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## Mindfulness training in medical education as a means to improve resilience, empathy, and mental health in the medical profession

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### Abstract

The high rates of depression, burnout, and increased risk of suicide among medical students, residents, and physicians in comparison with other careers signal a mental health crisis within our profession. We contend that this crisis coupled with the inadequate acquisition of interpersonal skills during medical education results from the interaction between a challenging environment and the mental capital of individuals. Additionally, we posit that mindfulness-based practices are instrumental for the development of major components of mental capital, such as resilience, flexibility of mind, and learning skills, while also serving as a pathway to enhance empathy, compassion, self-awareness, conflict resolution, and relational abilities. Importantly, the evidence base supporting the effectiveness of mindfulness-based interventions has been increasing over the years, and a growing number of medical schools have already integrated mindfulness into their curricula. While we acknowledge that mindfulness is not a panacea for all educational and mental health problems in this field, we argue that there is currently an unprecedented opportunity to gather momentum, spread and study mindfulness-based programs in medical schools around the world as a way to address some longstanding shortcomings of the medical profession and the health and educational systems upon which it is rooted.

**Key Words:** Mindfulness; Medical education; Mental capital; Mental health; Medical students; Resilience

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**Core Tip:** High rates of depression, burnout, and suicide risk among medical professionals highlight a mental health crisis. We proposed that mindfulness-based practices can enhance mental capital, fostering resilience, flexibility, and learning skills. Mindfulness also promotes empathy, compassion, self-awareness, conflict resolution, and relational abilities. Increasing evidence supports the effectiveness of mindfulness interventions, prompting many medical schools to integrate them into curricula. While not a panacea, mindfulness offers a promising opportunity to address longstanding issues in the medical profession and associated health and educational systems.

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## INTRODUCTION

By the end of the 20<sup>th</sup> century, there was a consensus that medical education should transition its focus from the memorization of factual material to the cultivation of life-long learning skills in students[1-3]. Rather than learning something once and for all, students were expected to acquire the ability to continually update their knowledge. Medical schools were tasked to equip students with the means and skills to foster such attitudes. This shift in perception arose in response to the geometric growth and increased accessibility of information within the field of medicine.

Interestingly, this evolution in medical education did not witness a parallel transformation in the acquisition of relational and conflict-solving skills[4-6]. While medical schools adapted to the changing landscape of information delivery, the emphasis on relational skills did not experience a comparable shift within formal curricula. However, most physicians would probably agree that acquiring proficiency in relational skills with patients, peers, and other healthcare professionals is far more complex than mastering factual information or technical procedures[7]. Compounding this challenge is the consistent evidence showing a decline in empathy among medical students and residents as they progress through their education[8]. This decline not only hampers their ability to understand the patient's perspective but also impacts their competence in working within inter-professional teams, potentially contributing to the development of disruptive behavior, which is an increasingly recognized source of avoidable medical errors and harm to patients[9].

Shapiro *et al*[10] proposed a definition of professionalism as “any intent, action, or words that foster trustworthy relationships.” Teaching relational skills that foster such relationships remains at the same time the Achilles’ heel and Holy Grail of modern medical education[11,12]. Most experts in this field attribute the challenge of nurturing professionalism in medical students to problems associated with the hidden curriculum of healthcare organizations[13-15]. The hidden curriculum represents the learning derived from the organizational and cultural environment of healthcare institutions[16]. It comprises unspoken, taken-for-granted rules and customs that impart vehement lessons about what is and what is not important, acceptable, or desirable in medicine on a daily basis. Even in the unlikely scenario where medical schools dedicated 1000 h of their formal curricula to teach professionalism to their students, there would still be a significant risk of failure due to the strong influence of unprofessional examples available in every medical school’s hidden curriculum.

A few institutions such as Brigham and Women’s Hospital, Mount Sinai Medical Center, the University of Pennsylvania Health System, the University of Washington School of Medicine, and Vanderbilt University School of Medicine deserve praise for their efforts in addressing the problem of unprofessional behavior within their hidden curricula. Most of these initiatives involved the establishment of an institutional code of professional conduct and a centralized reporting and management structure for professionalism-related concerns[17].

While such approaches are extremely important, we contend that they are insufficient to change the landscape of declining empathy and other relational abilities within medical education. Our main argument lies in the fact that the inappropriate acquisition and deterioration of interpersonal skills results from the interaction of a challenging environment and the individual mental capital of medical students. By ‘environment’ we mean not only matters associated with the hidden curriculum but also every experience, positive and negative, students go through during their training. The very nature of medical learning inevitably involves experiencing stress, suffering, pain, loss, and several other challenging situations such as sleep deprivation, heavy study/workload, and responsibility in caring for patients with serious illnesses. By individual ‘mental capital,’ we refer to both cognitive and emotional resources, encompassing learning abilities, mental flexibility, emotional intelligence, social skills, and resilience in the face of stressful situations, as defined by an influential report from the Foresight Program of the United Kingdom Government Office for Science[18].



Our argument is supported by a recent systematic review of predictors of empathy and compassion among medical students, which included 222 studies[19]. On the one hand, that review revealed that empathy and compassion are negatively associated with factors such as heavy workloads, hierarchical work environments, ‘assembly-line’ organizational culture, and an educational ethos prioritizing the acquisition of knowledge and academic achievement. On the other hand, that review also found evidence that empathy and compassion were positively correlated with individual characteristics of students, such as emotional intelligence, openness, perspective-taking, and reflexive skills.

If medical schools are indeed committed to changing the picture of declining empathy described above, in addition to addressing their hidden curricula, they should strive to nurture their students’ capabilities to cope with adverse and stressful milieus. But what kinds of initiatives have evidence as a means to increase empathy, compassion, self-awareness, stress coping, conflict-solving, and relational abilities?

We posit that mindfulness-based practices offer a way to foster such competencies. Mindfulness has been defined as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment”[20]. It is an innate ability that can be enhanced by training in several formal and informal mindfulness techniques. These methods originated from ancient contemplative traditions, especially Buddhism, and were systematized by John Kabat-Zinn in 1979 into a program called Mindfulness-Based Stress Reduction. That program did not aim to teach Buddhism or any kind of religious ideology; instead, it intended to instruct patients, who were not responding to usual medical treatments, in meditative methods to cope and relieve physical and psychic suffering.

The program served as a model for a wide range of mindfulness-based initiatives in various fields such as the military, sports, business corporations, education, and healthcare. In the United Kingdom, an all-party parliamentary group conducted an inquiry into the potential of mindfulness-based practices in the domains of health care, education, workplaces, and the criminal system. In its final report, they argued that mindfulness is instrumental for the development of major components of mental capital, such as resilience, flexibility of mind, and learning skills[21]. In addition, they recommended various forms of support for mindfulness-based initiatives in those key areas. Importantly, those recommendations were framed upon the understanding that the United Kingdom is facing a major mental health crisis, with increasing effects of depression, anxiety, and stress on its population, and alternative approaches are urgently needed to address it.

We contend that the high rates of depression, burnout, and increased risk of suicide among medical students, residents, and physicians in comparison with other careers also point to the existence of a mental health crisis within our profession[22-25]. For example, according to the Australian National Mental Health Survey of Doctors and Medical Students, which included over 14000 participants, 24.8% of doctors had thoughts of suicide in comparison to 13.3% of the general population and 12.8% of other professionals[26].

The evidence base around the effectiveness of mindfulness-based interventions has been growing over the years. A review of mindfulness-based programs in medical education concluded that despite the different designs of those programs, their results were uniformly positive among medical students and healthcare professionals and involved increases in empathy, self-compassion, and ability to focus, as well as decreases in stress, anxiety, and depressive symptoms[27].

Another recent systematic review focused exclusively on the effectiveness of mindfulness-based interventions on empathy in healthy populations and included 12 randomized clinical trials and 1 quasi-experimental study[28]. Its meta-analysis found a statistically significant positive standardized mean difference of 0.37 (95% confidence interval: 0.16 to 0.58) favoring the mindfulness-based interventions in improving empathy levels in comparison to controls. Importantly, 7 out of the 13 studies included in that review focused on subjects in medical-related occupations, and 4 studies on medical students.

Similarly, a meta-analysis of the most comprehensive systematic review conducted to date about the effectiveness of mindfulness-based interventions on stress levels in medical students found a pooled standardized mean difference of 0.37 (95% confidence interval: 0.24 to 0.50), favoring the mindfulness arm, in 18 studies[29]. In addition, a recent scoping review of mindfulness training for undergraduate health and social care students highlighted that, besides its positive effects on stress levels, those interventions were associated with improved student self-awareness, ability to attend to patients, peer cohesion, and group support, as well as student insights into the culture of health and social education[30].

Furthermore, it seems relevant to highlight that there is some initial evidence that there may be long-term benefits of mindfulness interventions among students. A randomized controlled trial of a 15-h mindfulness-based stress reduction intervention performed over 7 wk among 288 undergraduate medical and psychology students was associated with improved well-being and coping patterns up to 6 years after the intervention[31]. Lastly, a recent realist review of mindfulness-based interventions in a variety of workplaces, including 75 studies, suggested that the mechanisms behind the positive effects of those interventions involved awareness/self-regulation, acceptance/compassion, a sense of growth, feeling permitted to take care of oneself, and the promise of goal attainment[32]. Importantly, that review also emphasized the paramount role of a supportive environment in realizing the positive effects of mindfulness-based interventions.

As to the pathophysiological mechanisms underlying the effects of mindfulness-based practices, there is some evidence from the neuroscience field indicating that they are associated with neuroplastic changes in the insula, amygdala, anterior cingulate cortex, frontolimbic network, temporoparietal junction, and default mode network. These structures are related to the regulation of attention and emotion and change in perspective on self[33,34].

Finally, it is important to acknowledge that mindfulness-based practices had already made their first steps in medical education decades ago[27]. The University of Massachusetts Medical School has been offering a mindfulness-based stress reduction program for its students as part of its curriculum since 1985. Monash University in Australia integrated a mindfulness program into its core curriculum for all medical students in 2002 and expanded it into other faculties such as

Engineering, Law, and Psychology. Importantly, a 2014 survey found that 43 out of 140 medical schools accredited by the Association of American Medical Colleges in the United States had mindfulness integrated into their curricula<sup>[35]</sup>.

## CONCLUSION

The arguments described above do not imply that all questions about mindfulness practices and their role in medical education have been solved, nor that they are a mystic solution for all educational and mental health problems in this field. Instead, they highlight the current unprecedented opportunity to gather momentum, spread, and study mindfulness-based programs in medical schools around the world as a way to address some longstanding shortcomings of the medical profession and the health and educational systems upon which it is rooted.

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