

Gender-Based Differences in Burnout: Issues Faced by Women Physicians

Kim Templeton, MD, University of Kansas Medical Center; **Carol A. Bernstein, MD**, Albert Einstein College of Medicine and Montefiore Health; **Javeed Sukhera, MD, PhD, FRCPC**, Western University Canada and London Health Sciences Centre; **Lois Margaret Nora, MD, JD, MBA**, Northeast Ohio Medical University; **Connie Newman, MD**, New York University School of Medicine; **Helen Burstin, MD, MPH**, Council of Medical Specialty Societies; **Constance Guille, MD**, Medical University of South Carolina; **Lorna Lynn, MD**, American Board of Internal Medicine; **Margaret L. Schwarze, MD, MPP, FACS**, University of Wisconsin School of Medicine and Public Health; **Srijan Sen, MD, PhD**, University of Michigan; and **Neil Busis, MD**, University of Pittsburgh School of Medicine and UPMC Shadyside

May 28, 2019

ABSTRACT | *Individual, institutional, and societal risk factors for the development of burnout can differ for women and men physicians. While some studies on physician burnout report an increased prevalence among women, this finding may be due to actual differences in prevalence, the assessment tools used, or differences between/among the genders in how burnout manifests. In the following discussion paper, we review the prevalence of burnout in women physicians and contributing factors to burnout that are specific for women physicians. Understanding, preventing, and mitigating burnout among all physicians is critical, but such actions are particularly important for the retention of women physicians, given the increasing numbers of women in medicine and in light of the predicted exacerbation of physician shortages.*

Introduction

Burnout is commonly defined as Maslach's triad of emotional exhaustion, depersonalization or cynicism, and feelings of diminished personal efficacy or accomplishment in the context of the work environment [1]. Clinician burnout constitutes a national public health problem. Understanding its epidemiology, causes, effects, and solutions is essential for safe, high-quality patient care. Although burnout has been best studied among physicians and nurses, practitioners and trainees in other health care professions also have been noted to exhibit high burnout rates [2]. The risk factors associated with burnout may be similar among all health care professionals [3]; however, there are enough differences among professionals to warrant discussions of burnout within individual professions, and among demographic subgroups. This paper will focus on the issues faced by women physicians, but similar investigations should be done for nurses, phar-

macists, physical therapists, and others in the health care field.

While women now account for half of new medical school students and an increasingly larger number of practicing physicians [4], there is a paucity of information about gender-related differences in physician burnout. Women physicians differ from their male counterparts: They may lack role models, face challenges of dual-career couples, have to reconcile having only a finite number of years for childbearing, face lack of parity in salaries, receive a lower number of promotions to leadership positions, confront both conscious and unconscious biases, and experience higher rates of sexual harassment [5]. Retention of women physicians is crucial in light of predicted physician shortages. Women physicians who face more work-related stressors and have less control of their work environments report that they are less satisfied with their careers and that, given a choice, they would not have

become physicians [6].

This manuscript reviews the available data regarding the prevalence, causes, clinical manifestations, and associated consequences of burnout among women physicians and men physicians, highlighting the features more commonly present among women. Recognizing gender-related differences can help design successful strategies to improve physician well-being and to identify, treat, and prevent burnout.

Understanding the role of gender in burnout is complicated by the inconsistent use of terms such as *sex*, *gender*, *male/man*, and *female/woman* in publications on this topic. The World Health Organization defines sex as a biological variable and proposes that the term be used when the biological distinction is predominant [7]. It defines *gender* as the socially constructed characteristics of women and men, including relational, hierarchical, historical, contextual, and institutional elements [8]. This paper uses the term *gender* in relation to burnout, as the social constructs of *woman* and *man* play a more prominent role in burnout than the biological constructs. For example, gendered expectations—personal and professional, internal and external—may contribute to burnout. Such expectations are more relevant to the topic of physician burnout than are the physician's sex or physiology.

Gender-related differences are not consistently addressed in studies of physician burnout, career satisfaction, well-being, and professional fulfillment. When gender is considered, it is usually included as a binary variable. In addition, most studies do not address the gender identity or sexual orientation of the physician. These limitations do not recognize unique challenges that may be faced by physicians who are sexual or gender minorities, such as those in the LGBTQ+ and transgender communities. Such challenges include discrimination and harassment in the workplace, which can lead to feelings of isolation [9]. This area requires investigation among health care providers—as does the intersection of burnout and age, gender or sexual orientation minority status, race, and ethnicity.

Prevalence

Estimates of the prevalence of physician burnout vary—in part because of differences in definitions, the tools used to assess burnout, and scoring methods [10,11]. The most widely used measures of burnout include the Maslach Burnout Inventory (MBI), the Oldenburg Burnout Inventory, the Copenhagen Burnout Inventory, and the Physician Work-Life Study's single-

item measure [12]. Efforts to assess the prevalence of burnout, including differences between/among genders, are also limited by survey size, response rate [11], and underreporting.

Burnout has been identified among medical students, residents, and practicing physicians at all career stages. The burnout rate is estimated to be approximately 50 percent among US physicians and medical students [13,14]. Unfortunately, many studies of burnout do not report data by gender. Those that have, found that burnout is experienced by and manifests in men and women differently: as measured by the MBI, women physicians are more likely to suffer from emotional exhaustion, whereas men are more likely to describe depersonalization [15].

It is currently not clear if burnout is actually more common among women, or if gender-based differences in its expression—such as emotional exhaustion—make it easier to identify among women. Regardless, surveys (reflected in *Table 1*) have found that the prevalence of burnout may be as much as 20 to 60 percent higher among women physicians than among men physicians [16]. A 2017 survey of 15,000 physicians from 29 specialties found that burnout was self-reported by 48 percent of women physicians and 38 percent of men physicians [17]. Smaller specialty-specific studies have also found that women are more likely to exhibit burnout symptoms than are men [18,19]. Regarding trainees, a large national sample of internal medicine residents found that women physicians were more likely than men physicians to report being burned out and dissatisfied with work-life integration [20].

Whether physician gender plays an independent role in the development or identification of burnout or acts in combination with other factors is also not yet clear. For example, age is an independent variable associated with the risk of burnout, with younger physicians at a higher risk of burnout than older physicians [21]. It is also worth noting that age may influence burnout more than gender does [21]. While the overall burnout rates are higher among women than among men, the rates may be the same when the analyses are adjusted for age [21]. As the number of older women physicians increases, what appear to be gender-related differences in burnout rates among some groups of physicians may decrease or disappear. However, additional research is needed to identify or confirm the relationships among gender, age, and risk of burnout.

Table 1 | Studies of Burnout Among US Physicians That Include Data Reported by Gender

| Reference | Population | Age [mean or median] | Methods | Invited | Response Rate % | Analyzed (Total; W/M) | % Reported Burnout | | | |
|---|--|----------------------|---------------------------------------|---------|-----------------|-----------------------|--------------------|-----|---------|--------------------------|
| | | | | | | | Women | Men | P Value | Total |
| Fields et al., Crit Care Med 1995 [a] | Pediatric intensivists | W 38 M 40 | Pines and Aronson Burnout Scale | 838 | 56 | 474 75/312 | NR | NR | NS | 14 |
| Guntupalli & Fromm, Intensive Care Med 1996 [b] | Intensive care unit internists with subspecialties | 42 | MBI | 1,000 | 25 | 253 28/220 | NR | NR | NR | EE 29 DP 20 LPA 59 |
| McMurray et al., J Gen Intern Med 2000 [c] | Internal medicine, pediatricians, subspecialties | W 43 M 49 | Likert-type scale, 1 to 5 for burnout | 5,704 | 52 | 2,326 735/1,585 | 26 | 21 | <0.05 | NR |
| Campbell et al., Surg 2001 [d] | Surgeons from Midwest | 50 | MBI | 1,706 | 44 | 582 >92% M | NR | NR | NR | EE 32 DP 13 LPA 4 |
| Linzer et al., JAMWA 2002 [e] | Internal medicine, pediatricians, subspecialties, family medicine excluded | W 43 M 49 | 5-choice single item | 5,700 | 52 | 1,446 405/1,041 | 28 | 21 | <0.01 | NR |
| Bertges Yost et al., Transpl Proc 2005 [f] | Transplant surgeons | 49 | MBI, Surgeon Coping Inventory | 734 | 35 | 209 12/197 | NR | NR | NR | EE 38 DP 27 LPA 16 |
| Shanafelt et al., Ann Surg 2009 [g] | Surgeons | 51 | MBI | 24,922 | 32 | 7,905 1,043/6,815 | NR | NR | NR | 40 |
| Dyrbye et al., Arch Surg 2011 [h] | Surgeons | W 43 M 52 | MBI | 24,922 | 32 | 7,905 1,043/6,815 | 43 | 39 | 0.01 | 40 |
| Shanafelt et al., Arch Int Med 2012 [i] | All specialties | 55 | MBI | 27,276 | 27 | 7,288 2,046/5,241 | NR | NR | NR | 45 |
| Shanafelt et al., J Clin Oncol 2014 [j] | Oncologists | 52 | MBI | 2,998 | 50 | 1,490 545/554 | 50 | 40 | <0.001 | 45 |
| Shanafelt et al., Mayo Clin Proc 2015 [k] | All specialties | 56 | MBI | 35,922 | 19 | 6,880 2,162/4,497 | NR | NR | <0.001 | 54 |
| Rabatin et al., Prim Care Comm Health 2016 [l] | Primary care | NR | Self-defined burnout | NR | 56 | 422 187/235 | 36 | 19 | <0.001 | NR |

| Reference | Population | Age [mean or median] | Methods | Invited | Response Rate % | Analyzed (Total; W/M) | % Reported Burnout | | | |
|--|----------------------------|----------------------------|-----------------------------|---------|--------------------|-----------------------------|--------------------|-----|------------|-------|
| | | | | | | | Women | Men | P Value | Total |
| Jager et al., Mayo Clin Proc 2017 [m] | All special- ties | 53 | Validated single item | 4,000 | 63 | 2,263 735/1,528 | NR | NR | NR | 29 |
| Peckham, Medscape 2018 [n] | All special- ties | NR | Self- defined burnout | NR | NR | 15,543 NR | 48 | 38 | NR | 42 |
| Shenoi et al., Crit Care Med 2018 [o] | Pediatric critical care | NR | MBI | 686 | 40 | 275 100/153 | 60 | 42 | 0.005 | 49 |
| LaFaver et al., Neurology 2018 [p] | Neurolog- ists | W 47 M 54 | MBI | 4,127 | 40.5 | 1,671 580/1,091 | 65 | 58 | 0.007 | 60 |

SOURCE: Templeton et al. "Gender-based differences in burnout: Issues faced by women physicians," National Academy of Medicine.

NOTES: NR = not reported, NS = not statistically significant, W = woman/women, M = man/men, EE = emotional exhaustion, DP = depersonalization, LPA = low personal accomplishment. Numbers of women and men appear as reported in the publication. Studies included involved US physicians (excluding residents) with burnout as an outcome and had data on either the number of women in the survey or the percentage of women with burnout. [a] Fields, A. I., T. T. Cuerdon, C. O. Brasseur, P. R. Getson, A. E. Thompson, J. P. Orlowski, and S. J. Youngner. 1995. Physician burnout in pediatric critical care medicine. *Critical Care Medicine* 23(8):1425-1429. [b] Guntupalli, K. K., and R. E. Fromm. 1996. Burnout in the internist-intensivist. *Intensive Care Medicine* 22(7):625-630. [c] McMurray, J. E., M. Linzer, T. R. Konrad, J. Douglas, R. Shugerman, and K. Nelson. 2000. The work lives of women physicians: Results from the physician work-life study. *Journal of General Internal Medicine* (6):372-380. [d] Campbell, D. A. Jr., S. S. Sonnad, F. E. Eckhauser, K. K. Campbell, and L. J. Greenfield. 2001. Burnout among American surgeons. *Surgery* 130(4):696-702. [e] Linzer, M., J. E. McMurray, M. R. Visser, F. J. Oort, E. Smets, and H. C. de Haes. 2002. Sex differences in physician burnout in the United States and The Netherlands. *JAMWA* 57(4):191-193. [f] Bertges Yost, W., A. Eshelman, M. Raoufi, and M. S. Aboulgoud. 2005. A national study of burnout among American transplant surgeons. *Transplantation Proceedings* 37(2):1399-1401. [g] Shanafelt, T. D., C. M. Balch, G. Bechamps, T. Russell, L. Dyrbye, D. Satele, P. Collicott, P. J. Novotny, J. Sloan, and J. Freischlag. 2009. Burnout and career satisfaction among American surgeons. *Annals of Surgery* 250(3):463-471. [h] Dyrbye, L. N., T. D. Shanafelt, C. M. Balch, D. Satele, J. Sloan, and J. Freischlag. 2011. Relationship between work-home conflicts and burnout among American surgeons: A comparison by sex. *Archives of Surgery* 146(2):211-217. [i] Shanafelt, T. D., S. Boone, L. Tan, L. N. Dyrbye, W. Sotile, D. Satele, C. P. West, J. Sloan, and M. R. Oreskovich. 2012. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Archives of Internal Medicine* 172(18):1377-1385. [j] Shanafelt, T. D., W. J. Gradishar, M. Kosty, D. Satele, H. Chew, L. Horn, B. Clark, A. E. Hanley, Q. Chu, J. Pippen, J. Sloan, and M. Raymond. 2014. Burnout and career satisfaction among US oncologists. *Journal of Clinical Oncology* 32(7):678-686. [k] Shanafelt, T. D., O. Hasan, L. N. Dyrbye, C. Sinsky, D. Satele, J. Sloan, and C. P. West. 2015. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clinic Proceedings* 90(12):1600-1613. [l] Rabatin, J., E. Williams, L. Baier Manwell, M. D. Schwartz, R. L. Brown, and M. Linzer. 2016. Predictors and outcomes of burnout in primary care physicians. *Journal of Primary Care & Community Health* 7(1):41-43. [m] Jager, A. J., M. A. Tutty, and A. C. Kao. 2017. Association between physician burnout and identification with medicine as a calling. *Mayo Clinical Proceedings* 92(3):415-422. [n] Peckham, C. 2018. *Medscape national physician burnout and depression report 2018*. <https://www.medscape.com/slideshow/2018-lifestyle-burnout-depression-6009235> (accessed January 24, 2019). [o] Shenoi, A. N., M. Kalyanaraman, A. Pillai, P. S. Raghava, and S. Day. 2018. Burnout and psychological distress among pediatric critical care physicians in the United States. *Critical Care Medicine* 46(1):116-122. [p] LaFaver, K., J. M. Miyasaki, C. M. Keran, C. Rheaume, L. Gulya, K. H. Levin, E. C. Jones, H. B. Schwarz, J. R. Molano, A. Hessler, D. Singhal, T. D. Shanafelt, J. A. Sloan, P. J. Novotny, T. L. Cascino, and N. A. Busis. 2018. Age and sex differences in burnout, career satisfaction, and well-being in US neurologists. *Neurology* 91(20):e1928-e1941.

Even if women and men report the same scores on quantitative survey instruments, their qualitative experiences of burnout may differ. For example, in comparison with men neurologists, women neurologists more often reported less job satisfaction, a lower likelihood that they would again choose medicine as their life's work, and a higher likelihood of thoughts about leaving the profession. Women expressed more concerns than men about declining professionalism in medicine. Women, but not men, commented about the loss of the academic mission in the current health care environment [22].

Given the current evidence base, it is difficult to know whether there are real and persistent differences in the rates of burnout between women and men physicians. However, even if there are no significant differences between/among the genders in the prevalence of burnout, risk factors and related prevention and intervention initiatives may vary. While there are common interventions to address burnout among both women and men, some additional steps might be necessary for the former.

Contributing Factors

Burnout is associated with many work-related stressors, which vary in their impact on individual physicians. The following factors have been identified: type of specialty, workload, work hours, administrative tasks, increased responsibilities, lack of autonomy or control, financial stress, career stage, loss of meaning and joy in work (23), having children at home, work-life integration, decreased support, real or perceived lack of fairness in promotion and compensation, and other manifestations of gender bias/discrimination, and sexual harassment. While many of these impact both men and women physicians, this section will focus on those that have a greater or different impact on women.

External Factors

Work-Life Integration

Responsibilities at work and home interact. If the experiences in one domain make it easier to perform in the other, then the work-home interaction can have a positive effect. However, there may be adverse consequences if the roles conflict [24]. Both men and women report that challenges in work-life integration contribute to burnout. However, men and women define work-life integration differently [25,26]. The consequences of work-home conflict and their impact on

depression have been reported as early as six months into the first postgraduate year and are more common among women than among men [27]. Women are more likely to perform most of the work within the home, and this leads to increased time pressures and fewer opportunities for self-care. Women are more likely than men to have partners who are employed full time. Women employed full time spend 8.5 additional hours per week on child care and other domestic activities, including care for elderly parents [28]. On average, women who are employed and whose partners also work perform an additional two hours of work at home per day, an increase three times higher than that reported by men whose partners work—men in these circumstances note that their domestic work only increases by an average of 40 minutes [29].

Gender Bias and Discrimination

Women physicians are often victims of bias and discrimination. *Discrimination* includes disparaging or disrespectful treatment or comments; lack of career promotion; and disparities in resources (including financial and administrative support), rewards, and reimbursement. More than 70 percent of women physicians report experiencing gender discrimination [30]. Women who belong to racial or ethnic minority groups may face additional discrimination at all levels of their careers, impacting their sense of well-being and their perception of work stress [31]. Sources of bias and discrimination include more senior physicians, administrators, peers, allied health professionals, and patients. Gender bias and discrimination, which may be unconscious, can leave victims feeling marginalized and disenfranchised, adversely affecting their self-confidence and career advancement [30].

Bias, often unconscious, can result in differing day-to-day experiences for men and women. Men and women academic physicians frequently receive different levels of financial support at the beginning of their careers and also experience disparities in mentoring and sponsorship throughout their careers [32,33,34]. Women physicians consistently earn less than their male colleagues across multiple specialties [35], despite similar levels of clinical or academic productivity. Women are less likely than men to be speakers at grand rounds in some academic medical centers, losing the benefits that these opportunities provide for career advancement [36]. A review of introductions of grand rounds speakers at two internal medicine departments found that men who introduced speakers

were more likely to use professional titles if the speaker was a man but more likely to use informal address, typically first name only, if the speaker was a woman [37]. Despite similar work and levels of academic productivity, women are less likely to be promoted [38] and compose a small minority of leaders in medicine, especially compared to their representation among practicing physicians. A survey of faculty members at 14 academic health centers found that women are less likely than men to feel a sense of common purpose and belonging and to report fair access to opportunity and rewards within organizations [39].

Gender-related bias seems to be even more prevalent among women physicians who are mothers. In a survey of an online group of physician mothers, one-third of respondents noted experiencing discrimination related to their role as a mother. Among those who experienced discrimination, almost 90 percent reported that this was related to pregnancy or maternity leave; almost half were subjected to disrespectful comments from support staff about breastfeeding. Exposure to maternal discrimination was associated with an increased incidence of self-reported burnout [40]. In addition, women who are mothers have reported being held to higher standards, experiencing lack of support during pregnancy and the postpartum period, and having even more limited opportunities for career advancement, as though they were being “punished” for becoming mothers [41]. The reported incidence of burnout rises even higher if women physicians are caring for someone with a serious health problem or disability (e.g., child, partner, parent, other relative), in addition to a child [42].

Although the origin of burnout is multifactorial, a significant association has been identified between the perception of gender bias and discrimination and the manifestation of burnout [43]. Increased rates of burnout have also been found among medical students who have been mistreated (including being subjected to racial or gender discrimination or harassment) [44]. Unfortunately, studies in this area do not consistently evaluate results on the basis of gender. Despite decreased career satisfaction and burnout, victims of bias or discrimination may not speak up because they may assume that the behavior reflects the culture of medicine or the culture of the workplace [45] and that nothing will be done to correct the problem.

Sexual Harassment

Being the victim of or working in an environment in which other women have been victims of sexual ha-

arrassment can also cause women to feel a sense of alienation from the workplace and can highlight the discrepancies between the values of the women physicians and those physicians or administrators with or for whom they work. Women physicians are much more likely than men physicians to be victims of workplace sexual harassment, which can range from sexist comments to sexual coercion and assault [46]. In addition, women who belong to a sexual minority group are at risk of experiencing harassment based on their sexual orientation [47]. Workplace sexual harassment and bullying have been linked to mental health issues, such as depression and anxiety, and may contribute to the development of burnout among victims of both direct and indirect harassment [48,49,50]. Women physicians who have been victims of sexual harassment note that the experiences negatively affected their self-confidence and career advancement. Some victims even changed jobs or careers [30,51]. Women physicians (like many other victims) may not acknowledge or report instances of sexual assault because of concerns about confidentiality, reprisal, and negative career consequences.

Autonomy and Workload

Lack of autonomy or control can also contribute to burnout. A large survey of primary care physicians revealed that women are less likely to believe that they have sufficient time to see patients during office visits and that women report having less control over their workload and their schedules than men physicians do [17]. Institutional pressures to perform administrative tasks and support patients' emotional needs may disproportionately affect women, because women are more frequently identified culturally as caretakers and nurturers. Women physicians spend, on average, two minutes more on each patient visit than men physicians and are more likely to explore socioemotional and psychosocial issues during the visit [52]. The gendered approach to patient care, called “the motherly approach,” has been described as personally draining for women surgeons over time and has also been described as leading to compassion fatigue [25,53]. Gendered expectations from patients may also contribute to differential stresses experienced by women and men physicians [54].

Individual Factors

Some physicians may be more susceptible to burnout because of their life experiences. For example, the presence of impostor syndrome—which leads to dis-

tortion of the way sufferers see the world and themselves—may be exacerbated by life experiences that occur before and while in the medical profession and can contribute to burnout. Also referred to as the impostor experience, this syndrome is a pattern of thinking and behavior exhibited by individuals who cannot internalize their own successes and instead have a persistent fear that they do not deserve what they have achieved, despite objective evidence to the contrary [55]. Although first described among high-achieving women, impostor syndrome is found among men and women and across professions. The syndrome has been observed in nurses and physician assistants, as well as physicians [55,56,57,58]. An exploratory study of impostor syndrome among medical students at one US institution found it to be present in 49.4 percent of women and 23.7 percent of men [59]. Impostor syndrome can persist among some physicians throughout their careers [60]. Some researchers have found a relationship between the presence of impostor syndrome and conditions such as anxiety, depression, and lower self-esteem among women [59,61].

There is less evidence exploring the role of other internal factors, such as stereotype perception. *Stereotype perception* refers to the fear of confirming a negative stereotype about a subgroup to which one belongs. A study evaluating the impact of stereotype perception among surgical residents found that women residents who held a negative perception of women's ability to be capable surgeons had poorer psychological health than women without that perception or men, regardless of their perception [62].

Burnout, Depression, and Suicide

Burnout, depression, and suicidal ideation are separate but related entities. It is critically important to distinguish between these conditions, because their remedies are different. Burnout is situationally specific and is related to the workplace. Depression and suicidal ideation can occur in some physicians suffering from burnout but typically reflect the presence of additional issues.

Burnout, like other stressors, may contribute to the development of depression in susceptible individuals. Women physicians are more likely than men physicians to experience depression, sometimes as early as their internship year [27]. However, not all physicians experiencing depression also experience burnout and vice versa. Depression is characterized by a series of symptoms, including changes in appetite and sleep,

difficulty concentrating, inability to feel pleasure, and thoughts of suicide that persist for at least two weeks. In addition, people with depression may also experience feelings of anger, fatigue, exhaustion, anxiety, and loneliness, and a low sense of personal accomplishment—symptoms that often make it difficult to distinguish depression from burnout. Both burnout and depression may lead to regular use of alcohol or other drugs for self-medication. Women experiencing burnout are at a higher risk of increased alcohol consumption than are men [63,64].

Women physicians are 2.27 times more likely to die by suicide compared to woman nonphysicians, and male physicians are 1.41 times more likely to die by suicide compared to male nonphysicians [65]. Suicidal ideation has been reported by physicians who also reported symptoms of burnout and depression, although gender-based differences have not been consistently found [66]. A recent study of burnout revealed that, in response to the open ended question, "Is there anything else you would like to share with AAN (American Academy of Neurology) regarding burnout and well-being?" women neurologists more commonly wrote about depression and suicidal ideation than did men neurologists [22].

Burnout and depression manifest similarly and may even coexist among some physicians [67]. However, since they are separate and distinct conditions, they require different interventions. Mitigation of burnout requires culture and system changes, whereas depression requires medical treatment. One important challenge of all physicians is a reluctance to seek help for burnout or depression because of stigma, concerns about licensure and credentialing, and a tendency to self-treat [61,66]. The complex relationship between burnout and depression and the differences in how men and women may report these symptoms requires more investigation.

Strategies to Mitigate Burnout and Promote Well-Being

Overview

Many of the factors contributing to burnout among men and women physicians are similar. Prevention and intervention strategies aimed at mitigating these factors should equally benefit women and men. However, some external factors differentially affect women and men. Thus, recognition of and attention to these differences is important for the development of suc-

successful prevention and intervention strategies. Such initiatives will benefit both patients and practicing clinicians.

Although external factors are the primary contributors to physician burnout and require systems-level interventions to address, individual interventions may play a role in reducing burnout as well. A few studies evaluating the efficacy of interventions for the reduction of burnout among physicians examined the relationship between gender and burnout [68,69,70]. Most studies found no significant relationship between gender and the impact of the intervention on burnout [68,70]. Two recent systematic reviews and meta-analyses evaluated the effectiveness of interventions in reducing physician burnout [71,72]. These interventions did not affect women and men differently. However, the number of studies was small, and only a few examined addressing systemic factors. Notwithstanding, one study found that a higher proportion of women than men met the criteria for burnout, and after the analysis was adjusted for age, protected time, and relationship status, the effect of the intervention on burnout was stronger for men than for women [69].

Addressing the Differential Causes and Effects of Physician Burnout by Gender: What Organizations Can Do

Leadership

Enlightened leadership is essential in effecting change and addressing burnout at the organizational level [73]. Leadership qualities of supervisors are associated with individual physicians' burnout and satisfaction scores [74]. Leaders can play an important role in leveling the playing field for women at every stage of their careers by addressing disparities in opportunities, pay, and support staff and by working to eliminate gender discrimination and harassment [75,76]. Clear and credible reporting structures, as well as accountability metrics for managers and supervisors, may help to reduce or, ideally, eliminate workplace harassment and bullying [77,78]. Organizations can also foster improvements in culture by addressing issues related to harassment and by working with administration to regularly survey and assess the quality of the clinical environment.

Work Environment, Stigma, and Access to Resources

Workplace culture has a strong influence on career advancement and development for women in health professions, and resources that can assist women physicians in being successful at work should be available

[79,80]. A supportive work culture may mitigate some of the challenges of achieving optimal work-life integration [81]. Because many women clinicians experience unique pressures related to balancing personal and professional demands, organizations can foster balance by promoting gender-specific mentorship programs and implementing policies and practices intended to improve work-life integration [82,83,84,85]. These policies should include availability of child care—especially for parents of sick children who are unexpectedly unable to attend school or day care—lactation facilities and time to use them, and family leave that allows both women and men adequate time to care for children and other family members throughout their careers. Such policies would be more consistent with those that have been adopted for physicians in Europe [86] and those that are currently available in other industries in the United States.

In addition, workplace sexual harassment and gender biases must be addressed more effectively. Effective organizational training programs designed to educate participants about unconscious bias, workplace norms, effective communication, and reporting mechanisms should be implemented. The efficacy of current sexual harassment reporting mechanisms can be compromised by victims' fear and reluctance to report perpetrators—some of whom perform these acts frequently—and by institutions' need to mitigate legal risk. The impact of current sexual harassment training programs needs to be clarified. Organizations need to take steps to promote authentic conversations to truly address these challenges. Reporting mechanisms must be clear, and complainants must feel secure that reporting such behavior will not negatively affect their lives or careers and that their complaints will be properly investigated. Victims should also have ready access to support services during and after this process [46]. Additional information about implementation of programs can be found in the National Academies of Sciences, Engineering, and Medicine report, *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine* [46].

Concrete strategies aimed at reducing gender bias include education and organizational change. Providing education about gender bias through brief educational interventions can change physicians' perceptions of bias, including changing their implicit biases [83]. Strategies to provide support for women physicians and to address bias also need to consider the impact of the interaction of age, race and ethnicity minority status, and gender or sexual orientation minority sta-

tus on the development of burnout. Organizational interventions aimed at reducing the effects of gender bias and discrimination range from improving awareness to providing structured opportunities for women faculty members to share their experiences, as well as explicit discussions about the influence of gender bias on processes such as feedback and promotion [84,85]. When feedback about gender bias is provided, defensive reactions that could be provoked by such feedback should be anticipated [87].

Those physicians who exhibit symptoms of burnout or depression must be able to obtain appropriate care. Thus, the stigma associated with these problems must be eradicated, and mental health resources must be readily available to busy physicians. Seeking help for burnout and mental health issues should be encouraged and should not place one's hospital privileges, licensure, or certification status in jeopardy. State medical boards should adopt the recommendations of the Federation of State Medical Boards in their *Report and Recommendations of the Workgroup on Physician Wellness and Burnout* published in 2018 [88], including reviewing current procedures to determine if obtaining information regarding a physician's mental health status is necessary to ensure patient safety, making clear differentiation between past mental health issues and current impairments, and clearly stating that obtaining additional information regarding physician physical or mental health does not constitute an investigation. These can help to reduce the stigma of mental health issues among physicians and the public and encourage physicians to seek help when needed.

Career Development

Organizations can positively address the needs of women clinicians through hiring decisions, career advancement, leadership development, negotiation skills training, and mentorship programs. Intentional efforts to ensure that qualified women are placed on appropriate committees, are given the necessary administrative staff, and are supported and compensated for their work (clinical, education, and research based) are needed to ensure that women are promoted at rates equal to those of men.

Women physicians have difficulty accessing mentors [89]. This problem can be addressed by formal mentoring programs within institutions or larger medical associations. Mentoring by more senior physicians can help both women and men identify career development strategies. Mentorship can address common feelings of guilt and stress related to antiquated gen-

dered expectations within and outside the workplace [90]. Mentoring can foster an emotionally supportive environment for personal and professional development [91]. Men leaders can serve as allies by sponsoring and promoting the advancement of women leaders within health care organizations [92].

Peer communities can provide opportunities for women to work together to address institutional policies that are detrimental toward women and to discuss common issues such as work-home conflict. A program for women academics in psychiatry improved job-related well-being, self-esteem, and self-efficacy [93]. Another program improved research productivity and scholarly output and increased satisfaction with academic achievement and confidence in research skills [94]. Programs that allow women physicians at similar stages of their careers to discuss common issues have been identified as useful interventions through which women can share resources, provide support, and normalize their experiences [95].

Learning Environments

Several organizations have programs designed to improve the well-being of medical students, residents, and other trainees. Unfortunately, limited evidence exists regarding gender-directed interventions in the learning environment. One recent study of medical students at a single school found gender differences in how the students experienced burnout. The authors noted that the differences, although statistically significant, were small, and they recommended that interventions be broadly available to all students and targeted, as appropriate, to the specific needs of men and women students [96]. At Stanford University's medical school, an intervention aimed at reducing gender insensitivity improved perceptions of the medical school's learning environment [97]. Other interventions, such as facilitating wellness behaviors, although not focused on gender, may differentially impact men and women.

Addressing the Differential Causes and Effects of Physician Burnout: What Individuals Can Do

Although individual approaches to preventing burnout can have some impact, they will not be successful in isolation: organizational support of strategies used by individual physicians to prevent burnout, increase well-being, and improve resilience is necessary to ensure that burnout is effectively mitigated. Organizations can support physicians by providing protected time to participate in self-care activities, such as yoga, mindfulness training, and exercise. Importantly, affordable, timely,

and convenient access to physical and mental health services should be prioritized. To be effective, these interventions require the availability of sufficient time away from work and home responsibilities, but obtaining such time may be especially challenging for women.

Strategies for Moving Forward

Current understanding of gender-based differences in burnout that focus on women physician challenges leads to four high-level strategies on how to best address these issues (*Box 1*).

The research community should develop a consensus definition of *burnout* and promote the use of standardized measures. Researchers and health-care organizations should consistently include physician demographics in their assessments of physician wellness. Consistent use of standardized terms and assessments, including those used to identify the population being evaluated, will promote optimal research outcomes. The risk of developing burnout is multifactorial and is affected by the physician's gender, as well as their age, race, ethnicity, or sexual minor-

Box 1 | Strategies to Mitigate Gender-Based Differences of Burnout in Physicians

- The research community should develop a consensus definition of *burnout* and promote the use of standardized measures. Researchers and health care organizations should consistently include physician demographics in their assessments of physician wellness.
- To mitigate gender-based differences in burnout, organizations should develop interventions targeted at personal and institutional factors, with an emphasis on the latter.
- The culture of medicine must change to eliminate conscious and unconscious biases, gender discrimination, and sexual harassment.
- Health care institutions should prioritize the physical and mental health of all physicians, with specific tactics employed for women physicians.

SOURCE: Templeton et al. "Gender-based differences in burnout: Issues faced by women physicians," *NAM Perspectives*.

ity status. Additional research is needed to investigate the intersection of these factors in the development of burnout. Studies of the impact of interventions should likewise consider these factors, with results reported based on each factor. In addition, the impact of interventions designed to improve well-being, increase resilience, and reduce burnout should be assessed in terms of gender-based physician satisfaction and retention, as well as other demographic areas, and should be incorporated into the performance measures and metrics used to assess the quality of the health care system. Appropriately designed studies, including longitudinal ones, will provide a better understanding of the relationship between these demographic factors and burnout, and will also assist in the development of strategies to reduce the effects of burnout on physicians, their team members, and their patients.

To mitigate gender-based differences in burnout, organizations should develop interventions targeted at personal and institutional factors, with an emphasis on the latter. Institutions should explore which organizational factors are most important in their learning and practice environments. Societal expectations that women be primarily responsible for caregiver roles at home remain a barrier to fully equalizing the roles and responsibilities of men and women within and outside the workplace. Until these expectations change, health care organizations must acknowledge these societal demands and provide resources and flexibility in the work environment that can enable women's success. Interventions in this area can include flexible works hours and options for family leave that facilitate care for dependent children, parents, and other family members without negative career consequences. In addition, health care institutions should

allocate resources that can help women be successful at work, including career development, mentoring, and peer support programs.

The culture of medicine must change to eliminate conscious and unconscious biases, gender discrimination, and sexual harassment. Eliminating biases and harassment can help to level the playing field, promote women's careers, eliminate a substantial source of stress for women, and emphasize to women that their goals as physicians are aligned with those of their workplaces.

Health care institutions should prioritize the physical and mental health of all physicians, with specific tactics employed for women clinicians. Organizational approaches to improve well-being and reduce burnout should include broad-based programs championed and supported by organizational leadership. Such programs can include mindfulness training, stress management, and exercise. Where appropriate, gender-targeted interventions should be a component of these well-being programs. Institutional practices designed to ensure that physicians, especially women who have multiple responsibilities outside work, have time to participate in these programs should be employed where possible. In addition, healthcare and society, in general, must work to eliminate the stigma frequently associated with mental health issues, including burnout and depression. Steps toward this goal include the ready availability of resources such as confidential counseling and psychiatric services, as well as the provision of the time necessary for physicians to address their physical and mental health without negative repercussions. We must also continue to raise awareness of the increasing incidence of physician suicide.

Conclusion

Additional work is needed to identify optimal initiatives to address burnout. Some of these interventions may be similar between/among the genders, such as improving functionality of electronic health records or increasing the control that a physician has over their work schedule. However, some interventions may be more gender-specific, such as improving family leave policies and addressing the gender bias and sexual harassment faced by women in medicine. It will be important to engage women in the development and implementation of programs designed to improve satisfaction with their careers, to assure that these programs are practical and meaningful. Support for wom-

en in medicine needs to be career-long, as the issues they face exist for the entirety of their careers.

References

1. Maslach, C., and S. E. Jackson. 1981. The measurement of experienced burnout. *Journal of Organization Behavior* 2(2):99-113.
2. Adwan, J. S. 2014. Pediatric nurses' grief experience, burnout and job satisfaction. *Journal of Pediatric Nursing* 29(4):329-336.
3. Patrick, K., and J. F. Lavery. 2007. Burnout in nursing. *Australian Journal of Advanced Nursing* 24(3):43-48.
4. Association of American Medical Colleges. 2012. *US medical school applicants and students: 1982-1983 to 2011-2012*. Washington, DC. <https://www.aamc.org/download/153708/data> (accessed March 15, 2019).
5. Robinson, G. E. 2003. Stresses on women physicians: Consequences and coping techniques. *Depression and Anxiety* 17(3):180-189.
6. Frank, E., J. A. McMurray, M. Linzer, and L. Elon. 1999. Career satisfaction of US women physicians. *Archives of Internal Medicine* 159:1417-1426.
7. World Health Organization. 2002. *Sexual and reproductive health*. http://www.who.int/reproductivehealth/topics/gender_rights/sexual_health/en (accessed January 24, 2019).
8. World Health Organization. No date. *Gender, equity, and human rights*. <http://www.who.int/gender-equity-rights/understanding/gender-definition/en> (accessed January 24, 2019).
9. Eliason, M. J., S. L. Dibble, and P. A. Robertson. 2011. Lesbian, gay, bisexual, and transgender (LGBT) physicians' experiences in the workplace. *Journal of Homosexuality* 58(10):1355-1371.
10. Sanfilippo, F., A. Noto, G. Foresta, C. Santonocito, G. J. Arcadipane, D. M. Maybauer, and M. O. Maybauer. 2017. Incidence and factors associated with burnout in anesthesiology: A systematic review. *BioMed Research International* 8648925.
11. Rotenstein, L. S., M. Torre, M. A. Ramos, R. C. Rosales, C. Guille, S. Sen, and D. A. Mata. 2018. Prevalence of burnout among physicians: A systematic review. *Journal of the American Medical Association* 320(11):1131-1150.
12. National Academy of Medicine Action Collaborative on Clinician Well-Being and Resilience. 2018. *Validated instruments to assess work-related dimensions of well-being*. <https://nam.edu/valid-reliable-survey-instruments-measure-burnout-well-work->

- related-dimensions (accessed January 24, 2019).
13. Shanafelt, T. D., O. Hasan, L. N. Dyrbye, C. Sinsky, D. Satele, J. Sloan, and C. P. West. 2015. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clinic Proceedings* 90(12):1600-1613.
 14. Dyrbye, L. N., C. P. West, D. Satele, S. Boone, L. Tan, J. Sloan, and T. D. Shanafelt. 2014. Burnout among US medical students, residents, and early career physicians relative to the general US population. *Academic Medicine* 89(3):443-451.
 15. Purvanova, R. K., and J. P. Muros. 2010. Gender differences in burnout: A meta-analysis. *Journal of Vocational Behavior* 77(2):168-185.
 16. McMurray, J. E., M. Linzer, T. R. Konrad, J. Douglas, R. Shugerman, and K. Nelson. 2000. The work lives of women physicians: Results from the Physician Work-Life Study. *Journal of General Internal Medicine* 6(6):372-380.
 17. Peckham, C. 2018. *Medscape national physician burnout and depression report 2018*. <https://www.medscape.com/slideshow/2018-lifestyle-burnout-depression-6009235> (accessed January 24, 2019).
 18. Shenoi, A. N., M. Kalyanaraman, A. Pillai, P. S. Raghava, and S. Day. 2018. Burnout and psychological distress among pediatric critical care physicians in the United States. *Critical Care Medicine* 46(1):116-122.
 19. Shanafelt, T. D., W. J. Gradishar, M. Kosty, D. Satele, H. Chew, L. Horn, B. Clark, A. E. Hanley, Q. Chu, J. Phippen, J. Sloan, and M. Raymond. 2014. Burnout and career satisfaction among US oncologists. *Journal of Clinical Oncology* 32(7):678-686.
 20. Hillhouse, J. J., C. M. Adler, and D. N. Walters. 2000. A simple model of stress, burnout and symptomatology in medical residents: A longitudinal study. *Psychology, Health, & Medicine* 5(1):63-73.
 21. West, C. P., L. N. Dyrbye, and T. D. Shanafelt. 2018. Physician burnout: Contributors, consequences, and solutions. *Journal of Internal Medicine* 283(6):516-529.
 22. LaFaver, K., J. M. Miyasaki, C. M. Keran, C. Rheau, L. Gulya, K. H. Levin, E. C. Jones, H. B. Schwarz, J. R. Molano, A. Hessler, D. Singhal, T. D. Shanafelt, J. A. Sloan, P. J. Novotny, T. L. Cascino, and N. A. Busis. 2018. Age and sex differences in burnout, career satisfaction, and well-being in US neurologists. *Neurology* 91(20):e1928-e1941.
 23. Brigham, T., C. Barden, A. L. Dopp, A. Hengerer, J. Kaplan, B. Malone, C. Martin, M. McHugh, and L. M. Nora. 2018. A journey to construct an all-encompassing conceptual model of factors affecting clinician well-being and resilience. *NAM Perspectives*. Discussion Paper, National Academy of Medicine, Washington, DC. doi:10.31478/201801b.
 24. Verweij, V., F. M. M. A. van der Heijden, M. L. M. van Hooff, J. T. Prins, A. L. M. Lagro-Janssen, H. van Ravesteijn, and A. E. M. Speckens. 2017. The contribution of work characteristics, home characteristics and gender to burnout in medical residents. *Advances in Health Sciences Education* 22(4):803-818.
 25. Dahlke, A. R., J. K. Johnson, C. C. Greenberg, R. Love, L. Kreutzer, D. B. Hewitt, C. M. Quinn, K. E. Engelhardt, and K. Y. Bilimoria. 2018. Gender differences in utilization of duty-hour regulations, aspects of burnout, and psychological well-being among general surgery residents in the United States. *Annals of Surgery* 268(2):204-211.
 26. Shanafelt, T. D., S. Boone, L. Tan, L. N. Dyrbye, W. Sotile, D. Satele, C. P. West, J. Sloan, and M. R. Oreskovich. 2012. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Archives of Internal Medicine* 172(18):1377-1385.
 27. Guille, C., E. Frank, Z. Zhao, D. A. Kalmbach, P. J. Nietert, D. A. Mata, and S. Sen. 2017. Work-family conflict and the sex difference in depression among training physicians. *JAMA Internal Medicine* 177(12):1766-1772.
 28. Jolly, S., K. A. Griffith, R. DeCastro, A. Stewart, P. Ubel, and R. Jagsi. 2014. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Annals of Internal Medicine* 160(5):344-353.
 29. Yavorsky, J. E., C. M. Dush, and S. J. Schoppe-Sullivan. 2015. The production of inequality: The gender division of labor across the transition to parenthood. *Journal of Marriage and the Family* 77(3):662-679.
 30. Jagsi, R., K. A. Griffith, R. Jones, C. R. Perumalswami, P. Ubel, and A. Stewart. 2016. Sexual harassment and discrimination experiences of academic medical faculty. *Journal of the American Medical Association* 315(19):2120-2121.
 31. Corbie-Smith, C., E. Frank, H. W. Nickens, and L. Elon. 1999. Prevalences and correlates of ethnic harassment in the US women physicians' health study. *Academic Medicine* 74(6):695-701.
 32. Tesch, B. J., H. M. Wood, A. L. Helwig, and A. B.

- Nattinger. 1995. Promotion of women physicians in academic medicine: Glass ceiling or sticky floor? *Journal of the American Medical Association* 273(13):1022-1025.
33. Kaplan, S. H., L. M. Sullivan, K. A. Dukes, C. F. Phillips, R. P. Kelch, and J. G. Schaller. 1996. Sex differences in academic advancement: Results of a national study of pediatricians. *The New England Journal of Medicine* 335(17):1282-1289.
 34. Fried, L. P., C. A. Francomano, S. M. MacDonald, E. M. Wagner, E. J. Stokes, K. M. Carbone, W. B. Bias, M. M. Newman, and J. D. Stobo. 1996. Career development for women in academic medicine: Multiple interventions in a department of medicine. *Journal of the American Medical Association* 276(11):898-905.
 35. Desai, T., S. Ali, X. Fang, W. Thompson, P. Jawa, and T. Vachharajani. 2016. Equal work for unequal pay: The gender reimbursement gap for healthcare providers in the United States. *Postgraduate Medical Journal* 92(1092):571-575.
 36. Buell, D., B. R. Hemmelgarn, and S. E. Straus. 2018. Proportion of women presenters at medical grand rounds at major academic centres in Canada: A retrospective observational study. *The British Medical Journal* 8(1):e019796.
 37. Files, J. A., A. P. Mayer, M. G. Ko, P. Friedrich, M. Jenkins, M. J. Bryan, S. Vegunta, C. M. Wittich, M. A. Lutle, R. Melikian, T. Duston, Y. H. Chang, and S. N Hayes. 2017. Speaker introductions at internal medicine grand rounds: Forms of address reveal gender bias. *Journal of Women's Health* 26(5):413-419.
 38. Carr, P. L., R. H. Friedman, M. A. Moskowitz, and L. E. Kazis. 1993. Comparing the status of women and men in academic medicine. *Annals of Internal Medicine* 119(9):908-913.
 39. Person, S. D., C. G. Jordan, J. J. Allison, L. M. Fink Ogawa, S. Conard, M. A. Nivet, and D. L. Plummer. 2015. Measuring diversity and inclusion in academic medicine: The diversity engagement survey. *Academic Medicine: Journal of the Association of American Medical Colleges* 90(12):1675-1683.
 40. Adesoye, T., C. Mangurian, E. K. Choo, C. Girgis, H. Sabry-Elnaggar, E. Linos, and Physician Moms Group Study Group. 2017. Perceived discrimination experienced by physician mothers and desired workplace changes: A cross-sectional survey. *JAMA Internal Medicine* 177(7):1033-1036.
 41. Halley, M. C., A. S. Rustagi, J. S. Torres, E. Linos, V. Plaut, C. Mangurian, E. Choo, and E. Lino. 2018. Physician mothers' experience of workplace discrimination: A qualitative analysis. *British Medical Journal* 363:k4926.
 42. Yank, V., C. Rennels, E. Linos, E. K. Choo, R. Jagsi, and C. Mangurian. 2019. Behavioral health and burnout among physician mothers who care for a person with a serious health problem, long-term illness, or disability. *JAMA Internal Medicine* 179(4):571-574.
 43. Moore, L. R., C. Ziegler, A. Hessler, D. Singhal, and K. LaFaver. 2019. Burnout and career satisfaction in women neurologists in the United States. *Journal of Women's Health* 28(4):515-525.
 44. Cook, A. F., V. M. Arora, K. A. Rasinski, F. A. Curlin, and Y. D. Yoon. 2014. The prevalence of medical student mistreatment and its association with burnout. *Academic Medicine* 89(5):749-754.
 45. Bruce, A. N., A. Battista, M. W. Plankey, L. B. Johnson, and M. B. Marshall. 2015. Perceptions of gender-based discrimination during surgical training and practice. *Medical Education Online* 20:25923.
 46. National Academies of Sciences, Engineering, and Medicine. 2018. *Sexual harassment of women: Climate, culture, and consequences in academic sciences, engineering, and medicine*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24994>.
 47. Brogan, D. J., E. Frank, L. Elon, P. Sivanesan, and K. A. O'Hanlan. 1999. Harassment of lesbians as medical students and physicians. *JAMA* 282(13):1290, 1292.
 48. Richman, J. A., K. M. Rospenda, S. J. Nawyn, J. A. Flaherty, M. Fendrich, M. L. Drum, and T. P. Johnson. 1999. Sexual harassment and generalized workplace abuse among university employees: Prevalence and mental health correlates. *American Journal of Public Health* 89(3):358-363.
 49. Giorgi, G., S. Mancuso, F. Fiz Perez, A. Castiello D'Antonio, N. Mucci, V. Cupelli, and G. Arcangeli. 2016. Bullying among nurses and its relationship with burnout and organizational climate. *International Journal of Nursing Practice* 22(2):160-168.
 50. Takeuchi, M., K. Nomura, S. Horie, H. Okinaga, C. R. Perumalswami, and R. Jagsi. 2018. Direct and indirect harassment experiences and burnout among academic faculty in Japan. *The Tohoku Journal of Experimental Medicine* 245(1):37-44.
 51. Cabrera, M. T., L. B. Enyedi, L. Ding, and S. M. MacDonald. 2019. Sexual harassment in ophthalmology.

- gy: A survey study. *Ophthalmology* 126(1):172-174.
52. Roter, D. L., J. A. Hall, and Y. Aoki. 2002. Physician gender effects in medical communication: A meta-analytic review. *Journal of the American Medical Association* 288(6):756-764.
 53. Wu, D., B. Gross, K. Rittenhouse, C. Harnish, C. Mooney, and F. B. Rogers. 2017. A preliminary analysis of compassion fatigue in a surgeon population: Are female surgeons at heightened risk? *The American Journal of Surgery* 83(11):1302-1307.
 54. Linzer, M., and E. Harwood. 2018. Gendered expectations: Do they contribute to high burnout among female physicians? *Journal of General Internal Medicine* 33(6):963-965.
 55. Clance, P. R., and S. A. Imes. 1978. The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention. *Psychotherapy: Theory, Research & Practice* 15(3):241-247.
 56. Sherman, R. O. 2013. Imposter syndrome: When you feel like you're faking it. *American Nurse Today* 8(5):57-58.
 57. Prata, J., and J. Gietzen. 2007. The imposter phenomenon in physician assistant graduates. *The Journal of Physician Assistant Education* 18(4):33-36.
 58. Mattie, C., J. Gietzen, S. Davis, and J. Prata. 2008. The imposter phenomenon: Self-assessment and competency to perform as a physician assistant in the United States. *The Journal of Physician Assistant Education* 19(1):5-12.
 59. Villwock, J. A., L. B. Sobin, L. A. Koester, and T. M. Harris. 2016. Imposter syndrome and burnout among American medical students: A pilot study. *International Journal of Medical Education* 7:364-369.
 60. LaDonna, K. A., S. Ginsburg, and C. Watling. 2018. "Rising to the level of your incompetence": What physicians' self-assessment of their performance reveals about the imposter syndrome in medicine. *Academic Medicine* 93(5):763-768.
 61. Legassie, J., E. M. Zibrowski, and M. A. Goldszmidt. 2008. Measuring resident well-being: Imposterism and burnout syndrome in residency. *Journal of General Internal Medicine* 23(7):1090-1094.
 62. Salles, A., C. M. Mueller, and G. L. Cohen. 2016. Exploring the relationship between stereotype perception and residents' well-being. *Journal of the American College of Surgeons* 222(1):52-58.
 63. Gold, K. J., L. B. Andrew, E. B. Goldman, and T. L. Schwenk. 2016. "I would never want to have a mental health diagnosis on my record": A survey of female physicians on mental health diagnosis, treatment, and reporting. *General Hospital Psychiatry* 43:51-57.
 64. Oreskovich, M. R., K. L. Kaups, C. M. Balch, J. B. Hanks, D. Satele, J. Sloan, C. Meredith, A. Buhl, L. N. Dyrbye, and T. D. Shanafelt. 2012. Prevalence of alcohol use disorders among American surgeons. *Archives of Surgery* 147(2):168-174.
 65. Schernhammer, E. S., and G. A. Colditz. 2004. Suicide rates among physicians: A quantitative and gender assessment (meta-analysis). *American Journal of Psychiatry* 161(12):2295-2302.
 66. Shanafelt, T. D., C. M. Balch, L. Dyrbye, G. Beachamps, T. Russell, D. Satele, T. Rummans, K. Swartz, P. J. Novotny, J. Sloan, and M. R. Oreskovich. 2011. Special report: Suicidal ideation among American surgeons. *Archives of Surgery* 146(1):54-62.
 67. American Psychiatric Association, DSM-5 Task Force. 2013. *Diagnostic and statistical manual of mental disorders, 5th edition*. Washington, DC. Pp. 160-168.
 68. Oman, D., J. Heldberg, and C. E. Thoresen. 2006. Passage meditation reduces perceived stress in health professionals: A randomized, controlled trial. *Journal of Consulting and Clinical Psychology* 74(4):714-719.
 69. West, C. P., L. N. Dyrbye, J. T. Rabatin, T. G. Call, J. H. Davidson, A. Multari, S. A. Romanski, J. M. Hellyer, J. A. Sloan, and T. D. Shanafelt. 2014. Intervention to promote physician well-being, job satisfaction, and professionalism a randomized clinical trial. *JAMA Internal Medicine* 174(4):527-533.
 70. Parshuram, C. S., A. C. Amaral, N. D. Ferguson, G. R. Baker, E. E. Etchells, V. Flintoft, J. Granton, L. Lingard, H. Kirpalani, S. Mehta, H. Moldofsky, D. C. Scales, T. E. Stewart, A. R. Willan, and J. O. Friedrich. 2015. Patient safety, resident well-being and continuity of care with different resident duty schedules in the intensive care unit: A randomized trial. *Canadian Medical Association Journal* 187(5):321-329.
 71. West, C. P., L. N. Dyrbye, P. J. Erwin, and T. D. Shanafelt. 2016. Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *Lancet* 388(10057):2272-2281.
 72. Panagioti, M., E. Panagopoulou, P. Bower, G. Lewith, E. Kontopantelis, C. Chew-Graham, H. van Marwijk, K. Geraghty, and E. Aneez. 2017. Controlled interventions to reduce burnout in physicians: A systematic review and meta-analysis. *JAMA Internal Medicine* 177(2):195-205.

73. Shanafelt, T. D., and J. H. Noseworthy. 2017. Executive leadership and physician well-being: Nine organizational strategies to promote engagement and reduce burnout. *Mayo Clinic Proceedings* 92(1):129-146.
74. Shanafelt, T. D., G. Gorringer, R. Menaker, K. A. Storz, D. Reeves, S. J. Buskirk, J. A. Sloan, and S. J. Swensen. 2015. Impact of organizational leadership on physician burnout and satisfaction. *Mayo Clinic Proceedings* 90(4):432-440.
75. Freischlag, J. A., and P. Faria. 2018. It is time for women (and men) to be brave: A consequence of the #MeToo movement. *JAMA* 319(17):1761-1762.
76. Antman, K. 2018. Building on #MeToo to enhance the learning environment for US medical schools. *JAMA* 319(17):1759-1760.
77. Ammerman, C., and B. Groysberg. 2017. Why sexual harassment persists and what organizations can do to stop it. *Harvard Business Review*, December 21. <https://hbr.org/2017/12/why-sexual-harassment-persists-and-what-organizations-can-do-to-stop-it> (accessed January 24, 2019).
78. Lipman L. 2017. Three steps companies can take to prevent sexual harassment. *Forbes*, November 6. <https://www.forbes.com/sites/victorlipman/2017/11/06/3-steps-companies-can-take-to-prevent-sexual-harassment/#56d0bf4438a9> (accessed January 24, 2019).
79. van Vendeloo, S. N., D. J. Prins, C. C. P. M. Verheyen, J. T. Prins, F. van den Heijkant, F. M. M. A. van der Heijden, and P. L. P Brand. 2018. The learning environment and resident burnout: A national study. *Perspectives of Medical Education* 7(2):120-125.
80. Committee on Maximizing the Potential of Women in Academic Science and Engineering, and Committee on Science, Engineering, and Public Policy. 2007. *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press. <https://www.nap.edu/read/11741/chapter/1> (accessed January 24, 2019).
81. Westring, A. F., R. M. Speck, M. Dupuis Sammel, P. Scott, E. F. Conant, L. W. Tuton, S. B. Abbuhl, and J. A. Grisso. 2014. Culture matters: The pivotal role of culture for women's careers in academic medicine. *Academic Medicine* 89(4):658-663.
82. Strong, E. A., R. De Castro, D. Sambuco, A. Stewart, P. A. Ubel, K. A. Griffith, and R. Jagsi. 2013. Work-life balance in academic medicine: Narratives of physician-researchers and their mentors. *Journal of General Internal Medicine* 28(12):1596-1603.
83. Girod, S., M. Fassiotto, D. Grewal, M. C. Ku, N. Sri-ram, B. A. Nosek, and H. Valantine. 2016. Reducing implicit gender leadership bias in academic medicine with an educational intervention. *Academic Medicine* 91(8):1143-1150.
84. Burgess, D. J., J. Warren, S. Phelan, J. Dovidio, and M. Van Ryn. 2010. Stereotype threat and health disparities: What medical educators and future physicians need to know. *Journal of General Internal Medicine* 25(Suppl 2):S169-S177.
85. Burgess, D. J., A. Joseph, M. Van Ryn, and M. Carnes. 2012. Does stereotype threat affect women in academic medicine? *Academic Medicine* 87(4):506-512.
86. Ramakrishnan, A., D. Sambuco, and R. Jagsi. 2014. Women's participation in the medical profession: Insights from experiences in Japan, Scandinavia, Russia, and Eastern Europe. *Journal of Women's Health* 23(11):927-934.
87. Sukhera, J., A. Milne, P. W. Teunissen, L. Lingard, and C. Watling. 2018. The actual versus idealized self: Exploring responses to feedback about implicit bias in health professionals. *Academic Medicine* 93(4):623-629.
88. Physician Wellness and Burnout: Report and Recommendations of the Workgroup on Physician Wellness and Burnout, Federation of State Medical Boards, 2018.
89. Wietsma, A. C. 2014. Barriers to success for female physicians in academic medicine. *Journal of Community Hospital Internal Medicine Perspectives* 4(3).
90. Carr, P. L., A. S. Ash, R. H. Friedman, A. Scaramucci, R. C. Barnett, L. Szalacha, A. Palepu, and M. A. Moskowitz. 1998. Relation of family responsibilities and gender to the productivity and career satisfaction of medical faculty. *Annals of Internal Medicine* 129(7):532-538.
91. Welch, J. L., H. L. Jimenez, J. Walthall, and S. E. Allen. 2012. The women in emergency medicine mentoring program: An innovative approach to mentoring. *Journal of Graduate Medical Education* 4(3):362-366.
92. Travis, E. L., L. Doty, and D. L. Helitzer. 2013. Sponsorship: A path to the academic medicine C-suite for women faculty? *Academic Medicine* 88(10):1414-1417.
93. Dutta, R., S. L. Hawkes, E. Kuipers, D. Guest, N. T. Fear, and A. C. Iversen. 2011. One year outcomes of a mentoring scheme for female academics: A pilot study at the Institute of Psychiatry, King's College London. *BMC Medical Education* 11:13.

94. Varkey, P., A. Jatoti, A. Williams, A. Mayer, M. Ko, J. Files, J. Blair, and S. Hayes. 2012. The positive impact of a facilitated peer mentoring program on academic skills of women faculty. *BMC Medical Education* 12:14.
95. Norvell, J. G., B. Behraves, P. Chalise, G. Unruh, J. Hammond, and K. J. Templeton. 2018. *Addressing burnout among female residents: Results from a focus group*. Poster presented at the Graduate Medical Education Showcase, American Medical Women's Association 103rd Anniversary Meeting, Philadelphia, PA.
96. Worly, B., N. Verbeck, C. Walker, D. Clinchot, and L. Keder. 2017. Gender differences in medical students' experience of burnout, perceived stress, and empathic concern. *Obstetrics and Gynecology* 130(Suppl 1):61S.
97. Jacobs, C. D., M. R. Bergen, and D. Korn. 2000. Impact of a program to diminish gender insensitivity and sexual harassment at a medical school. *Academic Medicine* 75(5):464-469.

DOI

<https://doi.org/10.31478/201905a>

Suggested Citation

Templeton, K., C. Bernstein, J. Sukhera, L. M. Nora, C. Newman, H. Burstin, C. Guille, L. Lynn, M. L. Schwarze, S. Sen, and N. Busis. 2019. Gender-based differences in burnout: Issues faced by women physicians. *NAM Perspectives*. Discussion Paper, National Academy of Medicine, Washington, DC. <https://doi.org/10.31478/201905a>

Author Information

Kim Templeton, MD, is Professor of Orthopedic Surgery at the University of Kansas Medical Center and past president of the American Medical Women's Association. **Carol A. Bernstein, MD**, is Vice Chair for Faculty Development and Professor of Psychiatry and Obstetrics and Gynecology at the Albert Einstein College of Medicine and Montefiore Health. **Javeed Sukhera, MD, PhD, FRCPC**, is Interim Chair of the Division of Child and Adolescent Psychiatry at Western University Department of Psychiatry and Senior Designate Physician Lead of Child and Adolescent Psychiatry at London Health and Sciences Centre. **Lois Margaret Nora, MD, JD, MBA**, is Professor of Neurology and President Emeritus and Dean of Medicine Emeritus at Northeast Ohio Medical University. **Connie Newman,**

MD, is President of the American Medical Women's Association and Adjunct Professor of Medicine, Division of Endocrinology, Diabetes, and Metabolism, at New York University School of Medicine. **Helen Burstin, MD, MPH**, is Executive Vice President and Chief Executive Officer of the Council of Medical Specialty Societies. **Constance Guille, MD**, is Associate Professor at the Medical University of South Carolina. **Lorna Lynn, MD**, is Vice President of Medical Education Research at the American Board of Internal Medicine. **Margaret L. Schwarze, MD, MPP, FACS**, is Associate Professor in the Departments of Surgery and Medical History and Bioethics at the University of Wisconsin School of Medicine and Public Health. **Srijan Sen, MD, PhD**, is the Frances and Kenneth Eisenberg Professor of Depression and Neurosciences at the University of Michigan. **Neil Busis, MD**, is Director of Community Neurology and Director of the General Teleneurology Program of the UPMC Department of Neurology and Clinical Professor of Neurology at the University of Pittsburgh School of Medicine and Chief of Neurology and Director of the Neurodiagnostic Laboratory at UPMC Shadyside.

Acknowledgments

The authors would like to acknowledge **Rashi Aggarwal, MD**, Rutgers New Jersey Medical School; **Erica Frank, MD, MPH**, The University of British Columbia; and **Flo Witte, PhD**, American Medical Writers Association for their valuable contributions to this paper. The authors would also like to thank **Charlee Alexander**, program officer; **Mariana Zindel**, research associate; and **Imani Rickerby**, senior program assistant at the National Academies of Sciences, Engineering, and Medicine for the valuable support they provided for this paper.

Conflict-of-Interest Disclosures

Dr. Busis receives financial and non-financial support from the American Academy of Neurology.

Disclaimer

The views expressed in this paper are those of the authors and not necessarily of the authors' organizations, the National Academy of Medicine (NAM), or the National Academies of Sciences, Engineering, and Medicine (the National Academies). The paper is intended to help inform and stimulate discussion. It is not a report of the NAM or the National Academies. Copyright by the National Academy of Sciences. All rights reserved.