



The Impact of Mindfulness-Based Interventions on Academic Performance and Mental Health in University Students: A Randomized Controlled Trial

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ABSTRACT

University students worldwide are experiencing a growing mental health crisis, with anxiety, depression, and academic stress undermining well-being and learning outcomes (Auerbach et al., 2018). Mindfulness-based interventions (MBIs) have gained empirical support for reducing psychological distress and enhancing cognitive performance in diverse populations (Kabat-Zinn, 2013; Khoury et al., 2015). Yet, little is known about their impact on both academic performance and mental health within African higher education settings, nor have these interventions been consistently examined through a theological lens. This study employs a randomized controlled trial (RCT) to evaluate the effectiveness of an eight-week MBI program on the mental health and academic performance of undergraduate students. Preliminary findings suggest that participants receiving MBIs demonstrated significant improvements in psychological well-being and academic achievement compared to a control group. Theologically, the practice of mindfulness resonates with biblical contemplative traditions that emphasize meditation, renewal of the mind, and holistic flourishing (Ps. 1:2; Rom. 12:2). This research contributes to psychology by confirming MBIs' effectiveness in student development and to theology by situating contemplative practices within a biblical worldview. The results underscore the need for holistic approaches in higher education that integrate mental, academic, and spiritual well-being.

1. INTRODUCTION

1.1 Context and Rationale

The university years represent one of the most formative and challenging periods in a person's life. Students are expected to transition from adolescence to adulthood while simultaneously navigating academic demands, financial pressures, identity formation, and social relationships. Research has consistently shown that this stage is associated with elevated levels of psychological distress, particularly anxiety, depression, and burnout (Auerbach et al., 2018; Ibrahim et al., 2013). The World Health Organization (WHO) has identified university students as a population at high risk of mental health disorders, with nearly one in three reporting significant levels of anxiety or depression during their studies (WHO, 2020).

Globally, the prevalence of poor mental health among students has been rising over the last two decades, with the COVID-19 pandemic further intensifying the crisis (Son et al., 2020). In the African context, the situation is particularly concerning. University students in sub-Saharan Africa face not only academic stressors but also systemic challenges such as economic instability, unemployment fears, political uncertainty, and at times, insecurity on campuses (Peltzer & Pengpid, 2015). In Nigeria and Kenya, for example, surveys indicate that a significant proportion of university students report symptoms of depression, with limited access to professional mental health services (Ndeti et al., 2016; Omigbodun et al., 2020).

Academic stress remains one of the primary contributors to poor student well-being. The pressure to excel, the fear of failure, and the competitiveness of higher education environments often lead to chronic stress, which impairs both mental health and academic performance (Pascoe et al., 2020). Identity struggles, including the search for meaning, purpose, and belonging, further compound these challenges. Many students lack adequate coping strategies to navigate these stressors, resulting in maladaptive behaviors such as substance abuse, social withdrawal, or academic disengagement (Regehr et al., 2013).

Against this backdrop, mindfulness-based interventions (MBIs) have emerged as promising

evidence-based solutions. Rooted in ancient contemplative traditions but adapted into secular clinical and educational contexts, MBIs aim to cultivate present-moment awareness and non-judgmental acceptance of experiences (Kabat-Zinn, 2013). Over the past three decades, they have demonstrated efficacy in reducing stress, anxiety, and depression while enhancing cognitive functioning, resilience, and well-being (Khoury et al., 2015; Creswell, 2017). Within higher education, MBIs have been shown to improve concentration, self-regulation, and academic achievement, making them highly relevant to university populations (Bamber & Schneider, 2016).

Despite their growing popularity in Western contexts, the application of MBIs within African universities remains underexplored. Moreover, while secular mindfulness emphasizes non-religious practice, there has been limited engagement with the theological and philosophical traditions that resonate with contemplative practices. This creates a gap in both scholarship and practice that this study seeks to address by evaluating the impact of MBIs on student mental health and academic performance, while also considering their theological implications for holistic development.

1.2 Theological and Philosophical Rationale

Theologically, the notion of mindfulness intersects with biblical traditions of meditation, prayer, and silence. The Scriptures repeatedly affirm the importance of meditation on God's Word as a pathway to wisdom, stability, and flourishing. Psalm 1:2 commends the righteous person as one who "delights in the law of the Lord and meditates on it day and night," while Joshua 1:8 exhorts believers to meditate continually on God's instruction to ensure success. These biblical practices embody a form of focused attention and reflection that bears similarities to modern mindfulness, though their orientation is distinctly theocentric rather than self-centered.

The New Testament extends this vision by emphasizing the renewal of the mind (Rom. 12:2) and the cultivation of peace through prayer and thanksgiving (Phil. 4:6–7). Early Christian contemplatives, such as the Desert Fathers and later traditions within monasticism, developed practices of silence, stillness, and attentiveness to God's

presence—echoing the psychological benefits now empirically associated with MBIs (Nouwen, 1981). Thus, rather than being alien to Christian spirituality, mindfulness may be viewed as a bridge concept that connects contemporary psychological insights with ancient theological wisdom.

Philosophically, MBIs align with holistic models of human flourishing that see well-being not merely as the absence of illness but as the integration of spirit, soul, and body. The Apostle Paul's prayer in 1 Thessalonians 5:23 underscores this holistic vision: "May your whole spirit, soul and body be kept blameless at the coming of our Lord Jesus Christ." Theological anthropology affirms that human beings, as bearers of the *imago Dei*, possess the capacity for transformation, growth, and flourishing (Grenz, 2001). This perspective challenges reductionist views of human existence that focus solely on cognition or physiology, instead affirming a multidimensional understanding of well-being.

In this study, MBIs are considered not only as psychological tools but also as potential contributors to theological understandings of holistic development. By situating mindfulness within a framework of biblical contemplative practice and theological anthropology, this research seeks to advance an integrative model that is both scientifically rigorous and spiritually grounded.

1.3 Problem Statement

While MBIs have been widely researched in Western contexts, there is a notable lack of empirical evidence on their effectiveness within African university settings. Most existing studies are concentrated in North America, Europe, and parts of Asia, with relatively few conducted in sub-Saharan Africa. This creates an evidence gap that limits the ability of African universities to adopt MBIs as contextually relevant interventions (Sele & Jumangong, 2025).

Furthermore, the focus of MBI research has primarily been on mental health outcomes, with comparatively less attention given to academic performance. Yet, in the university context, academic achievement is a central concern for both students and institutions. The potential of MBIs to simultaneously enhance mental health and academic

performance makes them particularly valuable, but this dual impact remains under-investigated.

Finally, secular mindfulness research has often neglected theological engagement. While many MBIs are presented as secular and value-neutral, they implicitly draw from contemplative traditions with spiritual roots, particularly Buddhism. This neglect of theological reflection risks alienating religious communities and overlooking the rich contemplative practices embedded in Christian spirituality. Integrating theological perspectives is therefore essential for ensuring cultural and spiritual relevance, particularly in African contexts where faith plays a significant role in student life (Mbiti, 1999).

1.4 Objectives

This study seeks to address these gaps by pursuing three main objectives:

1. **To assess the impact of MBIs on mental health outcomes among university students.** The primary focus will be on levels of stress, anxiety, and depression, using validated psychological instruments.
2. **To assess the impact of MBIs on academic performance.** This will involve evaluating both self-reported measures of academic engagement and objective indicators such as grade point averages (GPAs).
3. **To explore the theological implications of MBIs for holistic student development.** By examining the intersections between mindfulness, biblical meditation, and theological anthropology, the study will contribute to a more integrative understanding of student well-being.

1.5 Research Questions and Hypotheses

Based on the objectives outlined, the study is guided by the following research questions:

- **RQ1:** Do MBIs significantly improve mental health outcomes in university students compared to a control group?
- **RQ2:** Do MBIs significantly enhance academic performance in university students compared to a control group?

Corresponding to these questions, the study proposes the following hypotheses:

- **H1:** University students who participate in MBIs will report significantly lower levels of stress, anxiety, and depression compared to those in the control group.
- **H2:** University students who participate in MBIs will demonstrate significantly improved academic performance compared to those in the control group.

By addressing these questions, the study aims to provide empirical evidence for the effectiveness of MBIs in African university contexts while also contributing to the broader interdisciplinary conversation on psychology, education, and theology.

2. LITERATURE REVIEW

2.1 Theoretical Foundations

Psychological Perspectives

Mindfulness, broadly defined as purposeful, non-judgmental attention to the present moment (Kabat-Zinn, 2013), has been theorized through several psychological frameworks. One central model is **self-regulation theory**, which suggests that mindfulness enhances individuals' capacity to regulate attention, emotions, and behavior (Baumeister & Vohs, 2007). In stressful environments, such as universities, students often struggle to manage competing demands, leading to dysregulated responses like anxiety, procrastination, and burnout. MBIs address this by strengthening attentional control and fostering adaptive emotional responses, thereby promoting resilience (Creswell, 2017).

Closely related are **stress-reduction models**, particularly the transactional model of stress and coping by Lazarus and Folkman (1984). According to this model, stress arises from an individual's appraisal of demands as exceeding available resources. MBIs alter this appraisal process by cultivating acceptance, reducing reactivity, and encouraging more balanced evaluations of stressors. Numerous studies have

shown that mindfulness decreases physiological markers of stress, such as cortisol levels, while also improving subjective perceptions of well-being (Pascoe et al., 2020).

A third theoretical foundation lies in **neuroplasticity research**. Advances in neuroscience demonstrate that mindfulness practice produces structural and functional changes in the brain, especially in areas linked to attention, emotion regulation, and memory (Tang et al., 2015). For instance, increased gray matter density has been observed in the prefrontal cortex and hippocampus following mindfulness training (Hölzel et al., 2011). These neurological changes provide a biological basis for the observed improvements in mental health and cognitive performance among students.

Theological Perspectives

While mindfulness has been popularized in secular contexts, its principles resonate with long-standing **biblical contemplative practices**. In the Hebrew Scriptures, meditation is portrayed as a discipline of delight and focus. Psalm 1:2 describes the blessed person as one who “delights in the law of the Lord and meditates on his law day and night.” Similarly, Joshua 1:8 emphasizes that continual meditation on God's Word leads to prosperity and success. These texts highlight the theological foundation for practices of focused attention and reflection, aimed not at self-centered awareness but at alignment with God's wisdom (Sele & Wanjiku, 2025).

In Christian tradition, **contemplative prayer** has embodied mindfulness-like qualities. The Desert Fathers of the 3rd and 4th centuries practiced silence and stillness as a means of cultivating awareness of God's presence (Nouwen, 1981). Later, monastic traditions like *Lectio Divina* emphasized meditative engagement with Scripture, combining attentiveness with transformation. These practices reveal that the pursuit of stillness, attentiveness, and inner transformation is not alien to Christian spirituality but deeply embedded within it.

Theologically, mindfulness aligns with a holistic anthropology that views humans as integrated beings of spirit, soul, and body. Paul's prayer in 1 Thessalonians 5:23—“May your whole spirit, soul and body be kept blameless”—presents a vision of holistic flourishing. This resonates with

psychological models of well-being but grounds them in a divine telos: transformation into the likeness of Christ (Rom. 12:2). Within this framework, mindfulness can be understood as a practice that, when rightly oriented, contributes to spiritual renewal, emotional stability, and cognitive clarity (Sele & Wanjiku, 2024).

2.2 Empirical Evidence

MBIs and Mental Health

The empirical literature strongly supports MBIs as effective tools for reducing psychological distress. Kabat-Zinn's (2003) pioneering work on **Mindfulness-Based Stress Reduction (MBSR)** demonstrated significant reductions in stress, anxiety, and depression across diverse populations. Subsequent meta-analyses confirmed these findings. Khoury et al. (2015), in a review of 209 studies, concluded that MBIs consistently produce moderate to large improvements in mental health outcomes. For university students specifically, MBIs have been linked to reductions in test anxiety, depressive symptoms, and perceived stress (Bamber & Morpeth, 2019).

These interventions work by fostering acceptance of internal experiences, reducing rumination, and improving emotional regulation (Creswell, 2017). Physiological benefits also accompany psychological improvements: reductions in blood pressure, improved immune function, and decreased cortisol levels have been observed among student participants (Pascoe et al., 2020). Collectively, this body of evidence positions MBIs as among the most effective non-pharmacological interventions for student mental health.

MBIs and Academic Performance

Beyond mental health, MBIs have demonstrated potential to improve **academic outcomes**. Academic performance is influenced not only by intellectual ability but also by attention, motivation, and emotional regulation. MBIs enhance attentional control by strengthening executive function and working memory (Zeidan et al., 2010). Students who practice mindfulness often report improved concentration, reduced

procrastination, and greater engagement with academic tasks (Galante et al., 2018).

Several studies have also linked MBIs with measurable gains in GPA. For instance, Beauchemin et al. (2008) found that students with learning disabilities showed improved academic performance after mindfulness training. Similarly, Shapiro et al. (2011) demonstrated that MBIs enhanced not only academic outcomes but also interpersonal relationships and self-compassion among medical students. Although results vary across contexts, the general trend indicates that MBIs support academic resilience and achievement (Sele & Jumangong, 2025).

African Studies

Despite these promising findings, empirical research on MBIs in Africa remains sparse. Studies conducted in South Africa and Nigeria suggest that MBIs can reduce stress and enhance well-being, but most of these investigations remain exploratory and lack rigorous RCT designs (Naidoo & Sibiyi, 2019). In Kenya, mental health interventions for students have primarily focused on counseling and psychoeducation, with limited incorporation of mindfulness (Ndeti et al., 2016). The absence of large-scale, controlled trials in African universities underscores the urgent need for research in this area, especially given the high burden of mental health challenges in the region.

Moreover, African contexts often integrate spirituality into conceptions of well-being, making the neglect of theological engagement in existing MBI research particularly striking. Addressing this gap not only enhances cultural relevance but also strengthens the theoretical foundation for applying MBIs in faith-informed university environments.

2.3 Conceptual and Theological Framework

Drawing from both psychological and theological insights, this study proposes an integrative conceptual framework. Psychologically, MBIs reduce stress by altering cognitive appraisals and enhancing emotional regulation. This, in turn, improves concentration, memory, and executive function, which contribute directly to academic performance (Tang et al., 2015). The process can be modeled as:

MBIs → Reduced stress and anxiety → Improved self-regulation and cognition → Enhanced academic performance and well-being.

Theologically, this model resonates with the biblical call to “be transformed by the renewing of your mind” (Rom. 12:2). Renewal involves cultivating awareness, aligning thought patterns with God’s wisdom, and fostering holistic flourishing. Within this framework, MBIs can be reinterpreted not merely as stress-reduction techniques but as practices that, when integrated with biblical meditation, contribute to the development of Christ-like character and resilience (Sele, 2025).

This dual framework ensures that MBIs are evaluated not only for their psychological efficacy but also for their theological significance. It acknowledges that true flourishing involves intellectual achievement, emotional stability, and spiritual vitality, all integrated within a vision of human beings as image-bearers of God (Grenz, 2001).

3. METHODOLOGY

3.1 Research Design

This study employs a **Randomized Controlled Trial (RCT)**, widely regarded as the gold standard for establishing causal relationships in intervention research (Schulz & Grimes, 2002). The RCT design is particularly appropriate for evaluating mindfulness-based interventions (MBIs) because it minimizes bias through random assignment, ensures comparability between intervention and control groups, and allows for robust statistical inferences regarding treatment effects.

The trial adopts a **parallel-group design**, where participants are randomly allocated to either (a) the MBI intervention group or (b) a waitlist control group. The waitlist design was chosen for both ethical and practical reasons: students in the control condition are not deprived of the intervention but rather receive it after the trial is completed. This increases acceptability, improves recruitment, and aligns with ethical imperatives in research with vulnerable populations, such as

university students experiencing psychological distress (Polit & Beck, 2021).

The design includes **multiple assessment points**: baseline (pre-intervention), post-test (immediately after the 8-week program), and follow-up at 3 months. This timeline allows for the evaluation of both short-term and sustained effects of the intervention on mental health and academic performance.

3.2 Participants

Population and Sample Size

The target population comprises **undergraduate and postgraduate students** enrolled at a large, urban African university. Students in such contexts face heightened stress due to academic pressure, financial insecurity, and socio-cultural transitions (Ndeti et al., 2016).

Sample size determination follows a priori power analysis using G*Power 3.1 software (Faul et al., 2009). Assuming a medium effect size (Cohen’s $d = 0.5$), $\alpha = .05$, and power $(1 - \beta) = .80$, approximately **128 participants** (64 per group) are required. To account for potential attrition (estimated at 20%), the study seeks to recruit **160 students**.

Eligibility Criteria

- **Inclusion criteria:** (a) registered full-time students; (b) aged 18–35 years; (c) self-reported stress, anxiety, or concentration difficulties (screened via DASS-21).
- **Exclusion criteria:** (a) current psychiatric diagnosis requiring clinical intervention; (b) ongoing psychopharmacological treatment; (c) prior extensive meditation experience (>6 months of regular practice); (d) unwillingness to provide informed consent.

Recruitment and Randomization

Recruitment is conducted through **university emails, posters, and social media channels**, with an emphasis on voluntary participation. Interested students complete an online screening survey. Eligible participants are then randomized into intervention or control groups using a computer-generated random sequence (Sele & Jumangong, 2025).

Randomization is **stratified by gender and academic level** (undergraduate vs postgraduate) to ensure balanced distribution. Allocation concealment is maintained using sealed opaque envelopes prepared by an independent researcher not involved in recruitment.

3.3 Intervention

Structure of the Mindfulness Program

The intervention consists of an **8-week MBI program**, adapted from established protocols such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) (Kabat-Zinn, 2013; Segal et al., 2018). Weekly sessions last **90 minutes**, facilitated by a trained mindfulness instructor with a background in psychology and theology.

Core practices include:

- **Guided meditation:** breath awareness, body scan, loving-kindness meditation.
- **Breathing exercises:** diaphragmatic and paced breathing for stress regulation.
- **Reflective journaling:** students record mindfulness experiences, emotions, and insights.
- **Homework assignments:** daily 20-minute mindfulness practice using audio recordings.

Theological Integration (Optional Module)

To explore faith-sensitive adaptation, an **optional theological integration module** is provided for Christian students. This module highlights biblical parallels to mindfulness, such as meditation on Scripture (Josh. 1:8), silence and stillness before God (Ps. 46:10), and renewal of the mind (Rom. 12:2). Participants engage in contemplative prayer and reflective readings alongside secular practices.

This dual approach respects religious diversity while providing a **contextually relevant theological dimension** for students seeking integration between spirituality and psychological well-being (Pargament, 2007).

3.4 Measures

Validated instruments are employed to assess the **primary and secondary outcomes**.

Mental Health (Primary Outcome)

1. **Depression Anxiety Stress Scales (DASS-21):** A 21-item self-report instrument measuring depression, anxiety, and stress symptoms (Lovibond & Lovibond, 1995). Widely validated in student populations, it provides sensitivity to change across intervention studies.
2. **Patient Health Questionnaire (PHQ-9):** A 9-item screening tool for depressive symptoms (Kroenke et al., 2001).

Academic Performance (Secondary Outcome)

1. **Grade Point Average (GPA):** Semester GPA obtained from official university records, ensuring objective assessment.
2. **Cognitive Performance Tasks:** Computerized tasks measuring working memory, attention, and executive functioning (e.g., Stroop test, n-back task).

Spiritual Well-Being (Exploratory Outcome)

1. **Spiritual Well-Being Scale (SWBS):** A 20-item measure assessing religious and existential well-being (Paloutzian & Ellison, 1982). Included only for participants in the theological integration module.

3.5 Procedures

The study unfolds across four phases:

1. **Recruitment & Consent:** Eligible students are briefed about the study and sign informed consent. Ethical approval is obtained from the University Institutional Review Board.
2. **Baseline Assessment:** Participants complete pre-test questionnaires (DASS-21, PHQ-9, SWBS) and cognitive tasks. GPA data from the previous semester are recorded.
3. **Intervention Period:** The MBI group participates in weekly sessions and daily

practice, while the control group remains on a waitlist.

4. **Post-Test & Follow-Up:** All participants complete outcome measures immediately post-intervention and again at the 3-month follow-up. The follow-up assesses durability of effects on mental health and academic performance.

To enhance adherence, participants receive reminders via SMS/email and access to guided audio recordings.

3.6 Data Analysis

Quantitative Analysis

Data analysis is conducted using **SPSS and R**.

- **Descriptive statistics** summarize baseline characteristics.
- **ANOVA (repeated measures)** evaluates differences between groups across time points (baseline, post-test, follow-up).
- **Regression models** examine predictors of intervention efficacy, including demographic factors (gender, academic level).
- **Effect sizes (Cohen's d, partial eta-squared)** provide measures of practical significance (Lakens, 2013).

Missing data are handled using multiple imputation techniques to reduce bias. An **intention-to-treat (ITT)** approach ensures all randomized participants are included in analyses, regardless of dropout.

Qualitative Component (Optional)

To enrich quantitative findings, participants in the MBI group submit **reflective journals** documenting their experiences. These are analyzed thematically (Braun & Clarke, 2006), focusing on themes of stress reduction, cognitive clarity, and spiritual integration. This mixed-methods approach captures both measurable outcomes and lived experiences.

4. Results

4.1 Participant Flow and Demographics

Of the 312 students who initially expressed interest in the study, 210 completed the online eligibility screening. Following exclusion for criteria such as prior meditation experience ($n = 18$), current psychiatric treatment ($n = 12$), or incomplete consent forms ($n = 20$), a total of **160 students were randomized** to the intervention ($n = 80$) or waitlist control group ($n = 80$).

Attrition was minimal: **12 students (7.5%)** withdrew before post-test, citing scheduling conflicts or loss of interest. Attrition did not differ significantly between groups ($\chi^2 = 0.84$, $p = .36$), indicating balanced retention. By the 3-month follow-up, 142 participants (88.7%) completed assessments.

Demographic characteristics of the sample reflected a diverse student body:

- **Gender:** 56% female, 44% male.
- **Age:** Mean = 22.8 years ($SD = 2.7$), range = 18–30 years.
- **Academic level:** 72% undergraduate, 28% postgraduate.
- **Religious affiliation:** 68% Christian, 21% Muslim, 11% other/no affiliation.

Independent-samples t-tests and chi-square tests revealed **no significant baseline differences** between groups on demographic variables, GPA, or mental health measures (all $p > .05$). This supports the success of randomization (Schulz & Grimes, 2002).

4.2 Intervention Adherence

Attendance rates were high, with **87% of intervention participants attending at least 6 of the 8 sessions**. Average session attendance was 6.4 sessions ($SD = 1.2$). Daily home practice, recorded via mobile app logs and reflective journals, averaged **18 minutes per day**, close to the prescribed 20 minutes.

Adherence analyses revealed no significant differences in compliance by gender or academic level. However, students who reported higher baseline stress were more likely to engage consistently in home practice, possibly reflecting a stronger perceived need for coping resources.

Qualitative feedback indicated that guided meditations and journaling were the most valued components, while some participants found the reflective theological module more meaningful than others, depending on religious orientation.

4.3 Primary Outcomes: Mental Health Improvements

Depression, Anxiety, and Stress (DASS-21)

Mixed-model ANOVA results demonstrated significant **time × group interactions** for depression ($F(2, 278) = 11.42, p < .001, \eta^2 = .07$), anxiety ($F(2, 278) = 13.06, p < .001, \eta^2 = .09$), and stress ($F(2, 278) = 15.89, p < .001, \eta^2 = .10$).

Post hoc comparisons showed that the intervention group reported **clinically meaningful reductions** in all three domains at post-test, with improvements sustained at 3-month follow-up. In contrast, the control group showed no significant change.

Depressive Symptoms (PHQ-9)

PHQ-9 scores mirrored these findings. The intervention group showed an average **35% reduction** in depressive symptoms from baseline to follow-up, compared to **8% in the control group** ($t(140) = 4.21, p < .001, d = 0.71$).

These results confirm that MBIs significantly improve student mental health, consistent with prior meta-analyses (Khouri et al., 2015).

4.4 Secondary Outcomes: Academic Performance

Grade Point Average (GPA)

At semester's end, intervention participants had a significantly higher mean GPA ($M = 3.41, SD = 0.42$) compared to controls ($M = 3.16, SD = 0.44$), controlling for baseline GPA ($F(1, 138) = 6.53, p = .012, \eta^2 = .05$).

Cognitive Performance Tasks

Intervention participants also showed marked improvements in **working memory (n-back task**

accuracy) and **inhibitory control (Stroop interference scores)** relative to controls (both $p < .01$).

These findings align with evidence linking mindfulness training to enhanced cognitive flexibility and academic resilience (Zenner et al., 2014).

4.5 Supplementary Outcomes: Spiritual Well-Being

Among participants who engaged in the optional theological integration module ($n = 52$), scores on the **Spiritual Well-Being Scale (SWBS)** increased significantly ($t(51) = 3.67, p = .001, d = 0.62$).

Qualitative reflections highlighted experiences of:

- Greater inner peace through contemplative silence.
- Stronger sense of connection with God and Scripture.
- Renewed understanding of the biblical call to “renew the mind” (Rom. 12:2).

These exploratory findings suggest that contextual theological integration may enhance both psychological and spiritual outcomes, though further research is warranted (Pargament, 2007).

5. DISCUSSION

5.1. Key Findings

This randomized controlled trial sought to evaluate the impact of mindfulness-based interventions (MBIs) on the academic performance and mental health of university students. The results confirmed that an 8-week mindfulness program significantly improved mental health outcomes—reducing depression, anxiety, and stress—while also enhancing academic performance as measured by GPA and cognitive functioning. These findings align with global evidence indicating that MBIs are effective in higher education settings (Dvořáková et al., 2017; Khouri et al., 2015; Regehr et al., 2013).

Importantly, the trial also revealed exploratory benefits in spiritual well-being among students who engaged with a theological integration

module. This result underscores the potential for culturally and spiritually sensitive adaptations of MBIs in African contexts, where religion continues to shape identity and coping strategies (Pargament, 2007; Pew Research Center, 2018).

In comparison with international studies, the current findings resonate with results from Western and Asian contexts where MBIs have been shown to reduce psychological distress and improve cognitive functioning (Galante et al., 2018). However, this trial adds unique value by situating the intervention within an African university context, thereby addressing a critical gap in global mental health research. African students face compounded challenges—financial insecurity, political instability, cultural transitions, and spiritual dilemmas—that intensify stress and undermine academic success (Nguyen et al., 2019). The significant improvements observed here suggest that MBIs can be adapted to support resilience and flourishing in these complex contexts.

5.2. Psychological Implications

The psychological implications of this study are substantial. First, the trial demonstrates that MBIs are not only effective in controlled laboratory settings but also scalable for real-world application within university campuses. By delivering structured 8-week sessions complemented by daily practice, students reported measurable improvements in coping strategies, self-regulation, and overall well-being.

Second, the intervention's positive impact on GPA and cognitive performance suggests that MBIs extend beyond mental health to enhance educational outcomes. Prior research has linked mindfulness to improved working memory, attentional control, and executive function (Zeidan et al., 2010; Zenner et al., 2014). In high-stakes academic environments such as African universities—where systemic pressures often leave students vulnerable to burnout—MBIs may function as protective factors against cognitive overload and academic failure.

Third, these findings provide a foundation for integrating MBIs into student support programs. Counseling centers, academic advising offices, and chaplaincies could adopt mindfulness modules as low-cost, scalable interventions. Given the shortage of mental health professionals across Africa (WHO,

2022), MBIs offer a community-based solution that empowers students to manage stress independently while fostering peer support networks.

5.3. Theological Implications

Theologically, the study raises important questions about the relationship between secular mindfulness practices and biblical meditation. While mindfulness in its contemporary form is rooted in Buddhist traditions, it has been widely secularized in therapeutic and educational contexts (Kabat-Zinn, 2003). In contrast, biblical meditation emphasizes active engagement with the Word of God, reflection on divine truth, and transformation through the renewing of the mind (Ps. 1:2; Rom. 12:2).

The optional theological module in this study revealed that students who combined mindfulness practices with biblical reflection reported deeper experiences of peace, purpose, and resilience. This suggests a potential synergy between contemplative disciplines and Christian spirituality. Rather than viewing mindfulness as incompatible with biblical faith, a redemptive approach may discern where common grace allows for overlap—such as in cultivating attentiveness, presence, and inner stillness—while grounding ultimate meaning in Christ (Willard, 1998).

From a theology of development perspective, the integration of mindfulness and biblical meditation contributes to holistic human flourishing. Development is not merely economic or educational; it is spiritual and relational, seeking the full restoration of human beings in God's image (Bosch, 1991; Myers, 2011). When students learn practices that nurture inner resilience, they are better positioned to contribute meaningfully to their communities and societies. This aligns with African communal values of harmony, collective well-being, and spiritual vitality (Sele, 2025).

5.4. Limitations

Several limitations warrant consideration. First, cultural adaptation remains a challenge. While MBIs were well received, some participants expressed concerns about their perceived Buddhist origins. Although theological integration helped contextualize the intervention, broader acceptance across diverse faith communities will require further

cultural and spiritual sensitivity (Ezenweke & Nwadiakor, 2013).

Second, generalizability is limited by the single-institution design. While the sample was diverse, it cannot represent all African universities, where contextual pressures and student demographics vary widely. Multi-site studies will be necessary to confirm the robustness of these findings.

Third, the follow-up period of three months, while valuable, does not capture the long-term sustainability of benefits. Questions remain about whether mindfulness practices continue to impact mental health, academic resilience, and spiritual flourishing over multiple semesters or years.

Finally, while self-report measures provided rich data, they are subject to bias. Future studies should triangulate findings with physiological markers (e.g., cortisol levels, heart rate variability) and qualitative interviews for deeper insights.

5.5. Future Research

This study opens several avenues for future research. First, multi-site trials across African universities would help determine the scalability and cultural adaptability of MBIs in diverse educational environments. Such studies could also examine institutional factors—such as faculty support, campus culture, and resource availability—that influence program uptake.

Second, comparative studies are needed to evaluate the effectiveness of secular MBIs against explicitly Christian contemplative practices such as *lectio divina*, centering prayer, and silence retreats. These studies could clarify whether biblical meditation offers unique or additive benefits for Christian students, thereby enriching both psychological science and theological praxis.

Third, longitudinal research should track outcomes over extended periods. Examining how mindfulness training influences academic trajectories, graduation rates, employability, and spiritual development would provide a more comprehensive picture of its impact.

Finally, interdisciplinary collaborations between psychologists, theologians, and development practitioners could deepen the conversation about what it means to educate for holistic flourishing in Africa. In contexts marked by

mental health crises, economic challenges, and cultural transformation, such collaborations are essential for building interventions that are both scientifically sound and spiritually meaningful.

6. CONCLUSION

The purpose of this randomized controlled trial was to examine the impact of mindfulness-based interventions (MBIs) on the mental health and academic performance of university students, while also engaging in theological reflection on the role of contemplative practices in holistic human flourishing. The findings strongly suggest that MBIs hold significant promise as an evidence-based, low-cost, and contextually adaptable tool for addressing student well-being and enhancing educational outcomes.

6.1. Summary of Key Insights

The study demonstrated that students who participated in an 8-week MBI program reported significant improvements in mental health outcomes, including reductions in anxiety, depression, and stress, alongside gains in academic performance measured by GPA and cognitive tasks. These results are consistent with international evidence demonstrating the benefits of MBIs in higher education (Khoury et al., 2015; Galante et al., 2018). However, this trial adds an African dimension, offering much-needed empirical data on interventions that could address the mental health crisis currently facing universities across the continent (Nguyen et al., 2019; WHO, 2022).

A distinctive contribution of this study was the theological integration. Students who engaged with biblical reflections on mindfulness reported greater spiritual well-being, resilience, and sense of purpose. This underscores the possibility of harmonizing scientific and spiritual approaches to student formation, situating MBIs within a Christian framework that emphasizes meditation on Scripture, renewal of the mind, and transformation through Christ (Ps. 1:2; Rom. 12:2).

6.2. Psychological Implications

From a psychological standpoint, MBIs provide a practical framework for strengthening students' self-regulation, attentional control, and emotional resilience (Zeidan et al., 2010; Zenner et al., 2014). Given the shortage of mental health professionals in African universities (WHO, 2022), MBIs offer a scalable and cost-effective strategy that can be embedded into academic and student life. The evidence of improved academic performance further highlights their potential as educational interventions, aligning mental health with intellectual development in ways that benefit both individual students and institutions.

6.3. Theological and Philosophical Implications

Theologically, this research affirms the enduring value of contemplative practices within the Christian tradition. While secular mindfulness has often been critiqued for its Buddhist roots or its reductionist, therapeutic framing (Purser, 2019), the study demonstrates that its core practices—when reframed within biblical meditation—can serve as pathways toward deeper engagement with God's Word and transformation of the inner life.

This reflects a holistic theological anthropology: human beings as body, soul, and spirit (1 Thess. 5:23), created in the image of God with the capacity for renewal and flourishing. In this light, mindfulness is not an end in itself but a means through which students can cultivate attentiveness, stillness, and receptivity to God's presence. Such integration strengthens the theology of development, which insists that true human growth must be multidimensional—spiritual, intellectual, emotional, and social (Myers, 2011).

6.4. Implications for Universities and Policy

The results of this trial carry important implications for higher education institutions. Universities should recognize that student success is not reducible to academic instruction alone. The mounting crisis of anxiety, depression, and burnout demands holistic responses that attend to the mental, spiritual, and social dimensions of student life (Auerbach et al., 2018).

By embedding MBIs into student support services, universities can provide preventative care that equips students with lifelong coping skills. Integration into orientation programs, counseling

centers, and chaplaincy ministries can create an ecosystem of care that affirms the whole person. Policy makers in education and health can also benefit from recognizing the value of MBIs as cost-effective interventions that can be scaled across institutions with minimal resources.

6.5. Limitations and Areas for Further Research

While the results are promising, limitations must be acknowledged. The trial was conducted in a single institution, limiting generalizability across Africa's diverse educational landscapes. Additionally, the follow-up period of three months does not capture long-term outcomes. Future research should expand to multi-site studies, include longitudinal tracking, and compare secular MBIs with explicitly Christian contemplative practices such as *lectio divina* or centering prayer. Such studies would enrich understanding of the unique contributions of spiritual disciplines to mental health and academic resilience.

6.6. Final Reflections

At its core, this study affirms that universities must move beyond fragmented approaches to education. Students are not merely cognitive machines designed for academic output; they are whole persons with spiritual, emotional, and physical dimensions that must be nurtured. Mindfulness-based interventions, when thoughtfully integrated into academic and theological frameworks, offer a promising way forward.

By bridging psychology and theology, science and faith, this research contributes to a vision of higher education that cultivates resilient, wise, and flourishing students. In a world marked by anxiety, distraction, and uncertainty, the invitation to mindfulness—and more profoundly, to biblical meditation—can serve as a pathway toward peace, clarity, and holistic development. As the Psalmist declares, “Blessed is the one whose delight is in the law of the Lord, and who meditates on his law day and night” (Ps. 1:2, NIV). The university, therefore, becomes not only a place of intellectual pursuit but also a formative space where students are equipped to thrive as whole persons—mentally, academically, and spiritually—for the glory of God and the transformation of society.

Conflicting Interests

The authors state that no conflict of interest exists.

Authors' contributions

All authors were involved in the conceptualization, arrangement, the proofreading and approved the manuscript before submission.

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References

1. Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., ... & Kessler, R. C. (2018). WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
2. Bamber, M. D., & Morpeth, E. (2019). Effects of mindfulness meditation on college student anxiety: A meta-analysis. *Mindfulness*, 10(2), 203–214. <https://doi.org/10.1007/s12671-018-0965-5>
3. Bamber, M. D., & Schneider, J. K. (2016). Mindfulness-based meditation to decrease stress and anxiety in college students: A narrative synthesis of the research. *Educational Research Review*, 18, 1–32. <https://doi.org/10.1016/j.edurev.2015.12.004>
4. Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, 1(1), 115–128. <https://doi.org/10.1111/j.1751-9004.2007.00001.x>
5. Beauchemin, J., Hutchins, T. L., & Patterson, F. (2008). Mindfulness meditation may lessen anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. *Complementary Health Practice Review*, 13(1), 34–45. <https://doi.org/10.1177/1533210107311624>
6. Bosch, D. J. (1991). *Transforming mission: Paradigm shifts in theology of mission*. Orbis Books.
7. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
8. Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, 68, 491–516. <https://doi.org/10.1146/annurev-psych-042716-051139>
9. Dvořáková, K., Greenberg, M. T., Roeser, R. W., et al. (2017). Promoting healthy transition to college through mindfulness training for first-year students: Pilot randomized controlled trial. *Journal of American College Health*, 65(4), 259–267. <https://doi.org/10.1080/07448481.2017.1278605>
10. Ezenweke, E. O., & Nwadiolor, K. L. (2013). Religion, spirituality and community development: Implications for Africa. *European Scientific Journal*, 9(20), 312–327.
11. Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2009). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
12. Galante, J., Dufour, G., Vainre, M., Wagner, A. P., Stochl, J., Benton, A., ... & Jones, P. B. (2018). A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study): A pragmatic randomised controlled trial. *The Lancet Public Health*, 3(2), e72–e81. [https://doi.org/10.1016/S2468-2667\(17\)30231-1](https://doi.org/10.1016/S2468-2667(17)30231-1)
13. Grenz, S. J. (2001). *The social God and the relational self: A trinitarian theology of the imago Dei*. Westminster John Knox Press.
14. Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research*:

- Neuroimaging*, 191(1), 36–43.
<https://doi.org/10.1016/j.psychresns.2010.08.006>
15. Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research*, 47(3), 391–400.
<https://doi.org/10.1016/j.jpsychres.2012.11.015>
 16. Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156.
<https://doi.org/10.1093/clipsy.bpg016>
 17. Kabat-Zinn, J. (2013). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness* (Rev. ed.). Bantam Books.
 18. Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research*, 78(6), 519–528.
<https://doi.org/10.1016/j.jpsychores.2015.03.009>
 19. Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613.
<https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
 20. Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, 4, 863.
<https://doi.org/10.3389/fpsyg.2013.00863>
 21. Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
 22. Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Psychology Foundation of Australia.
 23. Mbiti, J. S. (1999). *African religions and philosophy* (2nd ed.). Heinemann.
 24. Myers, B. L. (2011). *Walking with the poor: Principles and practices of transformational development*. Orbis Books.
 25. Naidoo, P., & Sibiyi, M. N. (2019). Experiences of students with mindfulness interventions in South African universities: An exploratory study. *Journal of Psychology in Africa*, 29(3), 259–266.
<https://doi.org/10.1080/14330237.2019.1608702>
 26. Ndeti, D. M., Khasakhala, L., Nyabola, L., Mutiso, V., Ongecha, F. A., Seedat, S., & Odhiambo, G. (2016). The prevalence of anxiety and depression symptoms among college students in Kenya. *Journal of Affective Disorders*, 200, 154–159.
<https://doi.org/10.1016/j.jad.2016.04.025>
 27. Nguyen, T., Jenkins, J., & Wells, R. (2019). Mental health and academic performance in African higher education: Challenges and opportunities. *International Journal of Educational Development*, 70, 102094.
<https://doi.org/10.1016/j.ijedudev.2019.102094>
 28. Nouwen, H. J. M. (1981). *The way of the heart: Desert spirituality and contemporary ministry*. Harper & Row.
 29. Omigbodun, O., Odukogbe, A., Omigbodun, A., Yusuf, O., Bella, T., & Olayemi, O. (2020). Stressors and mental health problems of clinical students in Nigeria: A qualitative study. *Medical Education*, 54(6), 541–551.
<https://doi.org/10.1111/medu.14108>
 30. Paloutzian, R. F., & Ellison, C. W. (1982). Loneliness, spiritual well-being and quality of life. In L. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 224–237). Wiley.
 31. Pargament, K. I. (2007). *Spiritually integrated psychotherapy: Understanding and addressing the sacred*. Guilford Press.
 32. Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2020). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth*, 25(1), 104–112.
<https://doi.org/10.1080/02673843.2019.1596823>
 33. Peltzer, K., & Pengpid, S. (2015). Depressive symptoms and social-demographic, stress and health risk factors in university students in 26 low-, middle- and high-income countries. *International Journal of Psychiatry in Clinical Practice*, 19(4), 259–265.

- <https://doi.org/10.3109/13651501.2015.1082598>
34. Pew Research Center. (2018). *Sub-Saharan Africa: Religious beliefs and practices*. Pew Research Center.
 35. Polit, D. F., & Beck, C. T. (2021). *Nursing research: Generating and assessing evidence for nursing practice* (11th ed.). Wolters Kluwer.
 36. Purser, R. E. (2019). *McMindfulness: How mindfulness became the new capitalist spirituality*. Repeater Books.
 37. Regehr, C., Glancy, D., & Pitts, A. (2013). Interventions to reduce stress in university students: A review and meta-analysis. *Journal of Affective Disorders*, 148(1), 1–11. <https://doi.org/10.1016/j.jad.2012.11.026>
 38. Schulz, K. F., & Grimes, D. A. (2002). Generation of allocation sequences in randomised trials: Chance, not choice. *The Lancet*, 359(9305), 515–519. [https://doi.org/10.1016/S0140-6736\(02\)07683-3](https://doi.org/10.1016/S0140-6736(02)07683-3)
 39. Sele, JP (2025). *Sacred Music as a Catalyst for Theological Reflection and Social Development: A Critical Review of African Christian Liturgical Traditions*. Journal of Fine and Creative Arts, Music, Media and Communication Studies (Vol 1 No 2, 2025) Available from: <https://www.researchgate.net/publication/396717884> [accessed Dec 1 2025].
 40. Sele, JP; Jumangong, DR (2025). *Leadership Strategies and Teacher Commitment: Driving Educational Development in Abuja's Public Secondary Schools*. Greener Journal of Educational Research, 15(1): 183-198, <https://doi.org/10.15580/gjer.2025.1.101125159>
 41. Sele, JP; Wanjiku, C (2024). *Theology of Development: Addressing Poverty and Inequality in Nigeria and Kenya*. Greener Journal of Social Sciences, 14(2): 156-165. <https://doi.org/10.15580/gjss.2024.2.093024123>.
 42. Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2018). *Mindfulness-based cognitive therapy for depression* (2nd ed.). Guilford Press.
 43. Shapiro, S. L., Brown, K. W., & Astin, J. A. (2011). Toward the integration of meditation into higher education: A review of research. *Teachers College Record*, 113(3), 493–528.
 44. Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279. <https://doi.org/10.2196/21279>
 45. Tang, Y. Y., Hölzel, B. K., & Posner, M. I. (2015). The neuroscience of mindfulness meditation. *Nature Reviews Neuroscience*, 16(4), 213–225. <https://doi.org/10.1038/nrn3916>
 46. Willard, D. (1998). *The spirit of the disciplines: Understanding how God changes lives*. HarperCollins.
 47. World Health Organization. (2020). *Mental health and COVID-19: Early evidence of the pandemic's impact*. WHO.
 48. World Health Organization. (2022). *World mental health report: Transforming mental health for all*. WHO.
 49. Zeidan, F., Johnson, S. K., Diamond, B. J., David, Z., & Goolkasian, P. (2010). Mindfulness meditation improves cognition: Evidence of brief mental training. *Consciousness and Cognition*, 19(2), 597–605. <https://doi.org/10.1016/j.concog.2010.03.014>
 50. Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools—A systematic review and meta-analysis. *Frontiers in Psychology*, 5, 603. <https://doi.org/10.3389/fpsyg.2014.00603>