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Correlation between mindfulness engagement and self-reported academic performance in medical students

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ABSTRACT

BACKGROUND & OBJECTIVE: Mindfulness practices are recognized as effective strategies for coping with stress in medical education. This study aims to determine the correlation between mindfulness engagement and self-reported academic performance in medical students

METHODOLOGY: An analytical cross-sectional study was conducted from October 2023 to March 2024, involving 90 undergraduate medical students. Data were collected online using Google Forms and analyzed in Google Sheets. Students' self-reported academic achievement was then correlated with mindfulness practices. A p-value of less than 0.05 was considered significant.

RESULTS: The mean age of participants was 22 ± 1.1 years, with the majority (66.1%) aged 22-24. The gender distribution was 55.8% male and 44.2% female. A significant majority (93%) were aware of mindfulness activities, and 60% reported participating in them. There was a significant difference in mindfulness awareness and practice, as indicated by p-values. Additionally, 81% of students believed that mindfulness practices positively influenced their academic performance. A statistically significant relationship was identified between mindfulness practices and self-reported academic achievements (p-value=0.002). Common barriers to practice included lack of time (61.8%), lack of interest (14.7%), and skepticism about its effectiveness (10.3%).

CONCLUSION: The study's findings suggest a positive correlation between mindfulness practices and self-reported academic achievement among undergraduate medical students. Most participants reported improvements in educational performance and mental health, highlighting the potential benefits of incorporating mindfulness practices into medical education.

KEYWORDS: Mindfulness, Medical Students, Academic Performance, Mental Health, Physiological Stresses.

INTRODUCTION

At present, medical students are experiencing significant burnout and stress. And this is due to the rigorous demand of their training programs[1]. They usually face stress from heavy workloads and academic pressures. Studies prove all these stressors can adversely affect not only students' mental health but also his/her academic performance and professional development[2].

The importance of addressing stress among medical students cannot be neglected. Because chronic stress can lead to burnout. And we all know, burnout is a state characterized by emotional exhaustion and reduced personal accomplishment. Burnout negatively impacts students' academic performance and their clinical skills. It also affects their overall quality of life[3]. Consequently, there is a dire need for effective interventions. To promote resilience and well-being among medical students. Mindfulness practices may offer a promising avenue for achieving these goals.

Mindfulness activities have gained popularity as effective strategies for improving mental health and well-being. Like, Kriakous et al. conducted a review of mindfulness-based stress reduction programs. He specifically targeted health care professionals. He revealed significant reductions in perceived stress and anxiety levels via mindfulness-based practices[4]. His findings highlighted the potential of mindfulness practices to reduce psychological stress among such people.

In addition, mindfulness interventions have shown to boost academic performance among medical students. Research by Altinyelken highlighted that participation in mindfulness programs is linked with improved attention and concentration, which translates into better performance in both exams and coursework[5]. The heightened awareness

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and cognitive focus through mindfulness practices significantly contribute to these academic benefits. This fosters a more conducive learning environment.

The practicality of mindfulness extends beyond individual academic achievement. It also enhances collaborative learning and interpersonal relationships among peers[6]. Mindfulness practices encourage students to engage keenly in classroom discussions and collaborative activities. This helps in fostering a supportive and enriching academic community. This interconnection can lead to a deeper understanding of the material. This also improves overall educational outcomes.

Despite a growing body of literature on mindfulness and its benefits, we need more information to understand its actual impacts, especially among medical students. Medical students navigate the complexities of medical training. So, integrating mindfulness practices into their educational framework could play a pivotal role in promoting resilience and reducing stress. This will also enhance overall academic and professional development.

The high levels of stress and burnout among medical students demand effective interventions in support of mental health and academic performance. This study explores the potential benefits of mindfulness practices in enhancing academic outcomes among undergraduate medical students at a private medical college in Pakistan. Specifically, it examines the correlation between mindfulness practices and students' self-reported academic achievements.

METHODOLOGY

This descriptive cross-sectional study was conducted at Abwa Medical College from October 2023 to March 2024. The study invited 90 4th-year MBBS students. The sample size was determined using Census sampling, which involves collecting data from every individual in the entire population; in this case, all 90 students, focusing on a specific group (4th-year MBBS students) to ensure the relevance and applicability of the mindfulness practices data. Census sampling was chosen because the total number of fourth-year MBBS students (90) was small and manageable, allowing inclusion of the entire population.

This ensured full representation of student perspectives on mindfulness practices without the risk of sampling bias. Approval was obtained from the College's Ethical Review Committee through a formal permission letter number ABWA/MC/DME/853/2023. Inclusion criteria comprised undergraduate students who were explicitly enrolled in the MBBS program at the college and actively participating in the curriculum during the study period. Exclusion criteria included students enrolled in programs other than MBBS (e.g., BDS, Nursing) and those with pre-existing psychological disorders or conditions that could confound the study outcomes.

Data was collected through an online Google form. The study questionnaire, developed following the literature review, included demographic data, mindfulness practice awareness among medical students, perceived benefits and challenges of practicing mindfulness, and self-reported academic achievement. For the purpose of this study, "mindfulness practice activities" were operationally defined as structured exercises such as mindful breathing, meditation, exercise, or reflective awareness tasks that students consciously engaged in to enhance focus, stress management, and overall well-being.

The questionnaire was pilot-tested on 7 medical students from the 3rd- and 5th-year MBBS classes to assess understanding and clarity before sharing it with the study participants. The identities of study participants were kept anonymous. Data analysis was performed on SPSS V.26.0 utilizing statistical formulae. Continuous variables, such as age, were presented as mean and Standard Deviation, while categorical variables were presented as frequencies and proportions.

A chi-square test and a Fisher's Exact test of significance were applied to assess the correlation between mindfulness practices among medical students and their self-reported academic achievement. A p-value< 0.05 was taken as significant. Inclusion criteria were undergraduate medical students of the 4th year MBBS Class. Exclusion criteria were non-medical students and postgraduates, students who already had psychological disorders or hearing issues.

RESULTS

Of the 90 invited participants, 68 returned the form, yielding a 75.6% response rate. The mean age of the participants was 22 + 1.1 years. Majority of the students (n=45) were from the age group 22-24 years (66.1%). Regarding gender, 38 males (55.8%) and 30 females (44.2%) participated in the study. Table-I below shows the demographic distribution of the participants.

Table-I:Demographic distribution of the participants (n=68).

Variable	Category	n(%)
Age group	19-21	21(31)
	22-24	45(66.1)
	25-27	2(2.9)
Gender	Male	38(55.8)
	Female	30(44.1)

Forty-one participants out of 68 (60.3%) were reported as being aware of the mindfulness activities, although only 22(32.4 %) participants mentioned participating in various mindfulness activities. There was a significant difference in awareness and practice of mindfulness activities among the students (p value = 0.00) Table-II.

Table-II:Relationship between awareness and participation in mindfulness activities(n=68).

Mindfulness Practice	Participation n(%)	No Participation n(%)	Total n(%)	p-value
Awareness present	41(60.3)	22(32.4)	63(92.6)	0.008
No Awareness	0(0)	5(7.4)	5(7.4)	
Total	41(60.3)	27(39.7)	68(100)	

***P-value calculated using Fishers Exact test.**

Table-III presents the awareness regarding the benefits of mindfulness activities. Thirty-seven students (54.4%) reported stress reduction as a benefit; 12 (1.6%) reported improved focus, concentration & relationships; and 8 (11.8%) noted enhanced emotional regulation. Better overall well-being was mentioned by 6(8.8%) students, and increased self-awareness was reported by 4(5.9%) students (5.9%). All benefits were reported by one student (1.5%).

When asked about the challenges that hindered regular mindfulness practice, students cited the lack of time as the most significant barrier (42, 61.8%), while uncertainty about how to practice mindfulness was cited by 7 (10.3%). Skepticism about the effectiveness of mindfulness was reported by 7(10.3%) students (10.3%), and cultural or religious reasons were noted by 2(3%) students, and lack of interest by 10(14.7%) students.

Table-III: Participants' awareness regarding benefits of mindfulness activities.

Variables	n(%)
Stress reduction	37(54.4)
Improved focus and concentration & relationships	12(17.6)
Enhanced emotional regulation	08(11.8)
Better overall well-being	06(8.8)
Increased self-awareness	04(5.9)
All benefits	01(1.5)

Table -IV: Barriers to regular mindfulness practice.

Variables	n(%)
Lack of Time	42(61.8)
Lack of interest	10(14.7)
Uncertainty about how to practice	7(10.3)
Skepticism about effectiveness	7(10.3)
Cultural/Religious issues	2(3)

Table -V: Perceived relationship between mindfulness practice and self-reported academic achievements (n=68).

Mindfulness practice	Academic Achievement		Total	P-value
	Yes	No		
Yes	38(55.88)	3(4.41)	41(68.29)	0.002
No	17(25)	10(37.0)	27(39.70)	
Total	55(80.88)	13(19.11)	68(100)	

***p-value calculated using Chi-square test.**

When asked about the impact of mindfulness practices on academic performance, 55 students (81%) reported that mindfulness practices can positively influence their academic performance. The results show a statistically significant association between mindfulness practices and academic achievement (p-value = 0.002). Students who engaged in mindfulness practices had significantly higher odds of reporting good academic achievement (Odds Ratio = 7.53, 95% CI: 2.10–27.00) and a 1.57-fold increase in relative risk (95% CI: 1.20–2.05) compared to those who did not practice mindfulness. These results indicate that medical students practicing mindfulness are substantially more likely to achieve better academic outcomes.

DISCUSSION

This study helped evaluate students' awareness, participation, and perceived benefits of mindfulness activities. The findings of this study align with the existing literature on the benefits and challenges of mindfulness in educational settings. Previous research has consistently shown that mindfulness can reduce stress, improve focus, and enhance emotional regulation. This was also reported by participants in this study [6,7]. For instance, a study by Munk et al. highlighted similar benefits among university students [8]. Furthermore, the significant gap between awareness and actual participation in mindfulness activities echoes the findings of Lin J and Mai L, who identified common barriers such as time constraints and skepticism [9]. The high level of awareness but lower level of participation suggests that while students recognize the potential benefits of mindfulness, practical challenges hinder regular practice.

There is an interesting finding in our study. This finding was the significant difference between the students' awareness and practice of mindfulness activities. This difference between awareness and participation in mindfulness activities suggests a need to bridge this gap. Increasing awareness alone is insufficient; there must be efforts to facilitate actual engagement. Educational institutions could consider integrating mindfulness practices into the curriculum, offering structured programs and resources that address common barriers [10]. For example, scheduling short mindfulness exercises and sessions daily could help overcome time constraints. Providing clear, evidence-based information about the benefits of mindfulness could help mitigate uncertainty and skepticism. Thus, encouraging more students to participate.

The perceived positive correlation between mindfulness practices and academic performance highlights the potential academic benefits of adopting them. Thus, highlighting the importance of promoting these practices to enhance student well-being and success [11,12]. This aligns with previous research on how mindfulness can improve concentration, reduce stress, and foster better learning. By practicing mindfulness daily, students may experience improved cognitive function and resilience. This will ultimately lead to higher academic performances.

In addition, students also quoted other advantages of mindfulness practices: stress reduction (57.6%), improved focus and concentration (45.5%), enhanced emotional regulation (43.9%), and increased self-awareness (40.9%). These findings are consistent with the broader mindfulness

literature. The literature highlights its effectiveness in reducing psychological distress and improving cognitive function and emotional well-being. Studies found that mindfulness-based interventions reduced symptoms of anxiety, depression, and stress. And also enhanced attention and cognitive performance [13]. The benefits reported by the students in this study support the inclusion of mindfulness practices in educational settings for a holistic approach.

Despite the benefits, several barriers hindered participants' mindfulness practice. These barriers require institutions to provide support for mindfulness practice. For example, integrating brief mindfulness sessions into the daily schedule and workshops on mindfulness techniques. This could address time constraints and uncertainty [13]. Additionally, providing evidence-based information and addressing cultural or religious concerns through inclusive practices could help overcome skepticism [14,15]. This will foster greater acceptance and participation among students.

Several recommendations are needed to effectively integrate mindfulness into the educational framework. First, institutions should consider structured mindfulness programs within the curriculum, workshops, or regular sessions during class time [16]. To provide resources and training for educators to facilitate these sessions is important [17]. Creating a supportive environment for mindfulness practices, offering mindfulness resources, creating quiet spaces for practice, and promoting a culture of well-being.

Educational strategies grounded in adult learning theories emphasize reflective, learner-centered approaches, which complement mindfulness practices by promoting student engagement and enhancing academic performance [18]. This all can ultimately enhance student participation and well being. Collaboration with mental health professionals to provide expert advise on mindfulness enrich the curriculum to promote mindfulness.Vermandis audenimora ortemus

LIMITATIONS :

This study provides valuable insights. It is essential to acknowledge its limitations. The sample size may not fully represent the broader medical student population. Reliance on self-reported data may introduce bias. For example, participants might overstate their engagement in mindfulness practices or the benefits of mindfulness [17]. The study's cross-sectional design limits the ability to establish causal relationships between mindfulness practices and academic performance. Future studies should adopt longitudinal designs to better understand the effects of mindfulness interventions. And also the long-term impacts on student outcomes.

Suggestions for Future Research

Future research should build on this study's findings by exploring the long-term effects of mindfulness practices on the academic performance and well-being of medical students. Investigating the effectiveness of different mindfulness interventions (e.g., individual vs. group practices) will provide deeper insights. It would be valuable for examining the role of faculty training in implementing mindfulness programs and the impact on students. Finally, research should examine demographic differences in perceptions and impacts of mindfulness. While also considering factors such as age, gender, and cultural background to tailor interventions more effectively.

CONCLUSION

This study demonstrates a significant positive correlation between mindfulness engagement and self-reported academic performance among undergraduate medical students. Students who practiced mindfulness reported better academic outcomes, reduced stress, improved focus, and enhanced emotional regulation, underscoring the potential value of mindfulness as a supportive strategy in medical education. Despite high awareness, participation in mindfulness activities remained limited due to time constraints, lack of interest, and skepticism about its effectiveness. These findings highlight the need for structured, institution-supported mindfulness programs integrated into the medical curriculum. Incorporating mindfulness practices may improve student well-being, resilience, and academic success, ultimately fostering a healthier, more effective learning environment for future healthcare professionals.

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Authors Contributions:

Mubeen Safdar: Substantial contributions to the conception or design of the work
Tayyab Sajjad : The acquisition, and analysis of data for the work.
Ammar Asif: Interpretation of data for the work.
Farooq Ahmad: Drafting the work.
Noor-I-Kiran Naeem: Reviewing it critically for important intellectual content.

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