4	ADAPT	2.7244	154	0.31771	0.02560
	ADAPT2	2.9022	154	0.35376	0.02851

Table 2 presents the correlations between the paired variables measured at Time 1 and Time 2. The results show that stress levels had virtually no correlation ($r = 0.006$, $p = 0.940$), indicating that scores remained largely independent across

the two time points. Well-being showed a small but significant positive correlation ($r = 0.177$, $p = 0.028$), suggesting some consistency in well-being levels over time.

Table 2. Paired samples correlations		*N*	Correlation	Sig.
Pair 1	STRESSTIME1 & STRESSTIME2	154	0.006	0.940
Pair 2	WELLBEINGTIME1 & WELLBEINGTIME2	154	0.177	0.028
Pair 3	NOTADAPT & NOTADAPT2	154	0.121	0.135
Pair 4	ADAPT & ADAPT2	154	−0.002	0.983

Table 3 summarizes the paired-sample t-test results comparing Time 1 and Time 2 scores. Although stress levels slightly increased, the change was not statistically significant ($p = 0.106$), indicating that the intervention did not produce measurable stress reduction. In contrast, well-being significantly improved from Time 1 to Time 2 ($p < 0.001$). Non-adap-

tive strategies significantly decreased ($p < 0.001$), while adaptive strategies significantly increased after the intervention ($p < 0.001$). These results suggest meaningful improvements in coping and well-being, despite the absence of significant stress reduction.

Table 3. Paired samples test		Paired differences					*t*	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% Confidence interval of the difference				
					Lower	Upper			
Pair 1	STRESSTIME1 – STRESSTIME2	−0.10195	0.77725	0.06263	−0.22568	0.02179	−1.628	153	0.106
Pair 2	WELLBEINGTIME1 – WELLBEINGTIME2	−0.32607	0.74812	0.06029	−0.44517	−0.20697	−5.409	153	0.000
Pair 3	NOTADAPT – NOTADAPT2	0.62987	0.50722	0.04087	0.54912	0.71062	15.410	153	0.000
Pair 4	ADAPT – ADAPT2	−0.17780	0.47590	0.03835	−0.25357	−0.10204	−4.636	153	0.000

To evaluate the magnitude of the intervention effect, Cohen's *d* was computed for the paired-samples design. Following recommendations for dependent samples, Cohen's *d* was calculated using the mean of the difference scores divided by the standard deviation of those difference scores:

$$d = \frac{M_{diff}}{SD_{diff}}$$

where M_{diff} represents the mean of the post-pre difference scores, and SD_{diff} is the standard deviation of those difference scores.

Because Cohen's *d* may overestimate the true population effect size, particularly in smaller samples, we also reported Hedges' *g*, which corrects for this small sample bias by applying a correction factor *J*:

$$g = d \times J$$
$$J = 1 - \frac{3}{4df - 1}$$

where *df = n – 1* in the paired-samples design. With larger samples, the difference between *d* and *g* becomes negligible, but reporting both provides a more conservative and accurate effect size estimate.

Stress

The analysis revealed that perceived stress levels slightly increased from Time 1 (M = 3.23, SD = 0.56) to Time 2 (M = 3.34, SD = 0.54). However, this difference was not statistically significant, $t(153) = -1.628$, $p = 0.106$, suggesting that the mindfulness intervention did not produce a measurable reduction in students' stress levels within the duration of the program. The effect size was small (Cohen's *d* = 0.13; Hedges' *g* = 0.13), indicating that the mindfulness intervention did not meaningfully reduce stress. It is possible that external academic or personal stressors continue to influence the students' perceived stress despite participation in mindfulness sessions.

Well-being

In terms of psychological well-being, the results indicated a significant improvement from Time 1 (M = 3.06, SD = 0.38) to Time 2 (M = 3.39, SD = 0.71), $t(153) = -5.409$, $p < 0.001$. Cohen's *d* was 0.43, and Hedges' *g* was 0.43, both indicating a small-to-moderate effect size. This finding suggests that the mindfulness program was effective in enhancing students' overall well-being, potentially by fostering greater emotional regulation, acceptance, and present-moment awareness during the intervention period.

Maladaptive coping strategies (NOTADAPT)

For maladaptive coping strategies, there was a statistically significant decrease from Time 1 (M = 3.12, SD = 0.43) to Time 2 (M = 2.49, SD = 0.32), $t(153) = 15.410$, $p < 0.001$. Cohen's *d* was 1.24, and Hedges' *g* was 1.23, indicating a very large effect size. This indicates that students reduced their use of unhealthy coping mechanisms, such as denial, behavioral disengagement, or self-blame, following participation in the mindfulness sessions.

Adaptive coping strategies (ADAPT)

Finally, there was a significant increase in adaptive coping strategies from Time 1 (M = 2.72, SD = 0.32) to Time 2 (M = 2.90, SD = 0.35), $t(153) = -4.636$, $p < 0.001$. Cohen's *d* was 0.37, and Hedges' *g* was 0.37, indicating a small-to-moderate effect size. This result indicates that after the mindfulness intervention, students reported greater use of adaptive coping mechanisms, such as active coping, planning, positive reframing, and acceptance, which are associated with improved psychological adjustment and resilience in stressful situations.

Discussion

How does mindfulness practice affect university students' psychological well-being?

The findings of the present study showed a small, non-significant increase in perceived stress following the mindfulness intervention, contrasting with prior research that typically reports significant stress reductions. For example, a quasi-experimental study with 128 participants (Alvarado-García et al., 2025) found that a 12-session mindfulness program produced significant improvements across all psychological outcomes ($p < 0.05$), with moderate to large effect sizes for reductions in stress ($\eta^2 = 0.376$), anxiety ($\eta^2 = 0.538$), and depression ($\eta^2 = 0.091$), as well as improvements in sleep quality ($\eta^2 = 0.306$), perceived social support ($\eta^2 = 0.704$), and life satisfaction ($\eta^2 = 0.510$). Similarly, Vanajan and Ng (2016) reported that a three-week brief MBSR intervention significantly reduced stress and improved well-being among university students.

The divergence between these established findings and the non-significant increase observed in our sample may be attributable to contextual factors, including the shorter intervention duration, fewer sessions, the brief length of each session, and heightened academic pressure during the study period.

Does a mindfulness intervention lead to significant improvements in coping strategies and mental well-being among university students?

In a study with a quasi-experimental design and a control group, employing pre-test and post-test measures with a research population of 2,890 female secondary school students in Sanandaj, Iran, 40 students were randomly selected and assigned equally to experimental and control groups (20 in each). Participants completed the Oxford Happiness Questionnaire (α = 0.79), Sarason Test Anxiety Questionnaire (α = 0.87), and Andler and Parker Stress Management Questionnaire (α = 0.81). The intervention involved mindfulness-based training, and data were analyzed using ANCOVA (Zandi et al., 2021).

The findings revealed that, compared to the control group, the experimental group showed significant improvements in problem-focused, emotion-focused, and avoidant coping strategies in the post-test ($p < 0.05$) (Zandi et al., 2021).

Roulston et al. (2018) found that participation in a six-week mindfulness program improved mental well-being, reduced stress, and enhanced resilience among undergraduate social work students. While the study did not explicitly examine the mechanisms underlying these effects, the observed increase in resilience can be interpreted as an enhancement of adaptive coping capacities, enabling students to manage stress more effectively. Overall, the study supports the integration of mindfulness practices in educational settings as a strategy to strengthen students' adaptive responses, providing a useful reference point for interpreting our findings.

Conclusion

Overall, the findings suggest that the mindfulness program had a positive impact on students' psychological functioning. While perceived stress levels did not show a meaningful reduction, students experienced significant improvements in overall wellbeing, indicating enhanced emotional regulation, acceptance, and present-moment awareness. The program also encouraged healthier coping patterns, as evidenced by a marked decrease in maladaptive strategies and an increase in adaptive coping approaches, such as active problem-solving, planning, positive reframing, and acceptance. These changes highlight the potential of mindfulness interventions to support students in managing challenges more effectively, fostering resilience, and promoting psychological adjustment in the face of academic and personal stressors.

Limitations

This study has several limitations. First, the absence of a control group restricts our ability to attribute changes in stress and well-being solely to the mindfulness intervention. External factors such as academic workload, semester timing, or personal circumstances may have influenced outcomes independently of the program. Second, the short duration of the intervention and the lack of follow-up measurements limit conclusions about the long-term sustainability of the observed effects. Future research would benefit from longitudinal designs that examine whether improvements in stress and well-being endure beyond the immediate post-intervention period.

Another limitation concerns potential confounding factors. Because participation was voluntary, self-selection bias cannot be excluded; students who were already motivated to improve their mental health may have been more likely to enroll. Other factors such as differences in prior mindfulness experience, concurrent life stressors, or variations in facilitator style could also have affected results. The reliance on self-report measures adds further constraints, as responses may reflect social desirability or subjective interpretation. Including physiological or behavioral indicators of stress (e.g., cortisol levels, heart rate variability, attentional performance) would provide more objective evidence of change.

In addition, while the study demonstrated improvements in well-being and an increase in adaptive coping approaches, the underlying mechanisms of change were not directly assessed.

Finally, the cultural and institutional context of this study may limit generalizability. The way mindfulness programs are received can vary depending on academic expectations, institutional support, and cultural attitudes toward mental health. Replicating the intervention across diverse educational and cultural settings would help clarify the extent to which the observed benefits can be generalized.

Recommendations

Based on the study's findings, several actionable steps can enhance the integration and effectiveness of mindfulness programs in educational settings.

Schools and universities should incorporate brief, structured mindfulness sessions into daily routines, such as 5–10 minutes guided practices at the start of classes, while also training educators to model these techniques.

Policymakers can further support this initiative by advocating for mindfulness to be included in mental health curricula and allocating funding for longitudinal research on its long-term benefits. Students are encouraged to build consistent mindfulness habits using accessible tools like meditation apps and peer support groups.

Mental health professionals should consider blending mindfulness with cognitive-behavioral approaches for students with heightened anxiety, while also working to reduce cultural stigma through targeted workshops.

Finally, researchers should deepen investigations into the neurological and cognitive mechanisms behind mindfulness, while comparing different intervention formats across diverse student populations. Together, these strategies can create a more supportive environment that fosters student resilience, reduces stress, and promotes sustainable well-being.

Declarations

The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to ethical considerations and participant confidentiality, raw data are not publicly available.

This study was conducted in accordance with ethical standards. All participants provided informed consent prior to participation.

Conflict of interest

The authors have no conflict of interest to declare.

References

1. Alvarado-García PAA, Soto-Vásquez MR, Infantes Gomez FM, Guzman Rodriguez NM, Castro-Paniagua WG (2025). Effect of a mindfulness program on stress, anxiety, depression, sleep quality, social support, and life satisfaction: a quasi-experimental study in college students. Front Psychol 16: 1508934. DOI: 10.3389/fpsyg.2025.1508934.

2. Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L (2006). Five facet mindfulness questionnaire (FFMQ). [Database record]. APA PsycTests. DOI: 10.1037/t05514-000.

3. Bandura A (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychol Rev 84(2): 191–215. DOI: 10.1037/0033-295X.84.2.191.

4. Bayram N, Bilgel N (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. Soc Psychiatry Psychiatr Epidemiol 43(8): 667–672. DOI: 10.1007/s00127-008-0345-x.

5. Beiter R, Nash R, McCrady M, Rhoades D, Linscomb M, Clarahan M, Sammut S (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. J Affect Disord 173: 90–96. DOI: 10.1016/j.jad.2014.10.054.

6. Bishop SR, Lau M, Shapiro S, Carlson L, Anderson ND, Carmody J, et al. (2004). Mindfulness: A proposed operational definition. Clin Psychol-Sci Pr 11(3): 230–241. DOI: 10.1093/clipsy.bph077.

7. Bullis JR, Bøe HJ, Asnaani A, Hofmann SG (2014). The benefits of being mindful: Trait mindfulness predicts less stress reactivity to suppression. J Behav Ther Exp Psychiatry 45(1): 57–66. DOI: 10.1016/j.jbtep.2013.07.006.

8. Carver CS (1997). Brief COPE Inventory [Database record]. APA PsycTests. DOI: 10.1037/t04102-000.

9. Cohen S, Wills TA (1985). Stress, social support, and the buffering hypothesis. Psychol Bull 98(2): 310–357. DOI: 10.1037/0033-2909.98.2.310.

10. Cohen S, Kamarck T, Mermelstein R (1983). Perceived Stress Scale [Database record]. APA PsycTests. DOI: 10.1037/t02889-000.

11. Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME (2001). Coping with stress during childhood

and adolescence: problems, progress, and potential in theory and research. Psychol Bull 127(1): 87–127.

12. Diener E (1984). Subjective well-being. Psychol Bull 95(3): 542–575. DOI: 10.1037/0033-2909.95.3.542

13. Diener E, Oishi S, Tay L (2018). Advances in subjective well-being research. Nat Hum Behav 2(4): 253–260. DOI: 10.1038/s41562-018-0307-6.

14. Disabato DJ, Goodman FR, Kashdan TB (2025). The hierarchical framework of wellbeing (HiFWB). Front Psychol 16: 1515423. DOI: 10.3389/fpsyg.2025.1515423.

15. Faro A (2013). Estresse e Estressores na Pós-Graduação: Estudo com Mestrandos e Doutorandos no Brasil. Psicol Teor e Pesqui 29(1): 51–60.

16. Farrer LM, Gulliver A, Bennett K, Fassnacht DB, Griffiths KM (2016). Demographic and psychosocial predictors of major depression and generalised anxiety disorder in Australian university students. BMC Psychiatry 16: 241. DOI: 10.1186/s12888-016-0961-z.

17. Ford BQ, Lam P, John OP, Mauss IB (2018). The psychological health benefits of accepting negative emotions and thoughts: Laboratory, diary, and longitudinal evidence. J Pers Soc Psychol 115(6): 1075–1092. DOI: 10.1037/pspp0000157.

18. Gross JJ (1998). The emerging field of emotion regulation: An integrative review. Rev Gen Psychol 2(3): 271–299. DOI: 10.1037/1089-2680.2.3.271.

19. Gross JJ, John OP (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. J Pers Soc Psychol 85(2): 348–362. DOI: 10.1037/0022-3514.85.2.348.

20. Hobfoll SE (1989). Conservation of resources: A new attempt at conceptualizing stress. Am Psychol 44(3): 513–524. DOI: 10.1037/0003-066X.44.3.513.

21. Hölzel BK, Lazar SW, Gard T, Schuman-Olivier Z, Vago DR, Ott U (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. Perspect Psychol Sci 6(6): 537–559. DOI: 10.1177/1745691611419671.

22. Iani L, Lauriola M, Chiesa A, Cafaro V (2019). Associations between mindfulness and emotion regulation: The key role of describing and nonreactivity. Mindfulness 10(2): 366–375. DOI: 10.1007/s12671-018-0981-5.

23. Jacobson E (1938). Progressive relaxation. 2nd ed. University of Chicago Press.

24. Jerath R, Edry JW, Barnes VA, Jerath V (2006). Physiology of long pranayamic breathing: Neural respiratory elements may provide a mechanism that explains how slow deep breathing shifts autonomic nervous system. Med Hypotheses 67(3): 566–571. DOI: 10.1016/j.mehy.2006.02.042.

25. Jovanović V, Rudnev M, Aryanto CB, Balgiu BA, Caudek C, Datu JAD, et al. (2024). A cross-cultural evaluation of Diener's tripartite model of subjective well-being across 16 countries. J Happiness Stud 25(6): 82. DOI: 10.1007/s10902-024-00781-4.

26. Kabat-Zinn J (1990). Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. New York: Delacorte Press.

27. Kabat-Zinn J (2017). Walking meditations. Mindfulness 8(1): 249–250. DOI: 10.1007/s12671-016-0638-1.

28. Kanji N, White A, Ernst E (2006). Autogenic training to reduce anxiety in nursing students: Randomized controlled trial. J Adv Nurs 53(6): 729–735. DOI: 10.1016/j.ctcp.2005.11.007.

29. Klainin-Yobas P, Ramirez D, Fernandez Z, Sarmiento J, Thanoi W, Ignacio J, Lau Y (2016). Examining the predicting effect of mindfulness on psychological well-being among undergraduate students: A structural equation modelling approach. Pers Individ Dif 91: 63–68. DOI: 10.1016/j.paid.2015.11.034.

30. Lang AJ, Strauss JL, Bomyea J, Bormann JE, Hickman SD, Good RC, Essex M (2012). The theoretical and empirical basis for meditation as an intervention for PTSD. Behav Modif 36(6): 759–786. DOI: 10.1177/0145445512451900.

31. Lazarus RS, Folkman S (1984). Stress, appraisal, and coping. New York: Springer Publishing Company, 456 p.

32. MacDonald HZ, Baxter EE (2017). Mediators of the relationship between dispositional mindfulness and psychological well-being in female college students. Mindfulness 8(2): 398–407. DOI: 10.1007/s12671-016-0611-z.

33. Mahmoud JS, Staten RT, Hall LA, Lennie TA (2012). The relationship among young adult college students' depression, anxiety, stress, demographics, life satisfaction, and coping styles. Issues Ment Health Nurs 33(3): 149–156. DOI: 10.3109/01612840.2011.632708.

34. Mahmoudzadeh S, Mohammadkhani P, Dolatshahi B, Moradi S (2015). Prediction of psychological well-being based on dispositional mindfulness and cognitive emotion regulation strategies in students. Pract Clin Psychol 3(3): 195–202.

35. Mandal SP, Arya YK, Pandey R (2017). Mindfulness, Emotion Regulation, and Subjective Well-Being: Exploring the Link. SIS J Proj Psy Ment Health 24: 57–63.

36. Marais GA, Shankland R, Haag P, Fiault R, Juniper B (2018). A survey and a positive psychology intervention on French PhD student well-being. Int J Dr Stud 13: 109–138. DOI: 10.28945/3948.

37. Mendes V, Iora JA (2014). A opinião dos estudantes sobre as exigências da produção na pós-graduação. Rev. Bras. Ciênc Esporte 36(1): 171–187. DOI: 10.1590/S0101-32892014000100012.

38. Mitmansgruber H, Beck TN, Höfer S, Schüßler G (2009). When you don't like what you feel: Experiential avoidance, mindfulness and meta-emotion in emotion regulation. Pers Individ Differ 46(4): 448–453. DOI: 10.1016/j.paid.2008.11.013.

39. Park CL, Adler NE (2003). Coping style as a predictor of health and well-being across the first year of medical school. Health Psychol 22(6): 627–631. DOI: 10.1037/0278-6133.22.6.627.

40. Peixoto LSA, Gondim SMG, Pereira C (2022). Emotion regulation, stress, and well-being in academic education: Analyzing the effect of mindfulness-based intervention. Trends Psychol 30(1): 33–57.

41. Regehr C, Glancy D, Pitts A (2013). Interventions to reduce stress in university students: A review and meta-analysis. J Affect Disord 148(1): 1–11. DOI: 10.1016/j.jad.2012.11.026.

42. Roemer L, Williston SK, Rollins LG (2015). Mindfulness and emotion regulation. Curr Opin Psychol 3: 52–57. DOI: 10.1016/j.copsyc.2015.02.006.

43. Roulston A, Montgomery L, Campbell A, Davidson G (2018). Exploring the impact of mindfulness on mental wellbeing, stress and resilience of undergraduate social work students. Social Work Education 37(2): 157–172. DOI: 10.1080/02615479.2017.1388776.

44. Santana VS, Gondim SMG (2016). Regulação emocional, bem-estar psicológico e bem-estar subjetivo [Emotion regulation, psychological well-being and subjective well-being]. Estudos de Psicologia 21(1): 58–68. DOI: 10.5935/1678-4669.20160007.

45. Schmidt M, Hansson E (2018). Doctoral students' well-being: A literature review. Int J Qual Stud Health Well-being 13(1): 1508171. DOI: 10.1080/17482631.2018.1508171.

46. Schultz JH (1932). Das autogene Training [Autogenic training]. Konzentrative Selbstentspannung. Versuch einer klinisch-praktischen Darstellung. Thieme.

47. Schwarzer R, Jerusalem M (1995). General Self-Efficacy Scale (GSE) [Database record]. APA PsycTests. DOI: 10.1037/t00393-000.

48. Shapiro SL, Carlson LE, Astin JA, Freedman B (2006). Mechanisms of mindfulness. J Clin Psychol 62(3): 373–386. DOI: 10.1002/jclp.20237.

49. Smith GD, Yang F (2017). Stress, resilience and psychological well-being in Chinese undergraduate nursing students. Nurse Educ Today 49: 90–95. DOI: 10.1016/j.nedt.2016.10.004.

50. Stallman HM (2010). Psychological distress in university students: A comparison with general population data. Aust Psychol 45(4): 249–257. DOI: 10.1080/00050067.2010.482109.

51. Tennant R, Hiller L, Fishwick R, Platt S, Joseph S, Weich S, et al. (2007). Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) [Database record]. APA PsycTests. DOI: 10.1037/t01628-000.

52. Thoits PA (2011). Mechanisms linking social ties and support to physical and mental health. J Health Soc Beh 52(2): 145–161. DOI: 10.1177/0022146510395592.

53. Vanajan A, Ng ALO (2016). Effectiveness of a three-week brief mindfulness-based stress reduction among university students. DOI: 10.5176/2251-1865_CBP16.36.

54. Zandi H, Amirinejhad A, Azizifar A, Aibod S, Veisani Y, Mohamadian F (2021). The effectiveness of mindfulness training on coping with stress, exam anxiety, and happiness to promote health. J Educ Health Promot 10(1): 177. DOI: 10.4103/jehp.jehp_616_20.