



Current Directions in Medical Student Well-Being

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Abstract

Traditionally, topics pertaining to student well-being have been conspicuously sparse throughout medical school curricula. This contradiction has been well documented in human health literature, and the academic medical community has developed strategies to respond to this need. A literature review of terms pertaining to medical student wellness was conducted to generate 34 unique articles. The articles were categorized based on three common themes: mental health, diversity, and work-life balance. In mental health, institutional changes such as professional and peer-to-peer counseling have demonstrated promising improvements. The advent of pipeline programs and student research fellowships has increased learning environment diversity. Finally, wellness programming in recreation and the arts, as well as academic shifts to pass-fail grading, have proven successful in improving work-life balance. While many of these initiatives have enriched the mental well-being of medical students, there remains a critical need to standardize these practices nationally.

Introduction

“I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.”

These enchanting words, from the oath of Louis Lasagna, are read aloud every year by thousands of awestruck new medical students during their white coat ceremonies. The oath maker pledges to care for patients with the sincerity, empathy, and kindness that all of us hope to receive from a physician. With these uplifting words, students enter medical school hoping to become the well-rounded physicians that the oath describes.

Troublingly, recent research suggests that medical education may actually impede learners

from developing some of the humanistic qualities described in the oath, ultimately affecting the quality of future patient care. A 2006 study by Dyrbye et al. demonstrated that medical students enter training with a similar mental well-being profile as their age-matched peers but leave school with less empathy and humanitarianism than they entered with¹. Of further concern, these medical students are also more depressed and report more suicidal ideation than their peers who did not go to medical school. Other studies have shown that the documented decrease in student empathy is associated with a decline in clinical performance², and that these disparities in well-being are amplified in women and groups traditionally underrepresented in medicine³.

These findings are at odds with the medical community's goal of training caring, competent

physicians who will provide care to a diverse population in the future.

As more research comes to light concerning the changes in student well-being associated with current training practices, the medical establishment is working vigorously to turn the dial. Now armed with self-awareness and documented studies, the medical community is working to improve the educational experience of future physicians so that they can better care for their patients and for themselves.

Purpose

This document is intended as an overview of the current literature on medical student well-being and aims to address some of the innovations currently employed to improve wellness for medical students. We hope this document will help medical students understand these relevant issues so they can better engage in important national conversations and initiate change at their own institutions. Although resident and faculty training contribute significantly to student and physician well-being, the scope of this document is limited to student wellness in medical education programs.

Methods

A literature review was conducted using the following online platforms: PubMed, JAMA archives, and Academic Medicine archives. The terms “medical student wellness,” “medical student AND mental health,” “medical school AND mental health,” “medical students AND work-life balance,” and “medical student well-being” were used to generate relevant articles.

Because our initial review of the literature alluded to gender, racial, and sexual orientation disparities within medical student well-being², we chose to research diversity in medical education and its effects on wellness. To generate articles

regarding diversity, the terms “medical student diversity,” “minority medical student,” and “minority faculty” were used. The titles and abstracts of the most applicable articles were read and further reviewed for relevance to pre-doctoral medical education.

According to this protocol, the search generated 27 articles through the wellness search terms and 7 through the diversity search terms. The selected articles were then logged into an Excel spreadsheet. The committee divided the papers into groups focused on mental health, diversity, and balance in medical school. Papers categorized into mental health deal primarily with psychological and psychiatric sequelae of the student experience. Papers categorized into diversity deal with race, gender, sexual orientation, and class concerns present in the student experience. Papers that describe major curricular changes designed to address work-life balance were placed in the balance section. Some papers contain material relevant to multiple categories. These papers were assigned to an appropriate primary category and were cross-referenced in the other topic summaries. From each article, the following data were collected: study name, objectives, sample size and characteristics, type, results, and limitations.

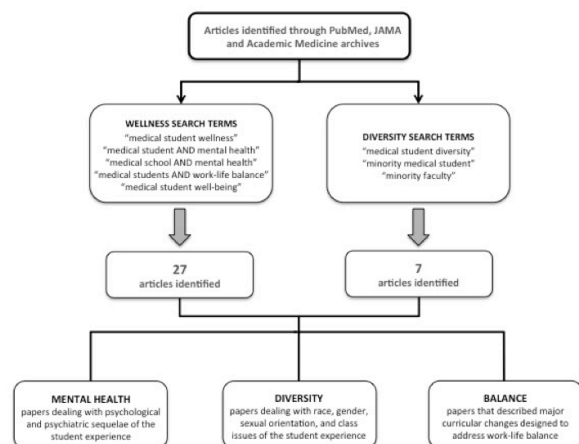


Figure 1: PRISMA diagram of literature review search criteria. Overall, 34 articles met search criteria and underwent a full review. Three principal categories: “mental health”, “diversity”, and “balance” were established from this review and were used to stratify and organize the content of the manuscript.

Mental Health	Diversity	Balance
15 Articles	7 Articles	12 Articles
1 systematic Review, 40 studies	1 systematic review, 28 studies	1 systematic review, 13 studies
5 multi-site cross-sectional studies	4 multi-site cross-sectional studies	3 multi-site cross-sectional studies
3 single-site cross-sectional studies	1 single-site qualitative case studies	1 single-site cross-sectional study
1 prospective multi-center single-cohort study	1 commentary	3 single-site qualitative case studies
2 prospective single-site single-cohort studies		4 commentaries
2 prospective single-site multi-cohort studies		
1 commentary		

Figure 2: Number of articles attributed to mental health, diversity and balance categories for literature review, with breakdown by type of study.

Mental Health

Pre-doctoral medical education has been linked to an erosion of medical students’ mental health. In a 2007 cross-sectional cohort study across 7 medical schools with 4,287 participating medical students, 49.6% of students reported ‘burnout’, a syndrome marked by emotional exhaustion, depersonalization, and a low sense of personal accomplishment⁴. Of further concern, 11.2% of respondents reported suicidal ideation in the past year^{1, 4}. Another multiple-site survey study with 2,246 medical student respondents indicated that 82% experienced some form of distress, including depression, suicidality, depression or thoughts of dropping out of medical school⁵. Of particular concern, a decrease in empathy and humanitarianism during the medical school years has also been well-documented². A recent web-based survey instituted by the University of Michigan in 2010 noted that the decline occurred as students entered their clinical clerkships⁶.

These findings are associated with negative outcomes for medical students as they struggle to care for themselves and for their patients². Burnout has been shown to be associated with higher levels of suicidal ideation, increased thoughts of dropping out of medical school, and unprofessional behavior such as lack of empathy^{7,5}. Because empathy is a predictor of physician competency², the decreased capacity for empathy may imply that medical education is

actually compromising future physicians’ capabilities to provide high quality patient care.

Factors that affect the experience of medical students have been moderately studied. The heavy workload, high student debt, competitive academic environment, and exposure to human suffering have been implicated as elements contributing to student burnout. Further compounding these problems, students are often taught in clinical settings by doctors who may be struggling with depression, burnout, and stress themselves. The “hidden curriculum” of medicine, in which students emulate the behaviors of their superiors, normalizes and exacerbates these experiences of cynicism and stigma towards mental health care, ultimately leading to exhaustion^{8,9}. Additionally, medical students commonly report experiencing verbal mistreatment by their superiors¹⁰. This form of mentor-driven mistreatment has been shown to influence students’ specialty choice, erode mental health, and adversely affect patient care.

Notably, some protective factors against stress have also been identified. Being married or partnered has been shown to be a protective factor for student mental health¹. Additionally, a study of three medical student cohorts at Vanderbilt University School of Medicine provided some evidence that exercising at least three times per week can also be protective¹¹.

Most medical schools have taken steps to mitigate student distress, and a few institutions have comprehensively redesigned the entire medical school experience. Almost every medical school now has a center for student counseling, where initiatives primarily focus on improving access to mental health services, educating students on mental illness, and reducing the stigma of struggling with mental health¹². Most schools offer a certain number of complimentary therapy sessions, although according to a 2011 study published in JAMA, only 22% of schools offer an unlimited number of sessions¹³. Of note, federal law requires that student mental health documents remain

confidential and that they do not influence medical student academics.

A report by Redwood et al. demonstrated that a "buddy" program at Oklahoma State University where older medical students mentor entering students decreased student stress by helping them process conflicts safely and increase their self-awareness¹⁴. Other peer-to-peer programs have been shown to be helpful in reducing the stigma associated with mental health concerns, in connecting students to resources, and in increasing class cohesion¹⁵. After the suicide of a physician at UC San Diego School of Medicine, UCSD launched the HEAR program, a self- and peer-referral mental health program. This program has also received positive reviews from the student body and has contributed to decreasing stigma regarding mental health care at UCSD¹⁶.

Diversity

Interestingly, diversity and cultivation of empathy may be related. Research has suggested that increasing minority representation may be protective against the documented decline in empathy seen in all medical students¹⁷. Greater diversity has been also shown to enrich classroom discussion, to better prepare all students in providing culturally competent care, and to strengthen support for healthcare equity¹⁷. However, despite the impressive benefits of diversity on medical education, racial/ethnic, class, gender and sexual orientation minorities are still underrepresented in medicine. Furthermore, the personal learning experience of students from diverse backgrounds in medical education tends to be quite different than that for other students³.

The AAMC formally defines underrepresented minorities (URM) as "racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population." These groups, which include African Americans, Mexican Americans, Puerto Ricans, American Indians/Alaska Natives, and Pacific Islanders, make up more than 25%

of the U.S. population but less than 13% of students enrolled in allopathic medical schools. A literature review on social and learning environments experienced by URMs in 2013 demonstrated that URMs who are enrolled in medical schools individually experience a more negative learning environment, receive less social support, are subject to discrimination and racial harassment, demonstrate poorer performance on standardized exams, and are ultimately less likely to remain in medical school when compared to non-minority peers³.

In light of these troubling findings, several initiatives have been proposed to create a more supportive learning environment for URMs. These include large-scale endeavors such as support for pipeline programs that increase the number of URM students entering medical school and the incorporation of diversity into the core mission of the institution³. Other small-scale suggestions for improvement include creating mentoring programs for URMs, providing URMs with earlier exposure to career pathways in medicine, and the expansion of research fellowships and grants targeting minority medical students. For example, the Program in Medical Education (PRIME) program is a system-wide initiative at University of California medical schools that recruits medical students from diverse backgrounds and provides supplemental education for these students to become physician-leaders for underserved populations¹⁸. These programs are particularly critical in promoting careers in medical leadership and academic medicine, areas where URMs face even greater barriers¹⁹. Furthermore, a handful of schools nationwide have offered admission to undocumented students under the Deferred Action for Childhood Arrivals (DACA) designation, which allows these students to stay in the United States up to two years for study without citizenship²⁰.

In addition to racial, ethnic minorities, women also face barriers to medical education. Although nearly 50% of U.S. medical students are women, female medical students continue to face gender stereotyping and discrimination. Female medical

students have higher attrition rates than male medical students and are also more likely to doubt whether they should have chosen the field of medicine²¹.

In a highly cited 2002 cross-sectional study conducted at 14 US medical schools, 83% of female medical students reported experiencing gender discrimination and sexual harassment, especially on core clerkships²². Of the female medical students who experienced discrimination, 45% reported that it affected their future specialty choice, and 25% reported that it affected their residency rankings. A 2009 qualitative study suggested that female medical students felt unprepared to handle uncomfortable situations they encountered on wards because the training environment values masculine traits over feminine traits. They also believed that male medical students formed more consequential and career-advancing bonds with attending physicians²¹. In another study, female medical students' perceived discrimination or harassment was associated with increased cynicism, poor self-esteem, and higher rates of depression²³.

Many existing initiatives supporting gender diversity in medicine have focused on developing policies regarding sexual harassment or increasing recruitment of female faculty. However, data suggests that gender discrimination extends beyond sexual harassment and stems from a "hidden curriculum" of distinct male and female roles and expectations²¹. Proposed solutions to these ingrained stereotypes include mentoring programs between female medical students and faculty members, frequent "check-ins" to encourage students to speak with administrators about gender discrimination, and developing 360-degree evaluations which would allow medical student performances to be assessed by multiple members of the community, including patients, nurses, and support staff²¹.

More recently, diversity research has focused on sexual and gender minorities (SGMs). SGMs include non-heterosexual and transgender

individuals, including those who identify as LGBT. An estimated 15.8% of medical students identify as SGMs²⁴, although it should be noted that survey response rates in this domain are very low. Of the surveyed SGMs, 30% report that they concealed their sexual identity during medical school and cited this concealment as stemming from fear of discrimination and limitations in residency and career options. This concern negatively impacts both physical and mental well-being, and has been attributed to increased rates of depression, anxiety, eating disorders, and substance abuse for SGMs. Proposed strategies for limiting SGM discrimination include institutional policies, such as same-sex partner benefits and designated gender-neutral restrooms, as well as curricular changes like cultural competency and competency-based evaluation²⁴. Other strategies, such as the recent addition of sexual orientation and gender identification questions to the AAMC student questionnaires, serve to increase SGM recognition and provide much-needed data on the SGM experience during medical school²⁵.

To better direct future change, more research is needed on the precise ways URMs and disadvantaged students contribute to the educational environment. Additionally, more research is needed on the impact of socioeconomic diversity on medical education, as the research collected for this paper did not address this important issue. The medical community would benefit from additional efforts to increase diversity in medical education, especially in regards to these disadvantaged groups.

Balance

As an increasing body of research documents the deleterious effects of the current medical training environment on students, medical schools nationwide have produced major cultural and curricular changes to mitigate these negative influences.

One notable example is Vanderbilt University, which has instituted a longitudinal program over

the course of a four-year curriculum. The Vanderbilt Medical Student Wellness Program comprises three components: advising and mentoring, leadership and peer-to-peer programming, and personal growth of doctors-in-training. Students are assigned to advisory colleagues that not only serve as a network for peer-to-peer advising, but also as a venue for non-academic activities that promote a more balanced lifestyle. This program has been remarkably successful in engaging the student body and has enjoyed considerable student satisfaction ratings¹².

Instead of instituting a multi-year program, many schools have expanded their student counseling centers to offer student wellness and balance services. These centers may offer services, including counseling, meditation and cooking lessons, and massage sessions²⁶. In particular, some institutions offer mindfulness-based stress reduction programs, which teach a form of modified meditation that has been shown to reduce anxiety and overall distress in students and physicians²⁷. These programs are usually voluntary, though one program at St. Louis University mandates participation in a resilience and mindfulness program as part of the curriculum. Exit surveys at the school indicate that this change has been positively evaluated and has contributed to decreased rates of depression in the medical student body¹².

Some schools have made simple yet fundamental changes to their curriculum in the hopes of decreasing academic pressure on students to improve well-being. Specifically, studies have shown that pass/fail grading systems increase student satisfaction with their medical education and do not change student performance in comparison to letter-grading systems²⁸. This grading model has now been adopted by many schools²⁸. A small single-institution study demonstrated that the problem-based learning format, as opposed to the traditional lecture-based learning format, may result in less depression, anxiety, and hostility in medical students²⁹. Furthermore, some institutions limit the amount of time that students

spend in lectures during their preclinical years or set aside days during clinical clerkships where students can take care of health appointments. These subtle yet innovative changes to medical curriculum have proven impactful upon student well-being²⁶.

Discussion

Recent data on the well-being of medical students has revealed a startling picture of the modern medical learning environment. Medical school's negative impact on student mental health, including the pronounced disparity in student health that students of underrepresented backgrounds face in these areas, is undeniable. However, it is also clear that many medical schools and residency programs have risen to the challenge of addressing these data by looking for ways to support students through the process of becoming a doctor. This review has explored many avenues for concrete solutions and provided case examples of successful programs in the medical literature.

It is widely accepted by the medical community that much more could be done to improve the learning environment for future physicians. The current literature provides many studies about school-specific programs targeting wellness, but a comprehensive analysis of effective practices in the field at large has not been completed to date. A consensus has not been reached as to how to improve wellness in medical education effectively, and papers that analyze best practices are needed to direct medical schools' efforts for improvement. From our analysis, we will now identify some areas of improvement here.

The structure of medical education has been largely unchanged since the 20th century, and many speculate that a change from the standard curriculum, two years of pre-clinical work followed by two years of clinical work, would help more students thrive. Indeed, it has been shown that a medical school related decrease in empathy begins during the two years of clinical work in the standard curriculum². Several

medical schools are working to re-design the entire medical school experience in an effort to produce better-prepared and empathetic physicians.

Furthermore, we could not find studies addressing the impact of medical school debt on medical student psychology in our literature search. This finding may indicate that our search parameters could have been broadened to capture studies referencing student debt in particular. However, a more likely conclusion is that the body of work regarding financial burden on student well-being needs to be further explored. Median student debt is approximately \$160,000 over the course of a student's education, and this may have a sizable impact on any given student's well-being. The decline in well-being for medical students throughout their education is multifactorial, and a complete characterization of these factors is needed for medical schools to adequately address them.

The literature clearly demonstrates that women, URM, and SGMs experience medical school in a fundamentally different way. To effectively guide continuing medical school reform, more research is needed on the precise ways URM and disadvantaged students contribute to the educational environment. Notably, none of the papers in our review addressed socioeconomic disparities in wellness. The medical community would benefit from increased diversity in medical education. In this way, the healthcare workforce better reflects the population it is serving. Though current interventions include harassment prevention and increased recruitment of minority groups into medicine, many schools are including alternative approaches, such as mentoring and curricular changes to increase the visibility of minorities, culture competence, and resilience training^{18, 20, 21}. Medical schools and

residency programs around the country are experimenting with programs to address these issues in multifaceted ways.

Conclusion

Data from studies of medical student wellness in the literature are disconcerting. Though medical schools have produced many innovative programs and curricular changes in order to improve the environment for future physicians, far more research and reform is required to mitigate the major effects on student well-being. To better assist institutions in these commendable pursuits, interventions should be monitored and their efficacy studied in order to develop better guidelines and best practices to direct future curricular changes. Student voices, both at home institutions and on a national scale, will become indispensable in these efforts, playing an invaluable part in influencing interventions that effectively help themselves and their colleagues.

Finally, the issue of student wellness is becoming a nationally recognized topic. Organizations such as the AAMC have consistently addressed student well-being as an issue of the utmost importance and have supported student involvement in debates about medical education. National platforms for disseminating effective practices and fostering inter-institution collaboration will become central in developing a model for medical education that actively promotes student well-being and diversity. Although the current literature and research reveal many areas for improvement, it is encouraging that the medical education community is already looking at innovation strategies to more effectively produce the compassionate, caring physicians that the Oath of Louis Lasagna encourages medical students to be.

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Conflicts of Interest

These authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

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