

Stress, Burnout and Coping Strategies in Preclinical Medical Students

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Abstract

It is acknowledged that physicians do not seek the same expert aid for themselves as they would offer their patients. In their preclinical years, medical students appear to espouse comparable behavior. To many, medicine is described as a never-ending path that places the student under heavy stress and burnout from the beginning, leaving him/her vulnerable and with insufficient coping methods. Hence, the objective of this study is to 1) explore the prevalence of stress and burnout among preclinical medical students, and 2) propose solutions to decrease stress and burnout and improve medical education in the preclinical years. A detailed scholarly research strategy using Google Scholar, Scopus, Embase, MEDLINE and PubMed was implemented to highlight key themes that are relevant to preclinical medical students' stress and burnout. Stress varied among different samples of medical students and ranged between 20.9% and 90%. Conversely, burnout ranged between 27% and 75%. Methods that help in reducing the incidence of stress and burnout by promoting strategies that focus on personal engagement, extracurricular activities, positive reinterpretation and expression of emotion, student-led mentorship programs, evaluation systems, career counseling and life coaching should be adopted.

Keywords: Burnout, medical education, medical school, medical student, preclinical years, stress

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Introduction

Medicine is a never-ending path and a highly demanding career that appears to leave many medical students at the risk of stress and burnout. A gap in the literature exists regarding the assessment of stress and burnout among preclinical medical students. Although medical schools strive to support students during the training process and aim to graduate knowledgeable, skillful and professional doctors, studies suggest that medical students experience high rates of personal distress,^[1-15] with latent unfavorable consequences on academic performance,^[16-18] aptitude,^[19] professionalism^[20-27] and health^[12,28-32] [Figure 1]. There is proof that stress

and anxiety during medical school foresee future predicaments in physicians,^[13] which, in addition to individual torment, may unconstructively affect patient care.^[13] Therefore, the objective of this article is to:

1. Present the epidemiology and manifestations of stress and burnout among preclinical medical students, and
2. Propose solutions to decrease stress and burnout and improve medical education in the preclinical years.

To explore the central themes and epidemiology of preclinical medical students' stress and burnout reported in the literature, sources were identified by searching Google Scholar, Scopus, Embase, MEDLINE

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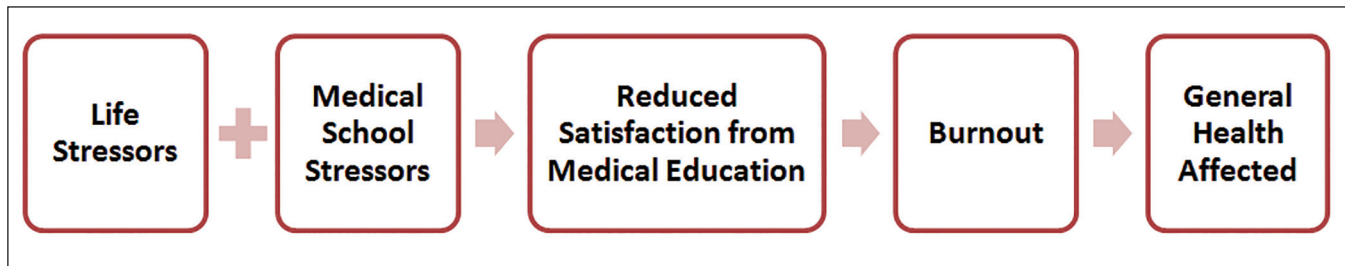


Figure 1: A model illustrating the relations between contributing factors and health outcomes of burnout among medical students

and PubMed for English language articles published between 1953 and 2015. We used the following search terms: Medical student AND stress, burnout, distress, ethics, medical education, professionalism, emotional exhaustion, cynicism or academic performance. Additional studies were identified from the reference lists of these articles. Articles were reviewed critically by authors and included as appropriate to provide readers with a current overview of the research on medical student stress and burnout in the preclinical years.

Stress

Stress is a psychological and physical reaction to the ever-increasing demands of life. To a degree, it is a normal part of medical education and can be a motivator for certain individuals; however, not all students find stress constructive.^[13] For many students, stress arouses feelings of fear, incompetence, uselessness, anger and guilt, and can be associated with both psychological and physical morbidities.^[33-35] Among medical students, stress has been reported to be due to academic demands, exams, an inability to cope, helplessness, increased psychological pressure, mental tension, excessive workload,^[36] curricular factors, personal life events and the learning environment.^[37-39] These factors can result in decreased life satisfaction,^[40] which in turn leads to unprofessional conduct, increased risk of suicidal ideation and serious thoughts of dropping out.^[41,42] The literature reports varying rates of stress among samples of preclinical medical students. Fares *et al.*^[43] rated stress among preclinical students from Lebanon at 62%. Sidik *et al.*,^[44] Zaid *et al.*^[45] and Fuad *et al.*^[46] reported stress prevalence that ranges between 41.9% and 46.9% in Malaysian medical students. Moreover, Mosley *et al.*^[8] and Ko *et al.*^[47] reported a stress prevalence of 57% among preclinical medical students in the US and Singapore, respectively. In the UK, Guthrie revealed a 35.4% stress prevalence among preclinical medical students.^[48] Similarly in India, Konjengbam *et al.*^[49] reported a 37% stress prevalence among undergraduate medical students. Other studies report lower medical student stress ranging between 20.9% and 29.6%.^[50-52]

Burnout

Burnout is another measure of physical exhaustion and mental distress, which is catalyzed primarily by occupational and professional demands. This syndrome of emotional exhaustion, depersonalization and low personal accomplishment culminates in decreased effectiveness at work.^[42] A broad range of professions that heavily involve human interactions, such as physicians,^[53,54] nurses^[55,56] and educators,^[57] experience burnout. Burnout is associated with decreased job performance^[58] and reduced job commitment^[56] and predicts stress-related health problems^[59] and low career satisfaction.^[60-62] It is well established in the literature that workload, lack of support and loss of control at times contribute to a sense of emotional exhaustion in those who endure medical education.^[42,43] In addition, feelings of reduced personal accomplishment, overwork and emotional commitment to medicine can lead to depersonalization.^[8] Hence, the development of burnout begins during the preclinical years, in which the setting is that of overwhelming work and facts to be learned with limited resources of time and memory, and continues throughout the clinical years.^[33,43,52]

Burnout and stress are symptomatically similar, with burnout attributed specifically to occupational or academic stressors.^[63] McManus *et al.*^[64] proposed that there is a cyclic relation between stress and emotional exhaustion, which suggests that heightened levels of stress and poor coping strategies may be key contributors in the development of burnout.

A study in Lebanon that measures burnout risk in preclinical medical students showed that 75% suffered from burnout.^[43] Another study from Spain revealed that 14.8% experienced burnout.^[65] The varying levels of stress and burnout in different countries can be attributed to the life stressors that vary from one region to another. In addition to academic and medical school stressors, socioeconomic, political, conflict-related and health-related factors contribute to the increased levels of stress and burnout. In Lebanon, a Middle Eastern country amid conflicts and regional instability,^[66-70] stress

Table 1: Stress and burnout levels in studies involving preclinical medical students between 1988 and 2015

Authors	Year	Number of medical students	Number of preclinical medical students	Stress (%)	Burnout (%)	Country
Fares et al. ^[43]	2015	165	165	62	75	Lebanon
Konjengbam et al. ^[49]	2015	299	40	37	—	India
Fuad et al. ^[46]	2015	762	450	46.9	—	Malaysia
Galan et al. ^[65]	2011	270	176	—	37.5	Spain
Dyrbye et al. ^[80]	2011	1846	—	58	—	US
Yusoff et al. ^[51]	2010	761	476	29.6	—	Malaysia
Dyrbye et al. ^[41]	2010	2682	1373	—	52.8	US
Santen et al. ^[39]	2010	194	194	—	33.3	US
Dyrbye et al. ^[42]	2008	2248	1201	—	49.6	US
Dahlin et al. ^[81]	2007	98	98	—	27	Sweden
Sreeramareddy et al. ^[52]	2007	407	239	20.9	—	Nepal
Zaid et al. ^[45]	2007	253	149	46.2	—	Malaysia
Dyrbye et al. ^[79]	2007	1694	892	49	47	US
Dyrbye et al. ^[78]	2006	1098	—	—	45	US
Aktekin et al. ^[3]	2005	119	119	47.9	—	Turkey
Moffat et al. ^[2]	2004	275	275	52.4	—	UK
Shaikh et al. ^[36]	2004	264	211	>90	—	Pakistan
Sidik et al. ^[44]	2003	166	105	41.9	—	Malaysia
Ko et al. ^[47]	1999	135	135	57	—	Singapore
Guthrie et al. ^[48]	1997	254	254	35.4	—	UK
Guthrie et al. ^[1]	1995	172	172	36	—	UK
Mosley et al. ^[8]	1994	162	—	57	—	US
Vitaliano et al. ^[10]	1988	312	312	25	—	US

and burnout levels are expected to be higher than in Spain, for example, where similar stressors are relatively non-existent.

Numerous studies note rates of burnout between 25% and 60% in a wide spectrum of health-related specialties.^[71-76] Nine US-based studies on burnout in medical students reported a prevalence ranging between 45% and 71%.^[4,38,40,42,77-81] Table 1 shows the prevalence of stress and burnout in studies that include preclinical medical students from 1988 until 2015.

Coping Mechanisms and Proposed Solutions

Students use various coping mechanisms to process stress [Figure 2]. Strategies that involve engagement such as problem solving, positive reinterpretation and expression of emotion, facilitate student adaptation,^[2,8,33,43,82] which reduces anxiety and depression and their effects on mental wellbeing^[59] and physical health.^[82] Extracurricular activities involving music and physical exercise have been associated with decreased stress and burnout levels in preclinical medical students.^[43] Unfortunately, few students seek help,^[83] and distress often continues into residency and beyond^[13] where it may have adverse effects on the quality of patient care delivered.^[84,85] Therefore, it is critical for medical



Figure 2: Methods and strategies that help in reducing stress and burnout in preclinical medical students

educators to understand the prevalence and severity of student stress and burnout, the potential adverse personal and professional consequences and the institutional factors that can affect student health from an early time.

Student-led support programs that are designed to promote the mentorship of junior students by senior students are recommended because they appear to lower student stress and ultimately burnout. Although the Association of American Medical Colleges urges medical schools to foster relationships between faculty members and students to promote a positive learning environment,^[86] we agree with Wolf *et al.*^[87] that student-guided programs may present a stronger source of support and promote positive strategies for coping with stress. Mouret^[88] proposed that senior medical students can more easily relate to challenges encountered by junior students. Many studies have shown that such events help in easing anxiety and stress and preventing burnout.^[14,89-92]

Linzer *et al.*^[93] and Freedborn *et al.*^[94] discussed the importance of autonomy as a central component of physician job satisfaction. Dyrbye *et al.*^[95] believed that autonomy was likely to be important for medical students as well. Students bring unique perspectives to curriculum committees and provide them a sense of ownership in their educational experience.^[95]

The evaluation system used to assess student performance can also have a massive effect on the learning environment. Robins *et al.*^[96] evaluated the effect of changing from numerical and letter grading schemes to a pass-fail grading system on student performance and satisfaction; they reported that students' satisfaction with the evaluation system and learning environment improved with the pass-fail approach. Although certain medical schools foster a pass-fail evaluation system for the preclinical years, we believe that the competitive mentality of the students that has developed during the premedical years continues throughout the preclinical years and can lead to anxiety and distress.

We agree with Stewart *et al.*^[33] and Park and Adler^[82] that early poor academic performance in medical school, mental health problems and avoidant coping mechanisms may place students at risk of distress both during and after medical school. We suggest that medical schools offer career counseling, life-coaching and confidential resources covered by the university's health insurance plan to help these students. We also believe that student-led support groups, discussed earlier, can help students in processing conflict, raising self-awareness and nurturing empathy. Maslach^[97] added that peer discussion groups also provide opportunities for students to express, analyze and share feelings, which decreases the likelihood of burnout. Pololi and Frankel^[98] asserted that shared reflections helped students in realizing that their struggles were common and provided an insight into how colleagues solved similar problems.

More work can also be done to improve the stress and burnout conditions of preclinical medical students. Parkerson *et al.*^[14] emphasized the importance of encouraging students to promote personal health with regular physical activity and adequate sleep. In addition, Wolf^[99] and Gaber and Martin^[100] believed that students should be provided with appropriate periods of rest during holidays and between modules to allow them to dissociate from the rigors of education and training. The transformation of medical students into medical doctors who are care-giving, compassionate, knowledgeable, well-appearing, and healthy requires improving the living and learning conditions during their medical education.^[62]

Conclusion

This article implemented a detailed scholarly research strategy to highlight key themes that are relevant to preclinical medical students' stress and burnout by introducing their definitions and exploring their prevalence and causes. In addition, this article proposed expert strategies and theories to help in reducing the incidence of stress and burnout and in promoting well-being among medical schools. Stress varied among the different samples of preclinical medical students and ranged between 20.9% and >90%, whereas the burnout prevalence rates ranged between 27% and 75%. As a result of work overload, overwhelming academic pressures to learn much within a limited time span and a sense of emotional commitment to medicine as a future career, burnout was found to manifest early among preclinical medical students; it then continues through the clinical years. High stress and burnout levels are associated with decreased life satisfaction, serious thoughts of dropping out and suicidal ideations; these cyclically lead to poorer performance, reduced commitment and higher levels of stress. It is particularly important to propose and implement strategies to reduce the incidence of stress and burnout among preclinical medical students to strengthen their commitment to medicine as a profession and allow for better future patient care. Strategies that focus on personal engagement, positive reinterpretation and expression of emotion, support programs delivered by senior students and extracurricular activities (mainly musical and physical activities) are among the coping mechanisms that are needed to reduce anxiety and thus, stress and burnout. It is the duty of medical educators to facilitate the utilization of such coping mechanisms to allow for smoother preclinical years and eventually more fruitful clinical years with physicians dedicated to providing the best care and commitment to patients.

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Conflicts of interest

There are no conflicts of interest.

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