

National Survey of Wellness Programs in U.S. and Canadian Medical Schools

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Abstract

Purpose

To describe the prevalence and scope of wellness programs at U.S. and Canadian medical schools.

Method

In July 2019, the authors surveyed 159 U.S. and Canadian medical schools regarding the prevalence, structure, and scope of their wellness programs. They inquired about the scope of programming, mental health initiatives, and evaluation strategies.

Results

Of the 159 schools, 104 responded (65%). Ninety schools (93%, 90/97) had a formal wellness program, and across 75 schools, the mean full-time equivalent (FTE) support for leadership was 0.77 (standard deviation [SD] 0.76). The

wellness budget did not correlate with school type or size (respectively, $P = .24$ and $P = .88$). Most schools reported adequate preventative programming (62%, 53/85), reactive programming (86%, 73/85), and cultural programming (52%, 44/85), but most reported too little focus on structural programming (56%, 48/85). The most commonly reported barrier was lack of financial support (52%, 45/86), followed by lack of administrative support (35%, 30/86). Most schools (65%, 55/84) reported in-house mental health professionals with dedicated time to see medical students; across 43 schools, overall mean FTE for mental health professions was 1.62 (SD 1.41) and mean FTE per student enrolled was 0.0024 (SD 0.0019). Most schools (62%, 52/84) evaluated their wellness programs; they used the Association of

American Medical Colleges Graduation Questionnaire (83%, 43/52) and/or annual student surveys (62%, 32/52). The most commonly reported barrier to evaluation was lack of time (54%, 45/84), followed by lack of administrative support (43%, 36/84).

Conclusions

Wellness programs are widely established at U.S. and Canadian medical schools, and most focus on preventative and reactive programming, as opposed to structural programming. Rigorous evaluation of the effectiveness of programs on student well-being is needed to inform resource allocation and program development. Schools should ensure adequate financial and administrative support to promote students' well-being and success.

Medical students matriculate with better mental health indicators than similarly aged peers, yet they graduate with higher rates of burnout, depression, and suicidal ideation.¹⁻⁵ Structural factors related to the medical school experience, including demanding curricula and evaluation systems, play an important role.⁶ In addition, the culture of medical training (e.g., the hidden curriculum, competitiveness, stoicism) and personal factors (e.g., life events, individual coping strategies) affect student well-being.⁶ The mental distress of medical students is particularly concerning given findings

that psychologically distressed students are more prone to making medical errors and are more likely to experience professionalism lapses and leave medical training than peers not experiencing distress.⁷⁻¹² Over the past decade, many medical schools have developed student wellness programs to address these mounting concerns.¹³

The Liaison Committee on Medical Education (LCME), recognizing the need for student support, has called for “programs to promote well-being and to facilitate adjustment to the physical and emotional demands of medical education”¹⁴; however, to date, few investigators have conducted research on the effect of such programming to guide interventions and resource allocation.¹⁵ As wellness programs have evolved, 4 areas for intervention have emerged:

1. Preventative programming to equip students with skills to manage the challenges of medical education and enhance their physical, social, emotional, and financial health (e.g., stress management, meditation),

2. Reactive programming to support and direct distressed students to resources (e.g., peer mental health support),
3. Structural programming to address curricular issues (e.g., pass/fail grading), and
4. Cultural programming to demonstrate institutional support of student well-being (e.g., alignment of policies with wellness priorities).

Little, however, is known about either the scope of existing wellness programs or the distribution of programming within these 4 areas.^{13,15-17}

Authors of a 2019 study of strategies to promote medical student well-being at 27 U.S. medical schools reported a wide range of programming and variability in resources, infrastructure, and evaluation strategies.¹⁵ While these findings helped to describe the existing landscape, the small sample size limits the usefulness of the study. In contrast, in this study, we have aimed to survey all LCME-accredited U.S. and Canadian medical schools to better

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define the prevalence of their wellness programs and to describe the structural aspects of their programs, the scope of their programming, the type and extent of their mental health initiatives, and their strategies for evaluation.

Method

Survey development

We conducted a literature review on medical student well-being, examining research published from 2000 through 2018, to inform the development of our survey. For our study, we defined a wellness program, based on our literature search,^{13,18} as a “program overseen by a faculty or staff member or committee which addresses medical student well-being” and which “supports students through events and resources to promote physical, psychological, financial, academic, and social well-being.” The survey assessed whether schools had a formal wellness program, and it explored the structural aspects of programs, the scope of programming, the availability of mental health initiatives, and strategies for evaluation (see Supplemental Digital Appendix 1 at <http://links.lww.com/ACADMED/B69>). Based on the literature review,^{13,17,19–22} we developed a framework to describe 4 core components of wellness programs and structured the survey to assess for (1) preventative programming, (2) reactive programming, (3) structural and curricular programming, and (4) cultural programming to support student well-being (Figure 1).

We piloted the survey with 12 student affairs deans and wellness directors at a

national meeting of medical educators to solicit feedback. We incorporated suggestions to shorten the instrument, address mental health interventions, and clarify focus areas. The final survey contained 47 items, including Likert-scale, multiple-choice, and free-response questions (see Supplemental Digital Appendix 2 at <http://links.lww.com/ACADMED/B69>).

Participants

We identified all U.S. and Canadian medical schools accredited by the LCME as of June 1, 2019, and we collected school-related data (i.e., school size and school type [public or private]) through publicly available resources.^{23–29} We identified a wellness director, if listed, as the primary contact, and we designated student affairs deans as the secondary contact unless no wellness director was identified (in which case the student affairs dean became the primary contact). We identified email addresses for contacts by searching medical school websites.

Survey distribution

In July 2019, one of us (W.W.L.) invited the primary contact at each school, via email, to participate in the survey using REDCap (v8.9.2, 2019 Vanderbilt University). REDCap is a secure application for managing online surveys. The email encouraged recipients to forward the survey to the colleague at their institution who was best suited to complete the survey. We sent nonresponding primary contacts and, when available, nonresponding secondary contacts reminders at 2, 3, and 4 weeks. If we received more than one survey

response from a school, we included the more complete survey. We offered participants who completed the survey the option of entering a raffle to win 1 of 10 \$100 gift cards. The University of Chicago Institutional Review Board (IRB19-0692) reviewed the study and deemed it exempt.

Data analysis

We exported data from RedCAP to Stata 16 (Stata Corp, College Station, Texas) for statistical analysis. For 5-point Likert scale questions, we combined and dichotomized responses of ≥ 4 (e.g., we analyzed and reported agree and strongly agree as agree). We used chi-square, Kruskal–Wallis, Mann–Whitney, and Fisher’s exact tests to compare the characteristics of responding and nonresponding schools and to explore the associations among the following:

- school size,
- wellness budgets,
- full-time equivalent (FTE) support for faculty leadership in wellness,
- program evaluation,
- presence of in-house mental health provider, and
- student satisfaction with wellness programming.

We used unpaired *t* tests and analyses of variance (ANOVAs) to explore differences in FTE support dedicated to wellness and FTE support dedicated to in-house mental health professionals as a function of school demographics. We used logistic regressions to study the association between outcomes (existence of formal wellness programs or having an in-house mental health professional) and dependent variables (region as determined by the Association of American Medical Colleges or AAMC [central, northeastern, western, and southern], school type, and school size).

Results

Of 159 LCME-accredited medical schools, individuals from 104 (65%) responded. These 104 respondents identified themselves as deans of students (49%, $n = 51$), wellness directors (40%, $n = 42$), student affairs directors (9%, $n = 9$), or other (2%, $n = 2$). Response rates were consistent throughout AAMC regions, school types, and school size. Of the 104 medical schools represented,

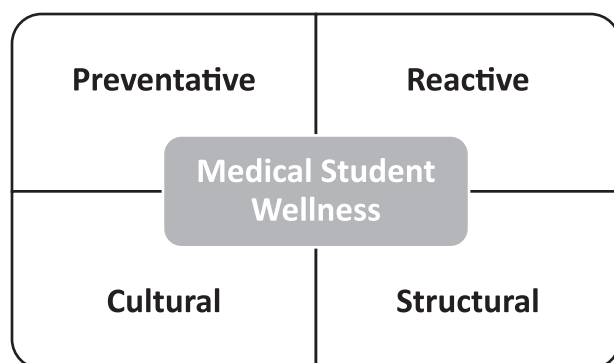


Figure 1 Framework for medical student wellness programs. Medical student wellness programs consist of programming to address preventative, reactive, cultural, and structural elements of well-being. Preventative programming proactively addresses stressors of medical education. Reactive programming connects distressed students to support resources. Structural programming addresses the curriculum or learning environment. Cultural programming addresses institutional and student perspectives on wellness programming.

64 (62%) were public, 60 (58%) were from the AAMC northeast and southern regions, and 55 (53%) enrolled over 641 students (Table 1). Although 104 schools participated in the survey, response rates for individual questions varied.

Prevalence of formal wellness programs

Ninety-three percent (90/97) of responding medical schools reported a formal wellness program. The top 3 reasons schools cited for creating a wellness program were (1) to respond to national trends (74%, 70/95), (2) to act on student interest (59%, 56/95), and (3) to meet LCME accreditation standards (38%, 36/95). Of the 7 schools without a wellness program, 4 (57%) reported plans to implement a program within the next academic year. We detected no significant association between the existence of a wellness program and school type, region, or school size.

Structural aspects of wellness programs

Leadership. Of 89 respondents answering the relevant question, 48 (54%) indicated the wellness program was led by medical school staff; 36 (40%) indicated leadership by deans, faculty, and medical students; and 14 (16%) indicated wellness program leaders included those in “other” roles. Of the 75 schools (72% of 104) with FTE support for leaders dedicated to wellness, the mean FTE support was 0.77 (standard deviation [SD] 0.76). We detected no significant difference between public and private institutions ($P = .87$), by AAMC region ($P = .41$), school size ($P = .46$), or by wellness program budget ($P = .15$). Wellness committees were reported by 78% (69/88) of schools (Table 1).

Budget. Across the 88 schools responding to the relevant question, annual budgets for wellness programs ranged from \$0 to \$180,000. Nearly a quarter of these 88 schools (24%, $n = 21$) reported an annual budget of < \$5,000, 19% ($n = 17$) reported a budget of \$5,000 to \$10,000, 24% ($n = 21$) reported a budget of \$10,001 to \$25,000, 9% ($n = 8$) reported a budget of \$25,001 to \$50,000, 15% ($n = 13$) were unsure, and 5% ($n = 4$) reported “other.” We detected no significant relationship between wellness program budget and public versus private status or school size (respectively, $P = .24$ and $P = .88$) (Table 1).

Scope of programming

According to the 85 respondents who answered the relevant question, most schools have adequate preventative, reactive, and cultural programming (respectively, 62% [$n = 53$ schools], 86% [$n = 73$], and 52% [$n = 44$]). In contrast, the majority of these respondents (56%, $n = 48$) reported too little programming around structural and curricular initiatives (Figure 2). Table 2 summarizes the scope of programming at responding schools.

Preventative programming. According to the 84 respondents who answered the relevant questions, the most common types of preventative programming focused on mental health (endorsed by 83 respondents [99%]), physical health (endorsed by 81 respondents [96%]), and academic support (endorsed by 80 respondents [95%]). Specific programming tailored to facets of mental health included self-care and meditation (both endorsed by 69 [82%]), burnout (63 [75%]), and resiliency (62 [74%]). Many schools also reported programming tailored for specific student groups, including students underrepresented in medicine (69 [82%]), women (64 [76%]), and LGBTQ students (60 [71%]).

Reactive programming. Student accessibility to faculty support and to staff support (e.g., ease of scheduling appointments, convenient office hours) was reported as very good/excellent by, respectively, 91% (78/86) and 85% (71/84) of respondents. Student access to student counseling services, to student disability services, and to student health services was reported as very good/excellent by, respectively, 71% (61/86) of respondents, 69% (59/85) of respondents, and 67% (58/86) of respondents.

Structural or curricular programming. Of the 84 respondents answering the relevant question, a majority reported preclinical pass/fail grading (81%, $n = 68$), peer mentoring (75%, $n = 63$), faculty advisors (74%, $n = 62$), and duty hours limitations during clerkships (67%, $n = 56$). Less common initiatives included scheduled time off from clerkships (37%, $n = 31$), no Gold Humanism Award (12%, $n = 10$), pass/fail grading on clerkships (10%, $n = 8$), no Alpha Omega Alpha (AOA) Honor Society (6%, $n = 5$), and no shelf exams (5%, $n = 4$).

**Table 1
Prevalence, Characteristics, and Structure of Wellness Programs of 104 U.S. and Canadian Medical Schools Participating in the National Survey of Wellness Programs, 2019**

Characteristic	No. (%) of medical schools
A wellness program is available	
Yes	90/97 (93)
No	7/97 (7)
School type²⁵	
Public	64/104 (62)
Private	40/104 (38)
Region²⁶	
Central	29/104 (28)
Northeast	30/104 (29)
Southern	30/104 (29)
Western	15/104 (14)
Enrollment^{27,28}	
≤ 320	9/104 (9)
321–480	20/104 (19)
481–640	20/104 (19)
641–800	28/104 (27)
> 800	27/104 (26)
Leadership of student wellness program provided by	
Medical school staff	48/89 (54)
Deans	36/89 (40)
Faculty	36/89 (40)
Medical students	36/89 (40)
Other	14/89 (16)
Schools with salary support for wellness program leadership^a	
	75/104 (72)
A wellness committee is present	
Yes	69/88 (78)
No	19/88 (22)
Annual budget for wellness program^b	
Other	4/88 (5)
< \$5,000	21/88 (24)
\$5,000–10,000	17/88 (19)
\$10,001–25,000	21/88 (24)
\$25,001–50,000	8/88 (9)
> \$50,000	4/88 (5)
Unsure	13/88 (15)

^a100% full-time equivalent (FTE) is salary support for one full-time faculty member. Mean FTE support across the 75 schools with salary support is 0.77 (standard deviation 0.76).

^bDoes not include salaries of faculty and staff.

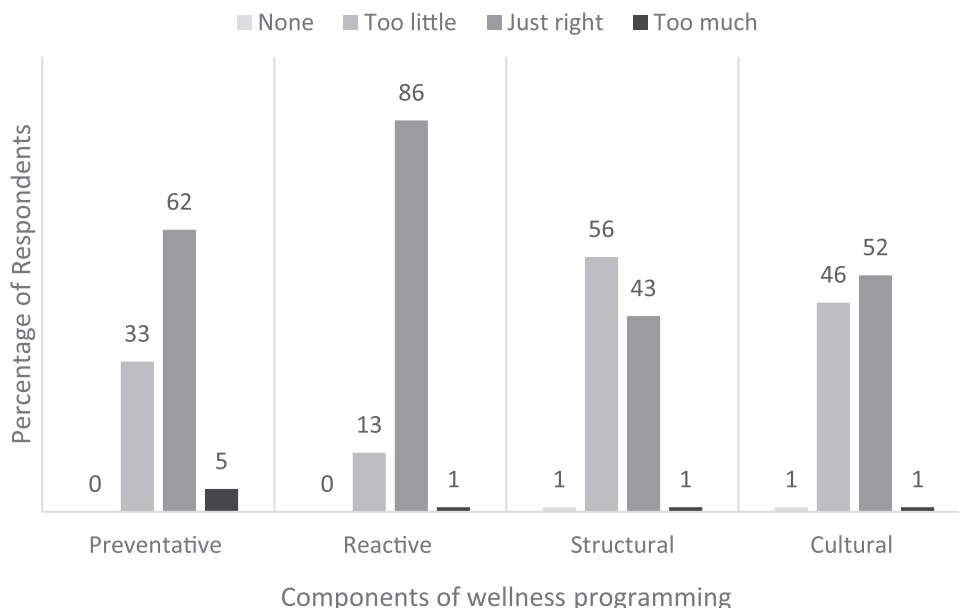


Figure 2 Adequacy of wellness program components at 85 U.S. and Canadian medical schools in the National Survey of Wellness Programs, 2019. Responding schools reported adequacy of different components of wellness programming. Preventative programming proactively addresses stressors of medical education. Reactive programming connects distressed students to support resources. Structural programming addresses the curriculum or learning environment. Cultural programming addresses institutional and student perspectives on wellness programming. The respondent (either student affairs deans or wellness program leaders) determined their programming to be “too little,” “just right,” or “too much.”

Sixty-eight percent of respondents (57/84) had a wellness curriculum, and of those, another 68% (39/57) focused on preclinical and clinical students, 26% (15/57) focused on preclinical students only, and 5% (3/57) focused on clinical students only. The curriculum consisted of both elective and mandatory elements at 74% (42/57) of schools, was mandatory at 21% (12/57), and was elective at 5% (3/57) of schools.

Mental health initiatives. The majority of respondents (65%, 55/84) reported having in-house mental health professionals with dedicated time to see medical students, and 7% (6/84) planned to offer the service in the next academic year. We noted a significant relationship between having an in-house mental health professional and larger medical school size ($P = .004$) but detected no significant relationship between having an in-house mental health professional and public versus private status ($P = .64$). Forty-three schools reported an average of 1.62 FTE (SD 1.41) support for in-house mental health professionals, and mean FTE support per student enrolled was 0.0024 (range 0.0001–0.0114, SD 0.0019). We detected no significant correlation between FTE and school type ($P = .95$), AAMC region ($P = .60$), school size ($P = .11$), or wellness program budget ($P = .93$).

Most schools (89%, 75/84) did not require mandatory mental health appointments for students. Seven percent (6/84) required mandatory appointments for a subset of students (i.e., all first-year students), 2 schools (2%, 2/84) reported they were planning mandatory appointments within the next academic year, and the remaining school (1%, 1/84) required mandatory appointments for all students. About a third of schools (35% [29/83]) screened students for burnout, about a quarter (26% [22/84]) for depression, and a fifth (20% [17/84]) screened for anxiety. Of schools that screened for burnout, depression, and anxiety, screenings were conducted annually at, respectively, 52% (15/29), 55% (12/22), and 41% (7/17) of

schools. According to the 84 respondents answering the relevant question, the most common types of mental health programming offered were peer support (offered by 42 schools [50%]), followed by peer suicide prevention programs and process groups (each offered by 25 schools [30%]).

Cultural programming. Of the 86 responding to the relevant question, most (87%, $n = 75$) respondents agreed that their wellness program was valued by leadership and most (83%, $n = 71$) reported students were satisfied with the wellness program. A minority (6%, $n = 5$) reported they were unsure how students felt. Reported student satisfaction was not associated with wellness budget ($P = .20$),

Table 2
Scope and Prevalence of Wellness Programming at 90 U.S. and Canadian Medical Schools Participating in the National Survey of Wellness Programs, 2019

Programming element	Response
Preventative programming: General	No. (% of 84) reporting yes
Mental health	83 (99)
Physical health	81 (96)
Academic support	80 (95)
Financial health	78 (93)
Social and community health	77 (92)
Spiritual health	55 (65)

(Table continues)

Table 2

(Continued)

Programming element	Response
Preventative programming: Prevalence of programming tailored to facets of mental health	No. (% of 84) reporting yes
Self-care	69 (82)
Meditation	69 (82)
Burnout	63 (75)
Resiliency	62 (74)
Depression	57 (68)
Anxiety	56 (67)
Imposter syndrome	51 (61)
Sleep	45 (54)
Substance use	39 (46)
Preventative programming: Prevalence of programming tailored to specific student groups	No. (% of 84) reporting yes
Students underrepresented in medicine	69 (82)
Women in medicine	64 (76)
LGBTQ students	60 (71)
Students with families	41 (49)
First-generation students	24 (29)
Students with learning differences	17 (20)
Reactive programming	No. (% reporting very good/excellent)
Access to faculty support	78/86 (91)
Access to staff support	71/84 (85)
Access to student counseling services	61/86 (71)
Access to student disability services	59/85 (69)
Access to student health services	58/86 (67)
Structural or curricular programming	No. (% of 84) reporting yes
Preclinical pass/fail grading	68 (81)
Peer mentoring programs	63 (75)
Assigned faculty advisors	62 (74)
Wellness curriculum	57 (68)
Duty hours limitations during clerkships	56 (67)
Scheduled time off from clerkships	31 (37)
No Gold Humanism Award	10 (12)
Pass/fail grading on clerkships	8 (10)
No Alpha Omega Alpha (AOA) Honor Society	5 (6)
No shelf exams	4 (5)
Cultural programming	No. (%) agreeing
Medical school leaders value the wellness program	75/86 (87)
Mental health initiatives	No. (%) reporting yes
In-house mental health professional(s) ^a	55/84 (65)
Peer support for mental health conditions	42/84 (50)
Screen for burnout	29/83 (35)
Peer suicide prevention programs	25/84 (30)
Balint or process groups	25/84 (30)
Screen for depression	22/84 (26)
Screen for anxiety	17/84 (20)
Mandatory appointments for subset of students	6/84 (7)

^aAcross 43 schools with funding for a mental health professional, the mean full-time equivalent (FTE) support is 1.62 (standard deviation [SD] 1.41); the mean FTE support per student enrolled is 0.0024 (SD 0.0019).

FTE support in the form of faculty leadership ($P = .46$), having a dedicated mental health professional ($P = .23$), or FTE support in the form of a mental health professional ($P = .62$).

Evaluation strategies

Of the 84 schools with a wellness program, 62% ($n = 52$) evaluated the program, 26% ($n = 22$) planned to start in the next academic year, and 12% ($n = 10$) neither evaluated nor had plans to do so within the next year. Of the 52 schools with formal evaluation programs for their wellness programs, the most common evaluation strategies were the AAMC Graduation Questionnaire (used by 43 [83%]), end-of-year student surveys (32 [62%]), and surveys of individual wellness events (26 [50%]). A smaller number of these 52 schools tracked student burnout, depression, and anxiety rates (respectively, 16 [31%], 14 [27%], and 11 [21%]). Of 84 respondents answering the question about barriers to evaluating wellness programs, 45 (54%) reported lack of time, 36 (43%) reported lack of administrative support, 20 (24%) reported lack of financial support, and 19 (23%) reported lack of expertise (Table 3). FTE support in the form of faculty leadership was not associated with whether programs were evaluated ($P = .07$).

Barriers

Of the 93% of schools (90/97) with wellness programs, reported barriers to further developing the program included lack of financial support (52%, 45/86), lack of administrative support (35%, 30/86), lack of faculty support (20%, 17/86), lack of student interest (17%, 15/86), and lack of expertise in program development (16%, 14/86). Of the 7% of schools (7/97) with no wellness program, reported barriers to creating a program included insufficient administrative support (57%, 4/7), lack of expertise in program development (43%, 3/7), and inadequate financial support (29%, 2/7). Three schools reported having elements of a wellness program that fell outside the study's definition of a formal program.

Discussion and Conclusions

This is, to the best of our knowledge, the first large study to describe the state of wellness programs at LCME-accredited medical schools across the

Table 3

Wellness Program Evaluation: Strategies Used by and Barriers Experienced by 90 U.S. and Canadian Medical Schools Participating in the National Survey of Wellness Programs, 2019

Survey element	No. (%)
Wellness program is evaluated	
Yes	52/84 (62)
Plan to in the next year	22/84 (26)
No	10/84 (12)
Evaluation strategy used	
AAMC Graduation Questionnaire	43/52 (83)
End-of-year student survey	32/52 (62)
Surveys of individual wellness events	26/52 (50)
Track burnout rates	16/52 (31)
Track depression rates	14/52 (27)
Track anxiety rates	11/52 (21)
Barriers to evaluating wellness programs	
Lack of time	45/84 (54)
Lack of administrative support	36/84 (43)
Lack of financial support	20/84 (24)
Lack of expertise in evaluation	19/84 (23)
No significant barriers	18/84 (21)
Other	14/84 (17)

Abbreviation: AAMC, Association of American Medical Colleges.

United States and Canada. Almost all responding schools had a formal wellness program. Anticipated development of a formal wellness program by the majority of schools without formal programs suggests that addressing student well-being remains a growing area of interest.

While most schools reported adequate preventative, reactive, and cultural programming, we identified the need for more initiatives focusing on the structural and curricular drivers of student distress. Less than 13% of responding schools implemented structural interventions during the clinical years (e.g., pass/fail clerkship grading and/or the elimination of shelf exams, the AOA Honor Society, and Gold Humanism Awards)—despite mounting evidence that curricular interventions may lead to lower rates of student distress, anxiety, and depression.^{6,16,17,21,30–35} To address this gap, we recommend focused collaboration between student and curricular affairs teams to identify and address key drivers

of student distress within the learning environment. In addition, structural interventions that show promise in improving resident well-being can be adapted for student clerkship rotations. For example, scheduled time off during clerkships for self-care was implemented by only a third of schools in our study despite favorable data from graduate medical education.^{36–38} More research is needed to identify tailored approaches for effective structural interventions and initiatives. For instance, implementing pass/fail clerkship grading and eliminating the AOA Honor Society may aid students at schools that are perceived to be most competitive since the schools' reputations may boost students during the residency application; however, using a similar approach at a school considered to be less competitive may disadvantage students.

Formal mental health programs that aim to raise awareness, improve access to care, and reduce stigma have been found to decrease depression and suicidal ideation rates in medical students.³⁹ Schools in our study identified mental health programs as a priority, and most hired dedicated mental health professionals to work with students. A recent report suggests that in-house mental health care may reduce barriers to care by decreasing appointment wait times, offering flexible scheduling, and decreasing stigma by not billing insurance; however, more research is needed to understand the effect of this resource and its optimal deployment (e.g., mandatory vs optional appointments) on mental health outcomes.⁴⁰ Research on student mental health has primarily focused on prevalence, risk factors, and strategies to improve access to care, and few articles have addressed the root cause of distress at the curricular level.^{17,41} Our study supports the need to focus future research on the effect of learning environment interventions on student mental health.²⁰

Building a positive culture around student well-being is fundamental to successful wellness programs and requires the buy-in of leaders, the alignment of values, trust, cohesiveness, and adequate financial and administrative support.^{42,43} While most schools in our study reported adequate leadership support, many reported inadequate financial and administrative resources as a barrier to sustaining and further

developing their wellness programs. Interestingly, our analysis found that higher levels of administrative and financial support were not associated with higher levels of perceived student satisfaction. In addition, for cultural initiatives to be effective, program leaders need to be mindful of the hidden curriculum and ensure that the stated goals of the wellness program align with academic policies so as to prevent mixed messages.⁴⁴ We found that designing comprehensive wellness programs is a challenging endeavor and requires multifaceted interventions focusing on student support, institutional culture, structural drivers of student distress, and programming that helps students develop the skills needed to deal with setbacks in their medical careers.

Evaluation of wellness programs remains a high priority for medical schools. While most schools reported evaluating their programs, many relied on surveys (e.g., the AAMC Graduation Questionnaire and annual student satisfaction surveys). While studies have found that administering iterative mental health self-assessments helps identify at-risk students, aids in connecting such students to support, and promotes help seeking behavior,^{15,45,46} fewer than one-third of schools in our study reported using burnout, depression, and anxiety assessment tools. We recommend integrating brief validated mental health instruments into program evaluations to more objectively assess the effect of wellness programs on student well-being. Medical schools are unable to meaningfully improve student well-being unless robust evaluation systems are used to measure the efficacy of interventions and guide allocation of resources.

Our study has several limitations. Medical schools with less robust wellness programs may not have participated in the survey, resulting in nonresponse bias. Schools self-reported high levels of student satisfaction, access to resources, and leadership support—findings that may reflect response bias. In addition, these findings need to be confirmed by student assessments. While we asked about leadership and culture around well-being, we did not specifically ask about school policies on student well-being. Lastly, we did not ask schools about their satisfaction with current evaluation strategies.

Future research should examine the effect of external stressors on student well-being. For example, the planned transition to pass/fail grading on the United States Medical Licensing Examination Step 1 may shift stress to clerkship grading, and schools should be proactive in addressing these threats to student well-being. In addition, studies have found associations between medical students' poor mental health and supervision by residents and faculty who are experiencing burnout or mental health issues themselves.¹⁵ Thus, it is imperative to address the well-being of residents and faculty to create a healthy and supportive learning environment for students.

Given the increased stressors brought on by COVID-19 and the ongoing, damaging effects of systemic racism on U.S. society, initiatives to support student well-being are increasingly relevant. We are encouraged to report that most schools have a formal wellness program, and we believe future work should focus on curricular interventions and robust evaluation systems to identify priority areas and inform resource allocation. Expanding mental health programs and tracking measures of student mental health over time may help guide program evaluation. Strong leadership is needed to promote a positive culture of well-being, to implement systemic interventions, and to advocate adequate financial and administrative resources to alleviate student distress and support student success.

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References

- 1 Rotenstein LS, Ramos MA, Torre M, et al. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: A systematic review and meta-analysis. *JAMA*. 2016;316:2214–2236.
- 2 Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med*. 2008;149:334–341.
- 3 Dyrbye LN, West CP, Satele D, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med*. 2014;89:443–451.
- 4 Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med*. 2006;81:354–373.
- 5 Brazeau CM, Shanafelt T, Durning SJ, et al. Distress among matriculating medical students relative to the general population. *Acad Med*. 2014;89:1520–1525.
- 6 Dyrbye LN, Thomas MR, Shanafelt TD. Medical student distress: Causes, consequences, and proposed solutions. *Mayo Clin Proc*. 2005;80:1613–1622.
- 7 Schrijver I. Pathology in the medical profession?: Taking the pulse of physician wellness and burnout. *Arch Pathol Lab Med*. 2016;140:976–982.
- 8 Xie YJ, Cao P, Sun T, Yang LB. The effects of academic adaptability on academic burnout, immersion in learning, and academic performance among Chinese medical students: A cross-sectional study. *BMC Med Educ*. 2019;19:211.
- 9 Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. *Med Educ*. 2016;50:132–149.
- 10 Thomas MR, Dyrbye LN, Huntington JL, et al. How do distress and well-being relate to medical student empathy? A multicenter study. *J Gen Intern Med*. 2007;22:177–183.
- 11 Dyrbye LN, Massie FS Jr, Eacker A, et al. Relationship between burnout and professional conduct and attitudes among US medical students. *JAMA*. 2010;304:1173–1180.
- 12 Dyrbye LN, Thomas MR, Power DV, et al. Burnout and serious thoughts of dropping out of medical school: A multi-institutional study. *Acad Med*. 2010;85:94–102.
- 13 Drolet BC, Rodgers S. A comprehensive medical student wellness program—Design and implementation at Vanderbilt School of Medicine. *Acad Med*. 2010;85:103–110.
- 14 Liaison Committee on Medical Education. Standards. <http://lcme.org/publications/#Standards>. Updated March 2020. Accessed December 29, 2020.
- 15 Dyrbye LN, Sciollo AE, Dekhtyar M, et al. Medical school strategies to address student well-being: A national survey. *Acad Med*. 2019;94:861–868.
- 16 Slavin S. Reflections on a decade leading a medical student well-being initiative. *Acad Med*. 2019;94:771–774.
- 17 Slavin SJ, Schindler DL, Chibnall JT. Medical student mental health 3.0: Improving student wellness through curricular changes. *Acad Med*. 2014;89:573–577.
- 18 Dunn LB, Iglewicz A, Moutier C. A conceptual model of medical student well-being: Promoting resilience and preventing burnout. *Acad Psychiatry*. 2008;32:44–53.
- 19 Bohman B, Dyrbye L, Sinsky CA et al. Physician well-being: The reciprocity of practice efficiency, culture of wellness, and personal resilience. *NEJM Catalyt*. <https://catalyst.nejm.org/doi/full/10.1056/CAT.17.0429>. Published August 7, 2017. Accessed March 11, 2021.
- 20 Slavin SJ. Medical student mental health: Culture, environment, and the need for change. *JAMA*. 2016;316:2195–2196.
- 21 Wasson LT, Cusmano A, Meli L, et al. Association between learning environment interventions and medical student well-being: A systematic review. *JAMA*. 2016;316:2237–2252.
- 22 Gaw CE. Wellness programs in medical school: Reevaluating the current paradigm. *Acad Med*. 2017;92:899.
- 23 Liaison Committee on Medical Education. Accredited MD Programs in the United States. <http://lcme.org/directory/accredited-u-s-programs>. Updated October 20, 2020. Accessed January 13, 2021.
- 24 Liaison Committee on Medical Education. Accredited MD Programs in Canada. <http://lcme.org/directory/accredited-canadian-programs>. Updated December 31, 2020. Accessed January 13, 2021.
- 25 Association of American Medical Colleges. Organizational Characteristics Database (OCD). <https://www.aamc.org/data/ocd>. Updated June 12, 2020. Accessed January 13, 2021.
- 26 Association of American Medical Colleges. Group on Student Affairs (GSA). GSA Regions. <https://www.aamc.org/professional-development/affinity-groups/gsa>. Accessed March 11, 2021.
- 27 Association of American Medical Colleges. Table B-1.2: Total Enrollment by U.S. Medical School and Sex, 2016–2017 Through 2020–2021. <https://www.aamc.org/media/6101/download>. Updated November 3, 2020. Accessed January 13, 2021.
- 28 The Association of Faculties of Medicine of Canada. Canadian Medical Education Statistics. https://afmc.ca/sites/default/files/pdf/CMES/CMES2019-Complete_EN.pdf. Updated 2020. Accessed January 13, 2021.
- 29 Association of American Medical Colleges. AAMC Medical School Members. <https://members.aamc.org/eweb/DynamicPage.aspx?webcode=AAMCOrgSearchResult&ortype=Medical%20School>. Updated 2020. Accessed December 29, 2020.
- 30 Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: A cross-sectional study. *Med Educ*. 2005;39:594–604.
- 31 Spring L, Robillard D, Gehlbach L, Simas TA. Impact of pass/fail grading on medical students' well-being and academic outcomes. *Med Educ*. 2011;45:867–877.

- 32 Robins LS, Fantone JC, Oh MS, Alexander GL, Schlafer M, Davis WK. The effect of pass/fail grading and weekly quizzes on first-year students' performances and satisfaction. *Acad Med.* 1995;70:327–329.
- 33 Bloodgood RA, Short JG, Jackson JM, Martindale JR. A change to pass/fail grading in the first two years at one medical school results in improved psychological well-being. *Acad Med.* 2009;84:655–662.
- 34 Rohe DE, Barrier PA, Clark MM, Cook DA, Vickers KS, Decker PA. The benefits of pass-fail grading on stress, mood, and group cohesion in medical students. *Mayo Clin Proc.* 2006;81:1443–1448.
- 35 Reed DA, Shanafelt TD, Satele DW, et al. Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: A multi-institutional study. *Acad Med.* 2011;86:1367–1373.
- 36 Choi D, Cedfeldt A, Flores C, Irish K, Brunett P, Girard D. Resident wellness: Institutional trends over 10 years since 2003. *Adv Med Educ Pract.* 2017;8:513–523.
- 37 O'Brien DC, Carr MM. Current wellness practices among otolaryngology residencies. *Otolaryngol Head Neck Surg.* 2018;159:258–265.
- 38 Mendoza D, Holbrook A, Bertino F, Theriot D, Ho C. Using wellness days to mitigate resident burnout. *J Am Coll Radiol.* 2019;16:221–223.
- 39 Thompson D, Goebert D, Takeshita J. A program for reducing depressive symptoms and suicidal ideation in medical students. *Acad Med.* 2010;85:1635–1639.
- 40 Karp JF, Levine AS. Mental health services for medical students—Time to act. *N Engl J Med.* 2018;379:1196–1198.
- 41 American Medical Association (AMA) StepsForward. Medical student well-being: Minimize burnout and improve mental health among medical students. <https://edhub.ama-assn.org/steps-forward/module/2757082>. Published December 5, 2019. Accessed December 29, 2020.
- 42 Choi AMK, Moon JE, Friedman RA. Meeting the challenges of medical student mental health and well-being today. *Med Educ.* 2020;54:183–185.
- 43 Walsh MM. Wellness in graduate medical education: Is it time to pull the Andon Cord? *J Grad Med Educ.* 2016;8:777–779.
- 44 Meeks LM, Ramsey J, Lyons M, Spencer AL, Lee WW. Wellness and work: Mixed messages in residency training. *J Gen Intern Med.* 2019;34:1352–1355.
- 45 Shanafelt TD, Kaups KL, Nelson H, et al. An interactive individualized intervention to promote behavioral change to increase personal well-being in US surgeons. *Ann Surg.* 2014;259:82–88.
- 46 Rosenzweig S, Reibel DK, Greeson JM, Brainard GC, Hojat M. Mindfulness-based stress reduction lowers psychological distress in medical students. *Teach Learn Med.* 2003;15:88–92.