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EXAMPLES OF SOLUTIONISM

Why impaired wellness may be inevitable in medicine, and why that may not be a bad thing

William E. Bynum IV[1] | **Lara Varpio**[2] | **Pim Teunissen**[3]

[1]Department of Family Medicine and Community Health, Duke University School of Medicine, Durham, NC, USA

[2]Department of Medicine, Uniformed Services University, Bethesda, MD, USA

[3]Department of Educational Research and Development, Maastricht University, Maastricht, The Netherlands

Correspondence
William E. Bynum, Department of Family Medicine and Community Health, Duke University School of Medicine, 2100 Erwin Road, Durham, NC 27705, USA.
Email: william.e.bynum@duke.edu

Abstract

Context: A wellness crisis exists among physicians and medical trainees. High rates of burnout, depression, stress and other states of impaired wellness have driven a sense of urgency to create solutions, and the medical education community has mobilised impressively. However, we argue—and data suggest—that this rush to find solutions has outpaced our efforts to more fully understand the nature of impaired wellness in medicine. This, we believe, has led to the implementation of solutions informed by limited understanding of the problems we intend to solve.

Methods: In this paper, we explore three contributors to this situation: (i) shaky definitions and conceptualisations of wellness, (ii) the predominance of deductive, quantitative research informing our understanding and current solutions, and (iii) the reliance on a 'disease-focused' approach to addressing impaired wellness in physicians and trainees. We discuss how these contributors have led to the current state of the science of wellness in medicine: one characterised by an expanding array of solutions built upon narrow conceptualisations of wellness and how it can be impaired.

Discussion: Moving beyond the current state of the science on wellness in medicine will require three critical developments: (i) consistent use of clear definitions of wellness; (ii) expanding our methodologies to include those utilising direct interaction with participants; and (iii) moving beyond solutions informed by a disease-model approach. We propose a different way of thinking about wellness: one based on what we view as an inherent—and potentially unavoidable—risk of experiencing impairment during a career in medicine. We argue that efforts to extinguish and eliminate all states of impaired wellness may also eliminate opportunities to develop constructive coping mechanisms and future resilience, and that wellness may best be conceptualised as healthy and authentic engagement with the inevitable adversity of a career in medicine.

1 | INTRODUCTION

Driven by concern for learners, colleagues and staff, as well as directives from accrediting bodies, the medical education community has mobilised to address the crisis of impaired wellness in trainees and physicians. This crisis, marked by alarming rates of burnout,[1] depression,[2,3] anxiety[4] and impaired empathy,[5] has instilled a sense of urgency to address these states of impairment. Leaders, educators and scholars have developed a steady flow of resources, ranging from individual interventions (e.g. mindfulness[6] and yoga[7]) to group

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interventions (e.g. discussion groups[8]) to institutional initiatives (e.g. pass or fail grading and mental health programmes[9]). Medical institutions, hospitals and training programmes have rearranged curricula,[9] assigned well-being champions,[10] developed toolkits[11] and realigned missions and values.[12] Licensing bodies, such as the Liaison Committee on Medical Education (LCME) and Accreditation Council for Graduate Medical Education (ACGME), have mandated wellness programmes and resources in medical schools and postgraduate training programmes in the United States.[13,14] The net sum of these efforts has been a rapid proliferation of solutions designed to address impaired wellness in medical trainees and practising clinicians.

Problematically, we believe this surge in solutions is outpacing our efforts to fully characterise and understand the states of impairment we're rushing to solve. Figures 1 and 2 from the scoping review by Mihailescu and Neiterman[15] support this notion by illustrating: (i) how the vast majority of the literature on the mental health status of physicians and trainees is focused on solutions and interventions, with considerably less focused on understanding the problems towards which they are directed, and (ii) that the topics of burnout, stress, depression and suicidality appear to dominate the literature on the mental health status of our population.

We contend that this concentration on interventions aimed predominantly at a handful of specific states of impairment (e.g. burnout, depression, and stress) may be unintentionally narrowing the focus of our wellness-related initiatives. We view this situation as akin to racing into a burning building with a limited set of tools and a narrow understanding of what is burning and why it burns. Some of the flames, emblematic of specific states of impairment such as burnout and depression, are increasingly coming into focus, but what fuels them, how best to extinguish them and whether they should be extinguished at all remain largely in the shadows.

In this manuscript, we explore what we believe is the current state of the science on wellness in medical education: one marked by a proliferation of solutions based on a relatively limited foundation of understanding. Specifically, we propose that shaky definitions and conceptualisations of wellness, the use of narrow research methodologies to understand wellness and the reliance on what we call the "disease model" of wellness have contributed to this current state. We argue that these forces have created specific lenses through which we view the highly complex construct of wellness in medical education, and we reflect on how we might paradigmatically change our conceptualisations, research approaches and support structures moving forward. We propose that rather than continuing to approach impaired wellness as something to be diagnosed, treated or avoided, we shift towards understanding it as a potentially normal or inevitable part of the experience of learning and practising medicine. Ultimately, we suggest that impaired wellness should not be met exclusively with elimination efforts but also with full engagement in constructively moving through it.

2 | REFLEXIVITY: SOME ROOTS OF OUR ORIENTATION

Our perspectives on impaired wellness are fundamentally shaped by our subjective experiences; therefore, it is important that we first outline the orientations that inform our arguments. Two of us (WEB and PWT) are clinician-educator-researchers and LV is a PhD researcher in health professions education. WEB and LV are from and work in North America, whereas PWT hails from and practises in Europe. PWT and LV possess extensive experience in qualitative methodologies and philosophies of science. WEB is a PhD candidate in health professions education. Under the supervision of PWT and LV, he studies how the self-conscious emotion of shame—or the feeling of being fundamentally flawed, deficient or unworthy—occurs in medical trainees. Our work in this area, which has primarily utilised qualitative inquiry, has revealed deep-seated aspects of the emotional experiences of medical trainees. Our participants'

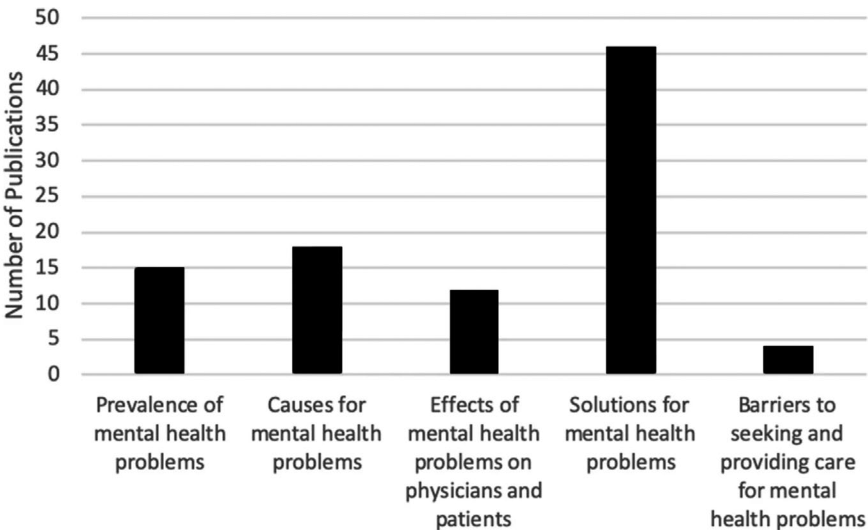

FIGURE 1 Frequency of themes in the literature on the current mental health status of physicians and physicians in training in North America. Reprinted from Mihailescu and Neiterman[15]. Permission not required (open access) [Colour figure can be viewed at wileyonlinelibrary.com]

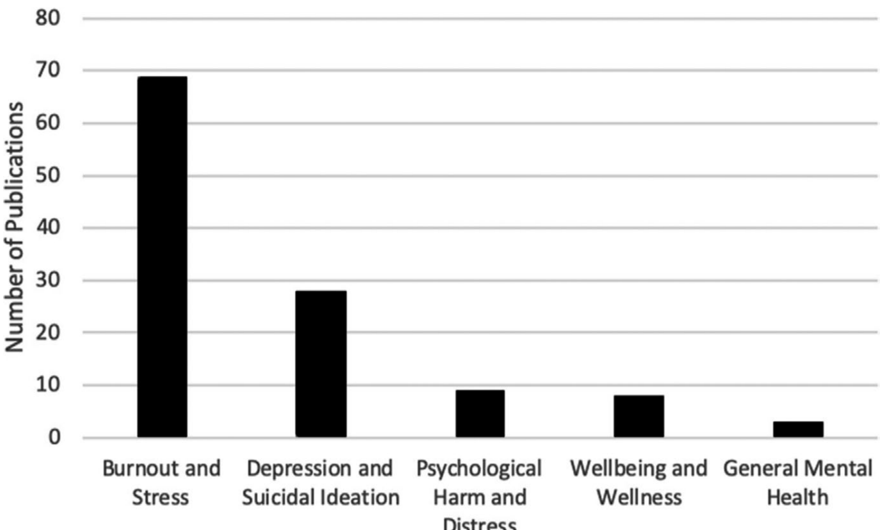

FIGURE 2 Number of sources of mental health topics discussed in the literature on the current mental health status of physicians and physicians in training in North America. Reprinted from Mihailescu and Neiterman[15]. Permission not required (open access) [Colour figure can be viewed at wileyonlinelibrary.com]

stories of shame and emotional distress have enlightened us to the emotional complexity of the medical learning experience, and they have shaped our own understanding of what it means to be well in medicine.

In addition, it is important for us to articulate how we conceptu alise the constructs of wellness and impaired wellness that are the focus of this paper. In line with leading theories,[16] we view wellness as a multidimensional construct consisting of physical, social, intellectual, emotional and spiritual domains, all of which are interconnected and may influence one another.[17] Specifically, we utilise the definition of wellness proposed by Corbin and Pangrazi to the United States President's Council on Physical Fitness and Sports in 2001 and informed by these theories.[17]

> A multidimensional state of being describing the existence of positive health in an individual as exemplified by quality of life and a sense of well-being.

By the above definition, we consider *impaired* wellness to be the absence or degradation of positive health, exemplified by lower quality of life and a lower sense of well-being. Impairment in wellness, which may occur in multiple personal dimensions and with inputs from the environment, impacts and is impacted by an individual's overall health.

Although these definitions are focused on wellness at the individual level, we acknowledge that wellness is heavily influenced by the environment.[17] We also acknowledge that this individualist perspective does not give equal credence to more collectivist conceptualisations. Although we certainly value them, our upbringings in Europe and North America have instilled an understanding that is more aligned with the individualist orientation. We share our perspective to provide the reflexivity necessary for the reader to interpret and contextualise our arguments.

3 | THE POORLY DEFINED FOUNDATIONS OF WELLNESS

In providing a definition of wellness, we have done something relatively rare in the wellness literature in medicine: explicitly define the term. Attempts to understand physician wellness are often conducted in the absence of clear conceptualisations of the phenomenon being studied. In a recent meta-analysis of 78 studies assessing physician wellness,[18] 67 studies (86%) did *not* define the term. In the 11 studies that did, there was significant variability in how wellness was conceptualised and defined. For example, across those 11 studies, most definitions conceptualised wellness as having mental and physical domains, but only three included a social well-being domain. Three other definitions conceptualised wellness based on the presence of positive valence or absence of negative valence. Not surprisingly, this variability influenced the ways in which researchers studied wellness, with most assessments measuring it as a mental phenomenon, with less attention focused on its social, physical and integrated dimensions.[18]

Conceptual frameworks and definitions for wellness in medicine do exist,[19] and they provide useful ways of understanding this complex construct. However, it appears that the *use* of wellness as a clearly defined concept is inconsistent in our literature. This is problematic because in the absence of consistent use of clear definitions, it is difficult to know if we are creating knowledge that is based on diverse or uniform perspectives, theories and experiences. Furthermore, without such clarity, we may be overly relying on, and failing to communicate about, our own personal perspectives in shaping the research we conduct and solutions we develop. Although these perspectives are certainly valid, they may be limiting the frames through which we seek to understand the highly complex construct of wellness and how it may be impaired. If we then develop solutions informed by these limited frames, we risk creating resources that are only relevant to people who conceptualise wellness or experience impairment in the same way.

4 | THE IMPACT OF RELIANCE ON OBJECTIVE DEDUCTIVE RESEARCH APPROACHES

Coupled with inconsistent use of clear definitions, we believe the predominant use of quantitative research methodologies is significantly impacting the state of the science on wellness in medicine. For example, in a recent scoping review of research on resident well-being, 21 of 27 studies utilised quantitative methods, with 17 conducting cross-sectional assessments of the relationships between wellness and various work and personal factors.[20] The abundance of systematic reviews and quantitative meta-analyses of wellness-related studies is further evidence of this trend towards quantitative assessment.[6,9,20-27]

The findings from this impressive body of quantitative research have focused researchers' attention on specific aspects of impaired physician wellness, including burnout, a well-studied and clearly influential state of impairment that holds a prominent place in the research on wellness in medicine. Other states of impairment, including depression, anxiety, stress and impaired empathy, are also present but less prominent, and so are contributing forces such as learner mistreatment, harassment and bias. Importantly, these states and drivers of impairment can be, and have been, studied quantitatively, the results of which enable us to conceptualise wellness in specific ways. However, these ways of understanding wellness in medicine may be obscuring other conceptualisations that could meaningfully inform the solutions we develop.

This opacity may be driven, in part, by a powerful set of assumptions about the nature of wellness that is linked to the quantitative approaches used to study them. These assumptions, which are generally aligned with positivist[28] and post-positivist[29] paradigmatic orientations, include the belief that discrete, external realities about physician and trainee wellness exist and that we can utilise quantitative methods to uncover and understand these realities.[30] Working primarily within these paradigmatic orientations has significant limitations. For instance, if we wanted to study shame (a highly complex phenomenon) in a deductive manner, we might harness existing theory[31] to hypothesise that shame is associated with depression, leads to impaired sleep and occurs more often in remediating students. We might then develop and validate an instrument to measure a specific aspect of shame (e.g. the frequency of its occurrence) and then utilise scales of depression, prevalence rates of medical error and measures of sleep to test, cross-sectionally, these potential associations with shame. These proxies would stand in for shame because, as an internal, subjective emotion uniquely experienced by each individual, shame is a phenomenon that is difficult to directly measure.[32] The resulting findings might show us that shame and depression are associated, that shamed individuals experience poorer sleep, and that remediating students are more likely to experience shame. These findings are likely to motivate us to develop interventions that identify and resolve students' shame, perhaps focusing on those undergoing remediation, so as to lower rates of depression and improve sleep.

Despite this reasonable, albeit hypothetical, study design, our understanding of the role of shame in medicine would be rooted in a single theory and remain incomplete. Utilising other theories and expanding beyond deductive objective research could shed new light on what shame feels like, what it makes people want to do, what internal thought processes lead to it, and how it might be experienced differently from one individual to another. This information could point us towards interventions that our theories haven't predicted, and it could inform us about how individuals may idiosyncratically respond to the interventions that our current conceptualisations and theories support.

Thus, we assert that using a predominantly deductive, objectivist approach to studying wellness risks leading to narrower, proxy-dependent insights than would be afforded through the balanced use of a broader set of methodologies. Furthermore, demanding objectivity in our wellness-related research will require that we maintain distance from the individuals and phenomena we seek to understand. This will prevent us from delving deeply into, or expanding outwards from, participants' actual lived experiences and how their unique contexts influence their wellness. In the case of shame, this would be problematic because it, like so many of the wellness phenomena we seek to understand, is not only deeply experienced, highly nuanced and contextually influenced,[33] but it is also stigmatised, poorly understood and confused with related constructs.[32] Thus, not only would objective distance inhibit deeper understanding of individuals' shame experiences, but it is likely to undermine the efficacy and relevance of the interventions that follow.

5 | THE INFLUENCE OF THE DISEASE-FOCUSED MODEL OF WELLNESS

We suggest that the rapid transition to solutionism, the shaky conceptual foundation regarding wellness and the heavy reliance on deductive quantitative research have contributed to a specific way of approaching impaired physician wellness: one that conceptualises it through the lens of diagnosable disease. Indeed, the language of medical diagnosis permeates our wellness research and scholarship. Wellness-related surveys such as the Maslach Burnout Inventory,[34] Perceived Stress Scale[35] and Jefferson Empathy Scale[36] "take the vitals"[37] of individuals and diagnose specific states of impairment such as burnout, stress and diminished empathy. Once identified, we are called to seek "prescriptions"[37] that allow us to "ward off",[38] "prevent"[21] and "take action against"[39] these states of impairment, in the same way as we approach conditions such as heart failure or pneumonia. In lieu of diuretics and antibiotics, we prescribe treatments such as mindfulness and yoga, which we likewise hope will resolve the underlying condition. In approaching impaired physician and trainee wellness in this way, we buoy underlying assumptions about impaired wellness, namely that it (i) generally affects all individuals in a similar fashion, (ii) can be accurately identified, (iii) can and should be

treated at the level of the individual, (iv) can be improved or cured, and (v) if improved or cured, will positively impact the individual's overall wellness.

Approaching impaired wellness in this way is neither inherently wrong nor foreign to us. The medical profession has historically been guided by the principle of achieving health through the treatment and eradication of disease. However, although the disease model may be appealing, it has flaws. First, just as a patient's health is more than the absence of disease,[16,40] so too is a physician's or trainee's wellness more than the absence of specific states of impairment. An individual's wellness is influenced by diverse factors existing in multi-layered dimensions.[16] Second, a disease-focused model fails to address the role of factors that exist outside the individual and are not easily diagnosed. Akin to the role of social determinants of health in patient care, these factors may be deeply embedded in physicians' and trainees' lived experiences and may exert significant influence (negative or positive) on their overall wellness. Indeed, an individual may be well in one context and unwell in another, and it may often be the case that the environment is sick, and not the individual. Third, if we adopt a disease-model approach to wellness, we risk identifying and treating the symptoms of more deep-seated states of impairment without addressing the core drivers. For example, our research shows that shamed learners can simultaneously experience feelings of burnout, depression and impaired empathy, all states that we are able to "diagnose" and for which "treatments" exist.[33] However, because shame is a deeply held, isolating and stigmatised emotion, it is unlikely to be resolved by only addressing its identifiable manifestations. In fact, veiled undercurrents from phenomena like shame may explain why specific interventions such as mindfulness, support groups, stress management training and protected sleep periods have had limited, if any, effect on psychological distress in medical trainees to date.[6,22]

If our understanding of physician wellness remains narrowly defined and limited to that which we can measure and diagnose, we must consider which aspects of wellness are being ignored because they cannot be easily quantified and labelled. Which solutions to yet-discovered determinants of wellness are we failing to recognise and employ? If we maintain this myopic focus, what negative consequences for physician and trainee wellness lie downstream? In other words, we assert that, because of our shaky conceptual foundations, reliance on quantitative deductive research and use of a disease-model approach, there is exponentially more that we *do not know* about how physicians and trainees attain wellness, and how it can be impaired, than we do know.

6 | EXPANDING BEYOND THE CURRENT STATE

Given this current state, how can we better conceptualise and support the wellness of medical trainees and practising physicians? How can we more effectively understand, identify and contain the wellness fires that burn in medicine? To ensure that the interventions we develop truly improve physician and trainee wellness, we need to expand beyond the current state of our science. This will require three critical developments: (i) consistent use of clear definitions of wellness in medicine; (ii) expanding our methodologies to include those utilising direct interaction with participants, and (iii) moving beyond a disease-model approach.

We believe it is imperative for scholars to consistently utilise clear definitions and to clearly state the theories that inform investigations of wellness in medicine. This will allow our community to identify the critical perspectives that may be missing and enable consumers of our research to situate it within their own contexts. Importantly, we contend that there is not a single correct or universal way to conceptualise wellness, and we suggest looking beyond the medical education literature to other disciplines where robust definitions and theories have been developed (e.g. psychology, sociology and anthropology). We need not rely on a single body of literature (i.e. ours in health professions education) for foundational understanding of this complex phenomenon. Furthermore, we should strive to conceptualise wellness in a way that attends to its personal nature while at the same time incorporating the multiple dimensions in which it can occur and multiple inputs that can influence it, including those from the environment and the community.

To investigate the inherently personal, complex constructs that influence wellness, we should empower individuals to fully articulate their experiences with impaired wellness and the meanings they attribute to those experiences. This requires empathy, connection and shared experience, which we argue can only come about through direct interaction with study participants. Researchers should partner with individuals with impaired wellness to wrestle with uncomfortable stories, explore the nuances of their experiences and non-judgementally understand the sources and ramifications of their impairment. This type of research work requires approaches in which researchers and participants co-construct knowledge together. The use of such approaches, to include hermeneutic phenomenology, ethnography and narrative research, is growing in medical education and should occur alongside, and help inform, ongoing deductive approaches. Doing this will require that we relax our fixation on objectivity as the standard of academic rigour and adopt ways of thinking about wellness research that accept and harness the power of subjectivity. The knowledge this affords will better situate and expand our current understanding of wellness within the deeper, more complex context of individual lived experience.

The disease-focused approach to wellness has, in many respects, been successful. It has identified specific diagnoses such as burnout and depression, revealed their prevalence and inspired solutions with curative potential. Despite these successes, we believe this approach has simultaneously created blind spots and narrowed our focus to experiences that can be diagnosed and treated with a limited set of tools. We advocate moving beyond a disease-focused model of wellness towards a more holistic understanding that recognises the *inherent risks and threats to wellness* embedded in learning and practising medicine. These threats and risks are fuelled by the very nature of

medicine. We endure rigorous and, at times, discriminatory, abusive, and suboptimal[41,42] training pipelines that force us to confront and overcome deficiencies in knowledge, skill and interpersonal communication, all while learning medicine on real people. We make high-stakes decisions in variable, uncertain situations with patients who, placing their lives in our hands, rely on our expertise and can be seriously harmed by our mistakes. We help our patients navigate highly complex, inefficient care systems that increasingly demand large amounts of our time and energy but consistently neglect to lighten the burden. We take on the additional roles of education and scientific discovery, which bring true value but incur additional demands on our limited personal resources. Finally, we do all of this while trying to maintain rich personal lives with some degree of normalcy and a high degree of meaning.

We worry that, within this extremely demanding milieu:

- the risk of developing an impaired state of wellness may be *unavoidable*;
- feelings related to the dominant construct of burnout may be *normal and understandable reactions* to an otherwise unmanageable situation;
- losing empathy may be *inevitable* when learning medicine in a toxic environment;
- aspects of shame may be a *normal emotional response* to erring in the care of patients for whom we committed to "first do no harm"; and
- achieving and maintaining complete wellness in medicine may be *fundamentally impossible*.

Furthermore, resolving to treat and cure all forms of impaired wellness, thereby stigmatising their presence even further, may inadvertently undermine the development of constructive coping mechanisms. If we strive to avoid or eliminate states of impaired wellness, do we risk also eliminating the opportunity to overcome this adversity and develop future resilience? Thus, we propose an additional and perhaps counterintuitive notion: that not all episodes of impaired wellness *should* be extinguished.

In other words, if we view wellness as the absence of specific states of impairment and believe that all states of impairment are pathologic and must be treated and cured, we cannot consider: (i) the possibility that some forms of impaired wellness may be a normal and unavoidable part of a physician's career, and (ii) that impaired wellness can serve as a catalyst for personal growth and resilience development.

We believe that authentically *striving* to be well, without expectations of always achieving it, is a very realistic and healthy goal. Within this approach, we engage in a process of continual improvement and view impaired wellness not as failure, but as a challenging experience that may offer the opportunity for reflection and growth. Accordingly, we believe that *healthy and authentic engagement* with the inevitable adversity of both learning and practising medicine is the way towards achieving—and maintaining—wellness in our profession.

7 | CONCLUSION

As we rush to fight the fires that threaten the wellness of physicians and medical trainees, it is time to pause and consider the state of our science. We should consider how we are currently defining wellness (if at all), how our largely deductive, objectivist approaches have influenced our conceptualisations, and how these conceptualisations, in turn, may have informed a rush to find solutions. We should recognise and applaud the tremendous amount of work carried out on wellness in medicine to date, but simultaneously acknowledge how much we don't know and how much we can *never* know. Then, armed with the renewed purpose that comes from aligning our concepts, the deeper understanding that comes from direct interaction and the expanded capabilities that come from balancing our research approaches, we should advance, wholeheartedly, towards the future of wellness in medicine.

8 | DISCLAIMER

The views expressed in this article are the authors' own and do not represent those of the DoD, US Air Force, US Army, US Navy, the US Government or its agencies.

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AUTHOR CONTRIBUTIONS

WEB contributed to the concepts and arguments laid out in the paper, wrote the first draft of the manuscript, and compiled subsequent revisions and the final manuscript. LV and PWT contributed to the concepts and arguments laid out in the paper and made substantial edits through multiple drafts. All three authors approved the final manuscript.

ORCID

William E. Bynum https://orcid.org/0000-0003-3796-9301
Lara Varpio https://orcid.org/0000-0002-1412-4341
Pim Teunissen https://orcid.org/0000-0002-0930-0048

TWITTER

William E. Bynum @WillBynumMD
Lara Varpio @LaraVarpio
Pim Teunissen @Pim_Teu

REFERENCES

1. 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(3):443-451.
2. Mata DA, Ramos MA, Bansal N, et al. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *JAMA*. 2015;314(22):2373-2383.
3. Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med*. 2008;149(5):334-341.
4. Quek TT, Tam WW, Tran BX, et al. The global prevalence of anxiety among medical students: a meta-analysis. *Int J Environ Res Public Health*. 2019;16(15):2735.
5. Neumann M, Edelhauser F, Tauschel D, et al. Empathy decline and its reasons: a systematic review of studies with medical students and residents. *Acad Med*. 2011;86(8):996-1009.
6. Daya Z, Hearn JH. Mindfulness interventions in medical education: a systematic review of their impact on medical student stress, depression, fatigue and burnout. *Med Teach*. 2018;40(2):146-153.
7. Simard AA, Henry M. Impact of a short yoga intervention on medical students' health: a pilot study. *Med Teach*. 2009;31(10):950-952.
8. Holm M, Tyssen R, Stordal KI, Haver B. Self-development groups reduce medical school stress: a controlled intervention study. *BMC Med Educ*. 2010;10:23. https://doi.org/10.1186/1472-6920-10-23
9. Wasson LT, Cusmano A, Meli L, et al. Association between learning environment interventions and medical student well-being: a systematic review. *JAMA*. 2016;316(21):2237-2252.
10. Eckleberry-Hunt J, Van Dyke A, Lick D, Tucciarone J. Changing the conversation from burnout to wellness: physician well-being in residency training programs. *J Grad Med Educ*. 2009;1(2):225-230.
11. American Psychiatric Association. Toolkit for well-being ambassadors: a manual. https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/Well-being-and-Burnout/APA-Well-being-Ambassador-Toolkit-Manual.pdf. Published 2017. Accessed February 23, 2020.
12. Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: Nine organizational strategies to promote engagement and reduce burnout. *Mayo Clin Proc*. 2017;92(1):129-146.
13. Liaison Committee on Medical Education. Functions and structure of a medical school. https://lcme.org/publications/. Published 2019. Accessed February 23, 2020.
14. Accreditation Council for Medical Education. Common Program Requirements (Residency). https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRResidency2019.pdf. Published 2019. Accessed February 23, 2020.
15. Mihailescu M, Neiterman E. A scoping review of the literature on the current mental health status of physicians and physicians-in-training in North America. *BMC Public Health*. 2019;19(1):1363.
16. Roscoe LJ. Wellness: a review of theory and measurement for counselors. *J Couns Dev*. 2009;87(2):216-226.
17. Corbin CB, Pangrazi RP. Toward a uniform definition of wellness: a commentary. *Pres Counc Phys Fit Sports Res Dig*. 2001;3(15):3-8.
18. Brady KJS, Trockel MT, Khan CT, et al. What do we mean by physician wellness? A systematic review of its definition and measurement. *Acad Psychiatry*. 2018;42(1):94-108.
19. Stewart MT, Reed S, Reese J, Galligan MM, Mahan JD. Conceptual models for understanding physician burnout, professional fulfillment, and well-being. *Curr Probl Pediatr Adolesc Health Care*. 2019;49(11):100658.
20. Raj KS. Well-being in residency: a systematic review. *J Grad Med Educ*. 2016;8(5):674-684.
21. West CP, Dyrbye LN, Erwin PJ, Shanafelt TD. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet*. 2016;388(10057):2272-2281.
22. Busireddy KR, Miller JA, Ellison K, Ren V, Qayyum R, Panda M. Efficacy of interventions to reduce resident physician burnout: a systematic review. *J Grad Med Educ*. 2017;9(3):294-301.
23. Kotter T, Fuchs S, Heise M, et al. What keeps medical students healthy and well? A systematic review of observational studies on protective factors for health and well-being during medical education. *BMC Med Educ*. 2019;19(1):94.
24. Panagioti M, Geraghty K, Johnson J, et al. Association between physician burnout and patient safety, professionalism, and patient satisfaction: a systematic review and meta-analysis. *JAMA Intern Med*. 2018;178(10):1317-1330.
25. Shiralkar MT, Harris TB, Eddins-Folensbee FF, Coverdale JH. A systematic review of stress-management programs for medical students. *Acad Psychiatry*. 2013;37(3):158-164.
26. Walsh AL, Lehmann S, Zabinski J, et al. Interventions to prevent and reduce burnout among undergraduate and graduate medical education trainees: a systematic review. *Acad Psychiatry*. 2019;43(4):386-395.
27. Erschens R, Keifenheim KE, Herrmann-Werner A, et al. Professional burnout among medical students: systematic literature review and meta-analysis. *Med Teach*. 2019;41(2):172-183.
28. Park YS, Konge L, Artino AR Jr. The positivism paradigm of research. *Acad*. 2020;95(5):690-694.
29. Young M, Ryan A. Post-positivism in health professions education scholarship. *Acad Med*. 2020;95(5):695-699.
30. Varpio L, Paradis E, Uijtdehaage S, Young M. The distinctions between theory, theoretical framework, and conceptual framework. *Acad Med*. 2020;95(7):989–994.
31. Tangney JP, Dearing RL. *Shame and Guilt*. New York, NY: Guilford Press; 2002.
32. Tangney JP, Dearing R. Assessing shame and guilt. In: Tangney JP, Dearing R, eds. *Shame and Guilt*. New York, NY: Guilford Press; 2002:26–51.
33. Bynum WE, Artino AR Jr, Uijtdehaage S, Webb AMB, Varpio L. Sentinel emotional events: the nature, triggers, and effects of shame experiences in medical residents. *Acad Med*. 2019;94(1):85-93.
34. Maslach C, Jackson SE, Leiter M. *Maslach Burnout Inventory: Manual*, 3rd edn. Palo Alto, CA: Consulting Psychologists Press;1996.
35. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24(4):385-396.
36. Hojat M, Mangione S, Nasca TJ, et al. The Jefferson scale of physician empathy: development and preliminary psychometric data. *Educ Psychol Measur*. 2001;61(2):349-365.
37. Hopkins L, Morgan H, Buery-Joyner SD, et al. To the point: a prescription for well-being in medical education. *Am J Obstet Gynecol*. 2019;221(6):542-548.
38. Bolye P. Thanks a lot. AAMC News. https://www.aamc.org/news-insights/thanks-lot?utm_source=newsletter&utm_medium=email&utm_campaign=AAMCNews&utm_content=01082020. Published Jan 2, 2020. Accessed January 15, 2020
39. National Academies of Sciences, Engineering, and Medicine. *Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being*. Washington, DC: The National Academies Press; 2019.
40. Huber M, van Vliet M, Giezenberg M, et al. Towards a 'patient-centred' operationalisation of the new dynamic concept of health: a mixed methods study. *BMJ Open*. 2016;6(1):e010091.
41. Gan R, Snell L. When the learning environment is suboptimal: exploring medical students' perceptions of "mistreatment". *Acad Med*. 2014;89(4):608-617.
42. Hu YY, Ellis RJ, Hewitt DB, et al. Discrimination, abuse, harassment, and burnout in surgical residency training. *N Engl J Med*. 2019;381(18):1741-1752.

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