Acad Psychiatry (2017) 41:159–166
DOI 10.1007/s40596-016-0590-3

EMPIRICAL REPORT

Taking Care of Our Own: A Multispecialty Study of Resident and Program Director Perspectives on Contributors to Burnout and Potential Interventions

Emily G. Holmes[1] · AnnaMarie Connolly[1] · Karen T. Putnam[1] · Kenan M. Penaskovic[1] · Clark R. Denniston[1] · Leslie H. Clark[1] · David R. Rubinow[1] · Samantha Meltzer-Brody[1]

Received: 3 February 2016 / Accepted: 1 July 2016 / Published online: 19 July 2016

Abstract
Objective Rates of resident physician burnout range from 60 to 76 % and are rising. Consequently, there is an urgent need for academic medical centers to develop system-wide initiatives to combat burnout in physicians. Academic psychiatrists who advocate for or treat residents should be familiar with the scope of the problem and the contributors to burnout and potential interventions to mitigate it. We aimed to measure burnout in residents across a range of specialties and to describe resident- and program director-identified contributors and interventions.
Methods Residents across all specialties at a tertiary academic hospital completed surveys to assess symptoms of burnout and depression using the Maslach Burnout Inventory and the Patient Health Questionnaire-9, respectively. Residents and program directors identified contributors to burnout and interventions that might mitigate its risk. Residents were asked to identify barriers to treatment.
Results There were 307 residents (response rate of 61 %) who completed at least one question on the survey; however, all residents did not respond to all questions, resulting in varying denominators across survey questions. In total, 190 of 276 residents (69 %) met criteria for burnout and 45 of 263 (17 %) screened positive for depression. Program directors underestimated rates of burnout, with only one program director estimating a rate of 50 % or higher. Overall residents and program directors agreed that lack of work-life balance and feeling unappreciated were major contributors. Forty-two percent of residents reported that inability to take time off from work was a significant barrier to seeking help, and 25 % incorrectly believed that burnout is a reportable condition to the medical board.
Conclusions Resident distress is common and most likely due to work-life imbalance and feeling unappreciated. However, residents are reluctant to seek help. Interventions that address work-life balance and increase access to support are urgently needed in academic medical centers.

Keywords Residency · Burnout · Depression · Medical education

Resident physician burnout has recently garnered increasing attention in research and the media [1, 2]. Burnout is a constellation of symptoms including emotional exhaustion, depersonalization, and decreased personal accomplishment [3]. The literature has documented that more than 50 % of residents experience burnout, and some studies have reported rates approaching 75 % [4–6]. Moreover, resident physicians are more likely to experience burnout and depression than are population-matched controls [4]. Of particular concern, recent research demonstrates that rates of burnout are rising while work-life satisfaction is declining among physicians of all ages in the USA [2].

The adverse effects of burnout on physicians, patients, and the health care system are serious and far reaching [7, 8]. Burnout negatively impacts patient and provider safety [9]. Distressed residents are more likely to self-report committing a medical error or providing suboptimal care, and residents who have committed a medical error are more likely to subsequently experience burnout and depression [6, 10, 11]. Residents who experience burnout are at increased risk for motor vehicle accidents, substance abuse, depression, and suicide [11–13].

✉ Emily G. Holmes
emily.holmes@unchealth.unc.edu

[1] University of North Carolina, Chapel Hill, NC, USA

Burnout has also been associated with decreased professionalism [14]. Awareness of physician impairment and maintenance of personal well-being have emerged as key professionalism targets within the ACGME Milestones, and a resident's progress in these domains must be tracked and assessed along his or her trajectory to independent practice [15]. The identification of specific factors contributing to burnout along with potential interventions to mitigate the condition could inform curricular and learning environment interventions in residency programs. Specifically, identifying contributors and mitigating factors of burnout could guide resident physicians and residency program directors on how to monitor and address physician wellness at both individual and system levels, thereby potentially enhancing Milestone achievement and providing doctors with the necessary skills to sustain their careers.

Previous work has identified multiple contributors to burnout including work hours, financial strain, fatigue, and poor self-care, but the increasing prevalence of physician burnout makes it critical that we identify the most important drivers of the problem [2]. Likewise, several studies have examined the effectiveness of a variety of interventions for burnout. There is evidence for the Respiratory One Method and duty hour restrictions; however, other interventions such as a communication skill course, Balint groups, journaling, stress management training, and the BATHE psychotherapeutic technique were not effective [16–23]. These results suggest that while there are some beneficial interventions, even some good ideas do not necessarily translate to improved resident well-being.

Academic psychiatrists are uniquely positioned to provide guidance to the health care system on how to address the complicated problem of physician burnout. There are multiple current examples of academic institutions in the USA in which psychiatrists have led initiatives to address burnout in their health care system and provide psychotherapeutic or psychopharmacologic support to struggling residents [24–26]. Therefore, it is valuable for academic psychiatrists to be familiar with the scope of this problem, as they may be called upon to provide support.

To our knowledge, no previous studies have collected input from residents or program directors about resident burnout. Just as health care providers try to understand illness from a patient's perspective in order to deliver patient-centered care, it is critical to obtain input from the residents and program directors who are directly affected by burnout to better understand this condition.

Therefore, our primary objective was to measure actual and program director-estimated rates of burnout and to survey residents and program directors to identify contributors to burnout and interventions that might mitigate burnout. We hypothesized that program director estimates of burnout might not be consistent with rates of burnout in residents, and we sought to compare the identified contributors and proposed interventions of these two stakeholders.

Methods

Study Design and Participants

This study is a cross-sectional survey of residents and program directors at a large tertiary, academic medical center. We contacted program directors of 20 residency programs (anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, medicine/pediatrics, neurology, neurosurgery, obstetrics and gynecology (OB/GYN), ophthalmology, otolaryngology, pathology, pediatrics, physical medicine and rehabilitation, plastic surgery, psychiatry, radiation oncology, radiology, general surgery, and urology) by email to participate in the program director survey and provided a link. We asked program directors to forward a separate email invitation with the resident survey link to their residents.

Data Collection

We collected data from May through June of 2014. Email invitations explained the purpose of the study and emphasized that participation was voluntary and that responses would be anonymous. The email invitations included links to the respective Qualtrics surveys. Residents who completed the survey received a $5 gift card.

Assessment Measures

Resident Survey

The resident survey included questions about demographics, exercise/self-care habits, and knowledge of burnout. To ensure anonymity, participants could choose "prefer not to respond" to all demographic questions, including residency program.

We asked residents to identify their residency program. We combined neurosurgery, ophthalmology, otolaryngology, plastic surgery, and urology into a group called "subspecialty surgery." For the data analyses, we grouped subspecialty surgery, general surgery, anesthesiology, and OB/GYN residents together into a category of "surgical specialties." We considered all other programs to be "non-surgical specialties." We chose to group residents in this manner because we suspected that residents in these surgical specialties might have different rates of burnout and perspectives on burnout compared with the non-surgical specialties.

We identified residents with burnout using the Maslach Burnout Inventory (MBI), a validated tool designed to measure workplace burnout [27]. The MBI has been validated in physician populations, and it generates three subscales: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA) [28]. To be consistent with the literature, we defined burnout as a dichotomous variable; the

threshold for burnout was either high EE (a score of 27 or higher) or high DP (a score of 10 or higher) [27].

We used the Patient Health Questionnaire-9 (PHQ-9), a validated, brief questionnaire to screen for major depression [29, 30]. By convention, we considered a score of 10 or higher to be a positive screen [30]. The ninth item of the PHQ-9 inquires about suicidal ideation, and we examined this item separately in our analyses.

The survey included a list of 10 potential contributors to burnout that were identified based on the literature to date (Table 2). Using a five-point Likert scale, residents rated the degree to which they believed that each factor contributed to resident burnout. Responses included not at all (1), a small degree (2), a moderate degree (3), a high degree (4), and a very high degree (5). Mode and mean Likert scores were calculated, with higher scores reflecting greater contribution to burnout.

A similar process was used to evaluate and compare nine potential interventions, selected specifically to address each potential contributors (Table 3). The residents were asked to estimate the likelihood that the interventions would be helpful in addressing burnout. As with the contributors, a five-point Likert scale was used with responses corresponding to extremely unlikely (1), unlikely (2), neutral (3), likely (4), and very likely (5).

To maintain anonymity and to ensure the most accurate reporting, we did not attempt to identify residents who endorsed suicidality or significant depressive symptoms. However, all residents were provided with a link to the website of our resident support program in the email invitation. This program is designed to provide educational resources and treatment for burnout, depression, and anxiety for residents at our hospital. The website includes contact information for the program psychiatrists and psychologist, who can typically arrange for a full assessment within 24 h of contact and emergency services, if needed.

Program Director Survey

To protect anonymity, program directors did not identify their residency programs. The program directors estimated the percentage of residents in their program who were suffering from burnout and quantified the amount of time spent responding to burnout-related resident distress. Program directors also identified contributors to burnout and potential interventions using the methodology described above.

Institutional Review Board Approval

This study was determined to be exempt from ongoing approval by the Institutional Review Board (IRB) of the University of North Carolina, IRB number 13-1521.

Statistical Analysis

We performed all statistical analyses using SAS software (version 9.4). We calculated descriptive statistics (frequencies and percentages for categorical variables, means, modes, and standard deviations for continuous and ordinal variables) and further analyzed categorical variables using Pearson's chi-square and Fisher exact tests. We appropriately analyzed continuous variables using Pearson product moment correlation coefficients, Student's t tests, or analysis of variance (ANOVA). Mode and mean responses are reported in Tables 2 and 3 for the Likert item scores. Likert items are considered an ordinal measurement scale. The mode represents the most frequent response(s) to that item, whereas reporting the mean alone would not pick up possible bimodal distributions present in the scale [31]. We considered a p value <0.05 to be statistically significant, and results presented here are unadjusted for multiple comparisons.

Results

Resident Physician Survey

Of the 20 program directors contacted, 18 distributed the survey to their residents, representing 504 individuals. A total of 307 residents completed at least one item on the survey, for a response rate of 61 %.

Not all 307 residents completed every question in the survey; therefore, results are presented for all responses obtained, and for many results the denominator is less than 307. Demographic information was collected from the respondents. Ninety-one percent (245/269) of respondents were between 26 and 35 years of age, 79 % (212/268) were white, and 79 % (211/267) were PGY1s, PGY2s, or PGY3s. Most of the respondents, 73 % (196/269) did not have children.

Rates of Burnout and Depression by Specialty

Overall, 69 % of residents met criteria for burnout (Table 1). There were statistically significant differences in burnout according to specialty ($X^2_{12} = 22.73$, $p = 0.03$). Some group sizes were small and rates ranged from 46 % in pathology to 89 % in general surgery. Male residents had higher rates of burnout than did female residents (77 versus 63 %, $X^2_2 = 6.24$, $p = 0.04$). There were no statistically significant differences observed for burnout percentages when stratified by age, year of residency, marital status, number of children, race, or ethnicity.

A total of 17 % of residents screened positive for depression (Table 1), and of those, 96 % also met criteria for burnout. Residents aged 20–35 had a lower prevalence of depression

Table 1 Rates of burnout and depression among all resident physicians who completed the burnout survey, by specialty

Specialty	Rate of burnout (%)	*p* value	Rate of depression (%)	*p* value
Overall	**190/276 (69)**		**45/263 (17)**	
Gender				
Male	75/97 (77)	$p = 0.044$	15/94	NS
Female	105/166 (63)		27/158	
Prefer not to say	5/6 (83)		2/6	
Age				
Ages 20–25	1/1 (100)	NS	0/1 (0)	$p = 0.026$
26–30	110/163 (67)		22/157 (14)	
31–35	59/82 (72)		13/78 (17)	
36–40	6/12 (50)		4/11 (37)	
>40	1/1 (100)		1/1 (100)	
Prefer not to say	8/10 (80)		4/10 (40)	
Surgical vs. non-surgical				
Surgical specialties	49/63 (78)	NS	11/45 (24)	NS
Non-surgical specialties	141/213 (66)		48/218 (22)	
Specialty				
Anesthesiology	13/16 (81)		1/15 (7)	
Dermatology	2/3 (67)		1/2 (50)	
Family medicine	8/16 (50)		2/16 (13)	
General surgery	17/19 (89)		5/19 (26)	
Internal medicine	26/33 (79)		6/33 (18)	
Obstetrics and gynecology	10/17 (59)		3/15 (20)	
Pathology	6/13 (46)		3/13 (23)	
Pediatrics	26/49 (53)		5/48 (10)	
Physical medicine and rehabilitation	8/11 (72)		1/11 (9)	
Psychiatry	28/40 (70)		5/37 (14)	
Radiology	22/26 (85)		7/26 (27)	
Surgical subspecialty (orthopedics, urology, etc.)	9/11 (82)		2/10 (20)	
Other	7/10 (70)		2/9 (22)	

than the 27 residents who were older or did not state their age ($X^2_1 = 8.42, p < 0.01$). Residents who experienced burnout had higher scores on the PHQ-9 ($t_{246} = -7.77$, $p < 0.01$). Using the ninth item of the PHQ-9, suicidal ideation was reported by eight residents; all of these residents had burnout, and six screened positive for depression.

Burnout and Treatment of Depression and Anxiety

In total, 28 % (76/276) of residents had ever received either medication or psychotherapy for treatment of anxiety or depression. Thirty-one percent (58/190) of residents with burnout had ever received mental health treatment compared to 21 % (18/86) of residents without burnout ($p = 0.09$).

At the time of the survey, 16 % (43/276) of residents reported that they were taking medication for depression and/or anxiety. Of these, 74 % (32/43) were experiencing burnout and 33 % (14/43) were experiencing depression. The current use of medication for depression or anxiety was not associated with burnout ($p = 0.39$) but was associated with depression ($X^2_1 = 9.94, p < 0.01$).

The use of psychotherapy was not associated with burnout ($p = 0.73$). Only a small percentage of residents, 13 % (35/276), were receiving psychotherapy at the time of the survey, and 71 % (25/35) of these residents experienced burnout. Psychiatry residents comprised 43 % (15/35) of the residents who were receiving psychotherapy.

Contributors to Burnout and Potential Interventions

Residents reported that the three greatest contributors to burnout were lack of time for self-care, exercise, and/or engagement in enjoyable activities outside of work (mode response 5); conflicting responsibilities between work, home, and family (mode response 4); and feeling underappreciated (mode response 4) (Table 2). Time spent on electronic medical

Table 2 Mode and mean Likert scores to assess the contribution of each potential item to burnout in which the following scale was used: not at all (1), a small degree (2), a moderate degree (3), a high degree (4), and a very high degree (5)

	Resident Mode (mean)	Program director Mode (mean)
Lack of time to exercise, take care of oneself, and/or engage in enjoyable activities outside of work.	5 (4.3)	4 (3.9)
Conflicting responsibilities between work, home, and family	4 (4.1)	4 (3.9)
Feeling underappreciated	4 (3.6)	4 (3.4)
Time spent on electronic medical records and documenting	3 (3.4)	3 (3.5)
Worries about childcare	3 (3.2)	4 (3.3)
Financial stress	3 (3.1)	2 (3.2)
Difficulty with patients	3 (2.8)	2 (2.6)
Difficulty with attendings	2 (2.5)	2 (2.8)
Lack of mentoring or guidance	2 (2.4)	4 (3.1)
Difficulty with other residents	2 (2.1)	2 (2.6)

records and documenting, worries about childcare, financial stress, and difficulty with patients were all felt to contribute to burnout to a moderate degree (mode response 3 for all). Residents agreed that difficult interactions with other residents and attending physicians and lack of mentoring or guidance had only a small contribution to burnout (mode response 2 for all).

Residents were more likely to meet criteria for burnout if they felt that their medical school experience did not provide sufficient insight into the demands of their specialty ($p = 0.04$). In our survey, radiology residents were most likely to disagree or strongly disagree that their medical school experience adequately prepared them for the demands of their specialty (65 %).

Residents reported that more vacation time and increased support from mid-level providers and scribes would be the most helpful interventions for mitigating resident burnout (both with mode responses of 5) (Table 3). Overall, training on how to deal with difficult patients and a formalized mentoring program were interventions that were identified as least likely to be helpful (both with mode responses of 3).

Barriers to Seeking Help

When asked about the greatest barrier to receiving care for stress and burnout, 42 % of residents reported "inability to take time off from work to seek treatment," while 24 % reported "ambivalence, avoidance, and/or denial of the problem." Only 35 % of residents agreed or strongly agreed that they would know how to get help for a colleague with burnout compared to 47 % of residents who disagreed or strongly disagreed. In addition, 25 % of respondents incorrectly believed that burnout is a reportable condition to the state medical board.

Program Director Survey

Burden of Resident Burnout

In total, 60 % of program directors completed the program director survey. The program directors were asked to estimate the rates of burnout by choosing one of the following options: 24 % or less, 25–49 %, 50–74 %, or

Table 3 Mode and mean Likert scores to assess the perceived helpfulness of each potential burnout intervention in which the following scale was used: extremely unlikely (1), unlikely (2), neutral (3), likely (4), and very likely (5)

	Resident mode (mean)	Program director mode (mean)
More vacation time	5 (4.4)	4 (3.4)
Increased support from mid-level providers and/or scribes	5 (4.3)	4 (4.5)
Available on-site childcare	4 (4.0)	5 (3.9)
On-site exercise facilities for residents	4 (4.0)	4 (4.3)
Debriefing after adverse patient outcomes	4 (3.7)	4, 5[a] (3.8)
Financial advising for residents	4 (3.5)	3, 4[a] (3.3)
Formalized peer support after an adverse patient outcome	4 (3.5)	5 (3.7)
A formalized mentoring program	3 (3.4)	4 (4.0)
Training on how to deal with difficult patients	3 (3.0)	3 (3.4)

[a] These responses had two modes

75 % or more. As a group, program directors underestimated rates of burnout; 92 % estimated that burnout rates in their programs were 49 % or less. Only one program director predicted a burnout rate of 50–74 %.

Seventy-five percent of program directors responded that it had been challenging to manage a resident suffering from burnout or other mental health issues, and 58 % said that they had spent up to 5–20 h per month providing increased support to a struggling resident. The majority of program directors (75 %) had spent 3 months or more providing increased support to struggling residents.

Program Director-Identified Contributors to Burnout and Potential Interventions

Program directors identified the following as the greatest contributors to burnout: lack of time for self-care, exercise, and/or engagement in enjoyable activities outside of work; conflicting responsibilities between work, home, and family; feeling underappreciated; worries about childcare; and lack of mentoring or guidance (mode responses of 4) (Table 2). Program directors were most supportive of on-site childcare, debriefing after adverse patient outcomes, and formalized peer support after adverse patient outcomes as interventions to mitigate burnout (mode responses of 5) (Table 3).

Discussion

In this report, we present the results of a multi-specialty study to better understand contributors to burnout and potential interventions to mitigate burnout and depression as identified by residents and program directors. The observed overall rate of burnout (69 %) is consistent with previously reported rates [4–6]. We saw that rates varied across specialties, and these differences were statistically significant. We also did not detect differences in burnout rates based on age, year of residency, marital status, number of children, race, or ethnicity, though this study was likely not sufficiently powered to detect differences between these subgroups.

It is notable that 17 % of residents, or 1 in 6, screened positive for depression. In 2014, the same year as our study, the Substance Abuse and Mental Health Services Administration conducted the National Survey on Drug Use and Health (NSDUH) to measure the 12-month prevalence of a major depressive episode of adults in the USA. The NSDUH found an overall 12-month prevalence of 6.7 %, much lower than the 17 % point prevalence that we measured among our residents [32]. Likewise, a study by Dyrbye and colleagues showed higher rates of depression in resident physicians than in cross-matched population controls [4].

Though burnout is being recognized and discussed more frequently within the medical profession, even program directors consistently underestimate the point prevalence. In our survey program, directors reported significant difficulty assisting residents with burnout and depression. Therefore, it is concerning that despite these difficulties almost all program directors underestimated just how widespread burnout is among residents.

How is it that program directors are struggling with the demands of assisting residents with burnout while still underestimating its prevalence? This phenomenon is probably the unfortunate result of a combination of both resident and program director factors.

There is evidence in the literature that physicians have poor recognition of depression within their own patients [33]. Additionally, when physicians do detect depression, it is often insufficiently treated [34]. Therefore, it is not at all surprising that physicians would also underestimate distress in residents with whom they do not have a doctor–patient relationship.

Moreover, Adams et al. have shown that physicians perceive that their peers have stigmatizing views of depression, a perception that reduces help-seeking behavior [35]. The responses from the residents in this survey reflect this perceived stigma. Most notably, 25 % of residents incorrectly perceive that burnout is a reportable condition to the medical board, highlighting concerns about the potential for professional ramifications of admitting distress. Furthermore, residents report discomfort with taking time off work for appointments, and over one third are unaware of how to get support for a struggling peer. Thus, even if residents recognize a problem, they do not necessarily feel empowered to seek treatment or to support a peer.

It is likely that the program directors are only familiar with the rare cases in which a resident feels comfortable enough to report distress or when a resident's burnout is overtly interfering with his or her clinical work. Meanwhile, many other residents are stoically struggling in silence. The identified barriers to receiving support for burnout and depression further highlight the stigma and fear that residents may have about the potential professional and personal ramifications of seeking mental health care [35].

In examining contributors to burnout, residents and program directors were in agreement that the lack of time for self-care and conflicting responsibilities between work and home life constituted the greatest contributors to burnout. Interestingly, residents and program directors also identified feeling unappreciated as a leading contributor to burnout.

Program directors agreed that lack of mentoring and guidance was one of the greatest contributors to burnout; however, residents identified this as one of the factors least likely to contribute to burnout. Likewise, residents felt that difficulty with other residents and attendings was not a major contributor to burnout. Examining both of these results together, one might deduce that the work environment is positive or at least not malignant enough

to overcome the issue of work-life imbalance that residents feel most contributes to burnout.

It is easier to identify contributors to burnout than it is to develop and implement successful interventions to mitigate burnout. Our study suggests that interventions that add additional time demands, such as formalized trainings, peer support, and financial counseling, are less supported by residents, while other interventions that may help residents improve work-life balance such as advanced practice provider and scribe support and on-site child care and exercise facilities were rated positively by both residents and program directors.

One intervention that has been examined in depth in the literature is duty hour restrictions [17, 18]. It should be noted that duty hour restrictions were put in place with the goal of improving patient safety, not reducing resident burnout [36]. While several studies have found evidence that duty hour restrictions reduce rates of burnout, an unintended consequence of duty hour restrictions has been increased patient handoffs and the potential for interruption of education as residents may be required to leave conferences, cases, or other learning experiences to adhere to duty hours [17, 18, 37–39].

The recently published and much-awaited FIRST trial set out to empirically examine the effect of duty hours on patient safety and resident education and well-being. This trial randomized surgical residents to either a "standard-policy" group that conformed to the current ACGME duty hour restrictions or a "flexible-policy" group, which allowed programs to waive restrictions on the amount of time off between shifts and maximum shift lengths [40].

The FIRST trial did not find statistically significant differences between residents in the two groups in terms of perceived well-being [40]. However, as we have seen, residents can be stoic, and they may overestimate their wellness [35]. Unfortunately, measures of burnout, a more nuanced and objective measure of well-being, were not obtained [40].

Residents and program directors agreed that feeling underappreciated is a major contributor to burnout, and this perception of underappreciation could be a potential intervention point for health care systems. Addressing existing problems that make residents feel invalidated and overlooked, such as insufficient call rooms and work space, while providing additional supports such as increased administrative assistance and an expedient response to resident concerns could help residents feel more valued within their hospital systems.

Academic psychiatrists are uniquely positioned to provide support to struggling residents. Psychiatrists at academic medical centers can deliver psychoeducational programs including grand rounds lectures to other departments to raise awareness of resident burnout. Our experience in developing our own resident support program as well as the experiences described by other institutions suggests that this type of program will be highly sought after and is greatly needed by academic institutions [24]. In addition, academic psychiatrists can help advocate for institutional support of initiatives to meet the needs of residents, such as increasing access to affordable, convenient, and confidential mental health care, developing flexible coverage systems that enable residents to attend appointments, increasing access to interventions that are known to reduce burnout, and supporting policies that allow residents access to medical leave for severe cases of distress.

Our study has limitations that should be noted. First, the study was conducted at a single academic medical center, which may limit the generalizability of the results. Second, this was a cross-sectional study, and different results might be obtained on a repeat survey. However, we believe these results are consistent with the current literature. Third, many of our subgroups consisted of small numbers of residents; therefore, it is likely that subgroup comparisons were underpowered to detect differences. Fourth, the PHQ-9 is a tool used to screen for depression, so these results may not accurately capture true rates of depression in this population.

There are a number of potential future directions for research on the topic of resident distress. Longitudinal studies that identify specific periods of vulnerability during training may be helpful. Also, there is a pressing need for more studies to measure the effectiveness of additional interventions to address burnout.

In summary, our data clearly demonstrate that resident burnout is a highly prevalent problem that must be addressed. It is imperative that we reduce burnout for the sake of our colleagues and patients and to ensure that we can maintain a healthy physician workforce. The culture of medicine, while focusing on the care of its patients, has neglected its own providers. The way forward will require a fundamental change in the culture of physician training to meet the current practice of healthcare—a change that is necessary to maintain the health of our profession. Psychiatrists are uniquely positioned to provide guidance and support to the health care system and to individual health care providers.

Acknowledgments The UNC Sanders Clinician Scholars Award provides funds to Dr. Meltzer-Brody that were used for this project.

Compliance with Ethical Standards

Disclosure On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

1. Chen PW. The widespread problem of doctor burnout. *The New York Times*. http://well.blogs.nytimes.com/2012/08/23/the-widespread-problem-of-doctor-burnout/?_r=0. Published 23 Aug 2012.
2. Shanafelt TD, Hasan O, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general us

working population between 2011 and 2014. Mayo Clin Proc. 2015;90(12):1600–13.
3. Green DE, Walkey FH, Taylor AJ. The three-factor structure of the Maslach Burnout Inventory: a multicultural, multinational confirmatory study. J Soc Behav Personal. 1991;6(3):453.
4. 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):443–51.
5. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. JAMA. 2011;306(9):952–60.
6. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med. 2002;136(5):358–67.
7. Dyrbye LN, Shanafelt TD. Physician burnout: a potential threat to successful health care reform. JAMA. 2011;305(19):2009–10.
8. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. Lancet. 2009;374(9702):1714–21.
9. Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. Ann Surg. 2010;251(6):995–1000.
10. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. JAMA. 2009;302(12):1294–300.
11. West CP, Tan AD, Shanafelt TD. Association of resident fatigue and distress with occupational blood and body fluid exposures and motor vehicle incidents. Mayo Clin Proc. 2012;87(12):1138–44.
12. Ramirez AJ, Graham J, Richards MA, Cull A, Gregory WM. Mental health of hospital consultants: the effects of stress and satisfaction at work. Lancet. 1996;347(9003):724–8.
13. Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. Arch Surg. 2011;146(1):54–62.
14. Dyrbye LN, Massie FS, Eacker A, et al. Relationship between burnout and professional conduct and attitudes among US medical students. JAMA. 2010;304(11):1173–80.
15. Holmboe ES, Edgar L, Hamstra S. *Milestones*. 2015. http://www.acgme.org/acgmeweb/tabid/430/ProgramandInstitutionalAccreditation/NextAccreditationSystem/Milestones.aspx. Accessed 19 June 2015.
16. Ospina-Kammerer V, Figley CR. An evaluation of the Respiratory One Method (ROM) in reducing emotional exhaustion among family physician residents. Int J Emerg Ment Health. 2003;5(1):29–32.
17. Goitein L, Shanafelt TD, Wipf JE, Slatore CG, Back AL. The effects of work-hour limitations on resident well-being, patient care, and education in an internal medicine residency program. Arch Intern Med. 2005;165(22):2601–6.
18. Gopal R, Glasheen JJ, Miyoshi TJ, Prochazka AV. Burnout and internal medicine resident work-hour restrictions. Arch Intern Med. 2005;165(22):2595–600.
19. Bragard I, Etienne A-M, Merckaert I, Libert Y, Razavi D. Efficacy of a communication and stress management training on medical residents' self-efficacy, stress to communicate and burnout: a randomized controlled study. J Health Psychol. 2010;15(7):1075–81.
20. Ghetti C, Chang J, Gosman G. Burnout, psychological skills, and empathy: Balint training in obstetrics and gynecology residents. J Grad Med Educ. 2009;1(2):231–5.
21. Sikora R, Mongold B, Sedgeman J, Davis SM. Burnout in emergency medicine residents and faculty: an attempt to modify stress response by journaling. Poster presentation presented at the *International Conference on Emergency Medicine,* San Francisco, CA. April, 2008.
22. Lieberman III J, The SM. BATHE method: incorporating counseling and psychotherapy into the everyday management of patients. Prim Care Companion J Clin Psychiatry. 1999;1(2):35–8.
23. Williams D, Tricomi G, Gupta J, Janise A. Efficacy of burnout interventions in the medical education pipeline. Acad Psychiatry. 2015;39(1):47–54.
24. Moutier C, Norcross W, Jong P, et al. The suicide prevention and depression awareness program at the University of California, San Diego School of Medicine. Acad Med. 2012;87(3):320–6.
25. UNC. The taking care of our own program. 2016. https://www.med.unc.edu/psych/education/taking-care-of-our-own.
26. Stanford. Resident well being. 2016. http://med.stanford.edu/gme/current_residents/resident_wellness.html.
27. Maslach C, Jackson SE, Leither MP, Schaufeli WB, Schwab RL. Maslach burnout inventory manual. 3rd ed. Palo Alto: Consulting Psychologists Pr; 1996.
28. Rafferty JP, Lemkau JP, Purdy RR, Rudisill JR. Validity of the Maslach Burnout Inventory for family practice physicians. J Clin Psychol. 1986;42(3):488–92.
29. Martin A, Rief W, Klaiberg A, Braehler E. Validity of the Brief Patient Health Questionnaire Mood Scale (PHQ-9) in the general population. Gen Hosp Psychiatry. 2006;28(1):71–7.
30. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606–13.
31. The Journal of Extension—JOE. http://www.joe.org.libproxy.lib.unc.edu/joe/2012april/tt2.php. Accessed 14 April 2016.
32. Center for Behavioral Health Statistics and Quality. Behavioral health trends in the United States: results from the 2014 National Survey on Drug Use and Health; 2015. http://www.samhsa.gov/data/.
33. Cepoiu M, McCusker J, Cole MG, Sewitch M, Belzile E, Ciampi A. Recognition of depression by non-psychiatric physicians—a systematic literature review and meta-analysis. J Gen Intern Med. 2008;23(1):25–36.
34. Jackson J, Passamonti M, Kroenke K. Outcome and impact of mental disorders in primary care at 5 years. Psychosom Med. 2007;69(3):270–6.
35. Adams E, Lee A, Pritchard C, White R. What stops us from healing the healers: a survey of help-seeking behaviour, stigmatisation and depression within the medical profession. Int J Soc Psychiatry. 2010;56(4):359–70.
36. Accreditation Council for Graduate Medical Education. Duty hours. 2016. http://www.acgme.org/What-We-Do/Accreditation/Duty-Hours/GraduateMedicalEducation/DutyHours.
37. Ahmed N, Devitt KS, Keshet I, et al. A systematic review of the effects of resident duty hour restrictions in surgery: impact on resident wellness, training, and patient outcomes. Ann Surg. 2014;259(6):1041–53.
38. Drolet BC, Christopher DA, Fischer SA. Residents' response to duty-hour regulations—a follow-up national survey. N Engl J Med. 2012;366(24):e35.
39. Desai SV, Feldman L, Brown L, et al. Effect of the 2011 vs 2003 duty hour regulation-compliant models on sleep duration, trainee education, and continuity of patient care among internal medicine house staff: a randomized trial. JAMA Intern Med. 2013;173(8):649–55.
40. Bilimoria KY, Chung JW, Hedges LV, et al. National cluster-randomized trial of duty-hour flexibility in surgical training. N Engl J Med. 2016;374(8):713–27.