Burnout and Quality of Life among Healthcare Research Faculty

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ABSTRACT

Burnout is increasingly recognized as a problem in the workplace—30% to 50% of physicians experience burnout, but no assessment of burnout has been done among healthcare research faculty. A cross-sectional survey of burnout, quality of life, and related factors was sent to all doctoral-level faculty in a large department of healthcare research. Of 54 respondents, 40% were categorized as burned-out using standard measurement. No differences in reported burnout were observed across genders, age, time with the institution, relationship status, or parental status. Those who were burned out were more likely to report: poor quality of life (57% vs. 22%, p=0.02); a feeling that work was done in crisis mode (80% vs. 50%, p=0.04); a sense that getting work done was more important than quality (53% vs. 3%, p<0.01); and lower overall job satisfaction (53% vs. 85%, p=0.02). Burnout was prevalent among healthcare research faculty and was associated with poor quality of life and a reduction in the perceived quality of work. Our results suggest addressing burnout may be an opportunity for research administrators to improve performance, job satisfaction, and retention.

BACKGROUND

Building and maintaining an academic career can be a stressful endeavor. Balancing academic pursuits with "service" duties such as consulting with other professionals can be challenging for healthcare researchers. Among physicians, studies show that 30% to 50% experience burnout (Campbell et al., 2001; Edwards, Kornacki, & Silversin, 2002; Gunderson, 2001; Linzer et al., 2001; Maslach, Jackson, & Leiter, 1996; Shanafelt, Boone, et al., 2012; Shanafelt, West, et al., 2009; Valetta & Harkness, 2013). Among academic physician faculty, 34% meet established criteria for burnout (Shanafelt, West, et al., 2009). There is presently a paucity of data on the amount or type of burnout experienced specifically by healthcare research faculty. Burnout among physicians results in errors, impaired judgment, accidents, and reductions in patient care (Shanafelt, Boone, et al., 2012). Healthcare research faculty typically do not see patients, but they do carry out sensitive and detailed research. Furthermore, healthcare research faculty may support a wide array of academic physicians by overseeing the statistical, epidemiological, and informatics aspects of research. The burnout experienced by healthcare research faculty is hence a function of the culture of the healthcare institution which is undoubtedly different from that of a purely academic setting like a university. Consequently, burnout among healthcare research faculty may have consequences that impact the entire research arm of an institution. From an administrative standpoint, in today's funding environment, healthcare research faculty have a vital role in both writing high-quality grants to attract diminishing dollars and in carrying out increasingly large research programs without increasingly large numbers of staff (Valetta & Harkness, 2013). Both of these activities are of institutional import and may be detrimentally impacted if burnout is present.

Burnout is a syndrome of emotional exhaustion and depersonalization that leads to decreased effectiveness at work (Maslach, Jackson, & Leiter, 1996). Treating colleagues as objects rather than human beings and becoming emotionally depleted are common symptoms of burnout. Little is known about the causes of burnout or mediating factors among this population. The personal and professional characteristics associated with achieving satisfaction in a healthcare research career are also unknown. This study was designed to measure the prevalence of burnout and quality of life among healthcare research (HCR) faculty and to explore the relationship between burnout and HCR

faculty's personal and professional characteristics.

METHODS

All doctoral-level faculty in a large department of health sciences research including researchers in biostatistics, epidemiology, healthcare policy research, and informatics were invited to participate in an IRB-approved study of well-being. Participants were surveyed in the spring of 2012 to provide a cross-sectional assessment of burnout, quality of life, and personal and professional characteristics.

The survey included the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996), a validated survey tool used to measure burnout. The MBI has been used successfully in many different professional groups, including physicians. The survey previously used for physicians was modified by substituting the word "clients" for "patients", as many HCR faculty work with colleagues outside HCR on projects for which the HCR faculty are not the primary investigators. The 22-item MBI produces scores ranging along a numerical analogue scale from 1 to 7 for individual items corresponding to the frequency at which each behavior is experienced. Overall burnout was defined by a high score on either the emotional exhaustion or depersonalization subscale of the MBI (Thomas, 2004), referred to as the "Full MBI Burnout" method in this paper. A two-item score for burnout from the MBI was also recently validated (West et al., 2012; West, Dyrbye, Sloan, & Shanafelt, 2009) (referred to as the "Two-Item Burnout" method in this paper). The survey also included a single validated item on overall quality of life (QOL; Locke et al., 2007), the Health Outcomes 8-item Short Form (SF-8), which is a validated tool used to measure mental and physical quality of life, selected questions exploring work load and personal wellness promotion practices from the 2011 Mayo Clinic All Staff Survey (Sirota Survey Intelligence, New York, NY) and the 2010 Mayo Clinic Culture of Safety Survey (Sirota Survey Intelligence, New York, NY), and basic demographic items.

Faculty were surveyed electronically using a web-based survey. Study data were collected and managed using Research Electronic Data Capture (REDCap) tools hosted at Mayo Clinic. REDCap is a secure, web-based application designed to support data capture for research studies (Harris et al., 2009). Up to three reminder e-mails were sent to non-responders over an eight-week period. All survey responses were anonymous to the investigators and participation was elective; one statistical data librarian remained unblinded to study participation in order to facilitate reminder emails. According to the email request, consent was given implicitly by survey response; faculty who did not desire to participate were directed not to participate.

Live survey responses were not visible to respondents.

Statistical Methods

The primary endpoint for the study was burnout on the Maslach Burnout Inventory as defined by a high score on either the emotional exhaustion or depersonalization subscale (Shanafelt, Boone, et al., 2012). Secondary endpoints included high burnout according to the two-item burnout scale, based upon a single item each for emotional exhaustion and depersonalization, and overall quality of life. Burnout was compared with demographic variables with Fisher's exact test. Overall and two-item burnout in this sample were compared to normative populations with the chi-square test. Response frequency and percent was calculated for each item on the MBI scale. Overall quality of life in this sample was compared to normative populations with the t-test; the proportion of respondents reporting overall QOL of 50 or below on the overall 0–100 scale was compared to normative populations with the chi-square test. HCR faculty with and without overall burnout were compared with respect to quality of life and personal and professional characteristics with Fisher's exact test.

Results

In total, 60% of faculty invited to participate via email responded, yielding 54 evaluable surveys. Among responders, 23% were under 35 years of age, 42% were between 35 and 44, 21% were between 45 and 54, and 15% were over age 55. Twenty-one respondents (39%) were male and 68% had children living at home. In order to maintain confidentiality, information on specific research expertise was not collected in this study.

Burnout

Using the standardized MBI scoring, 40% of healthcare research faculty were considered to be reporting burnout. No differences in reported burnout were observed across gender, age, time with the institution, relationship status, or having children living at home. Thirty-five percent of healthcare research faculty reported burnout when measured with the two-item scale question.

This sample of healthcare research faculty reported a relatively high level of burnout in terms of published norms for healthy populations and for those in professional, technical, and scientific services, though the difference failed to reach statistical significance (see Table 1). Burnout rates among healthcare research faculty were only slightly below the rates recently reported in a member survey of the American Medical Association (Shanafelt, Boone, et al., 2012), and considerably higher than burnout reported among university faculty (Lackritz, 2004).

Table 1
Normative Comparisons of Burnout across Different Populations

Population (*n*)	Two Item % Burnout	p-value	Full MBI % Burnout	p-value
Healthcare research faculty (*N*=54)	35%	-	40%	-
Full normative population[5] (*N*=5,791)	29%	0.28	N/A	
Normative population age 29-65[5] (*N*=3,462)	30%	0.23	N/A	
Professional normative population[5] (*N*=487)	29%	0.32	N/A	
University faculty[14] (*N*=265)	N/A		20%	0.001
Employed physicians age 29-65[5] (*N*=6,179)	38%	0.68	50%	0.15
American College of Surgeons[15] (*N*=7,157)	27%	0.17	N/A	

P-value vs. healthcare research faculty

Individual items from the MBI are shown in Table 2. Relationships with clients were generally seen to be positive in terms of working relationships and effectively coping with problems. Faculty seldom felt that at least once a month or less that: their clients treated them with a lack of respect; they treated clients as impersonal objects; their clients were unreasonable; and they did not care about their clients (91%, 94%, 81%, and 88%, respectively). More than half (61%) of researchers felt exhilarated after working with clients once a week or more. Faculty were also positive about the impact of their work in that at least once a week they felt they were positively influencing others' lives (70%) and accomplished many worthwhile things (72%). However, faculty commonly reported at least weekly feeling: emotionally drained from work; used up; burned out from work; and that they were working too hard (35%, 48%, 30%, and 59%, respectively).

QUALITY OF LIFE

Overall QOL in this sample of healthcare researchers averaged 63 on a 0–100 point scale (95% CI of 57–70) (see Table 3). Healthy individuals average roughly 70 to 80. Thirty-eight percent reported clinically meaningful deficits in overall QOL (scores of 50 or below). Surgeons from the 2010 American College of Surgeons survey (Shanafelt, Oreskovich, et al., 2012) and physicians from the 2011 American Medical Association survey (Shanafelt, Boone, et al., 2012) had significantly higher overall QOL scores than HCR faculty and a correspondingly smaller proportion reported meaningful deficits.

Impact of Burnout

Personal and professional characteristics of HCR faculty with and without burnout are detailed in Figures 1 and 2. Among faculty who were burned out, QOL averaged 52 versus 71 for those

Table 2

Frequency and Percentage of Response Levels for Individual MBI Items

MBI Items	Once a month or less	Few times a month	Once a week or more
Items Relating to Clients			
Feel like clients blame me for their problems	42 (81%)	6 (12%)	4 (8%)
Clients are unreasonable	43 (81%)	7 (13%)	3 (6%)
Don't really care what happens to some clients	46 (89%)	3 (6%)	3 (6%)
Clients treat me with a lack of respect	48 (91%)	3 (6%)	2 (4%)
Treat some clients as impersonal objects	49 (94%)	2 (4%)	1 (2%)
Easily understand how clients feel	1 (2%)	4 (8%)	44 (90%)
I deal effectively with the problems of my clients	2 (4%)	3 (6%)	47 (90%)
I can easily create a relaxed atmosphere with clients	4 (8%)	5 (10%)	43 (83%)
I feel exhilarated working with clients	13 (26%)	7 (14%)	31 (61%)
Other Work-related Items			
Feel I'm working too hard	14 (26%)	8 (15%)	31 (59%)
Feel used up at end of my workday	17 (32%)	11 (20%)	26 (48%)
Feel frustrated by my work	21 (39%)	12 (22%)	21 (39%)
Feel emotionally drained from work	24 (44%)	11 (20%)	19 (35%)
Feel fatigued in the morning having to face another day of work	28 (52%)	8 (15%)	18 (33%)
Feel burned out from work	27 (50%)	11 (20%)	16 (30%)
Working with people all day is a strain for me	43 (81%)	2 (4%)	8 (15%)
Have become more callous since I started working this job	41 (77%)	5 (9%)	7 (13%)
Worry that work is hardening me emotionally	42 (78%)	6 (11%)	6 (11%)
Working with people directly causes me stress	44 (85%)	6 (12%)	2 (4%)
Deal with emotional problems calmly at work	6 (12%)	4 (8%)	41 (80%)
General Items			
Feel like I am at the end of my rope	37 (73%)	5 (10%)	9 (18%)
Feel I've accomplished many worthwhile things	4 (8%)	11 (21%)	38 (72%)
Positively influence others' lives	8 (15%)	8 (15%)	38 (70%)
Feel very energetic	6 (11%)	11 (20%)	37 (69%)

Table 3

Normative Comparisons of Quality of Life across Different Populations

Population (n)	***Average QOL (95% CI)***	**p-value**	**QOL≤50**	**P-value**
Healthcare research faculty (*N*=54)	63 (57, 70)	-	38%	-
Full normative population* (*N*=5,899)	68 (67, 68)	0.2162	27%	0.07
American Medical Association* (*N*=7,252)	74.1 (73.7,74.5)	0.0002	15%	<0.0001
American College of Surgeons** (*N*=7,130)	73.9 (73.5,74.3)	0.0004	14%	<0.0001

* Shanafelt, Boone, et al. (2012); ** Shanafelt, Oreskovich, et al. (2012)

Impact of Burnout

Personal and professional characteristics of HCR faculty with and without burnout are detailed in Figures 1 and 2. Among faculty who were burned out, QOL averaged 52 versus 71 for those who were not burned out (p=0.002). More than half of the faculty reporting burnout had QOL scores of 50 or worse, indicative of a need for clinical intervention, as compared to 22% of faculty who were not burned out (p=0.02). Faculty reporting burnout reported reduced energy (40% versus 69%), more emotional problems (30% versus 3%), greater difficulty getting work done (25% versus 6%), and being less likely to perceive that policies and procedures were fairly enforced (45% versus 75%). Burned out faculty were more likely to report working in crisis mode (80% versus 50%) and more often agreed that getting work done was more important than quality (53% versus 3%). Faculty with burnout were more likely to have experienced a work/home conflict in the previous four weeks (65% versus 34%) and were less satisfied with work/life balance (30% versus 59%). Burned-out faculty also were less likely to report that they felt they could be themselves at work (45% versus 94%) and had lower overall job satisfaction (53% versus 84%).

Discussion

Burnout was considerable in this sample of healthcare research faculty who do not engage in patient care, with higher levels than university faculty (40% vs. 20%, p=0.001) and approaching the level of burnout for medical professionals (40% vs. 50%, p=0.15, for the full MBI burnout assessment; 35% vs. 38%, p=0.68, for the 2-item burnout assessment). In this study, burnout was strongly associated with overall job satisfaction, work-life balance, and quality of life. Overall, 59% of faculty reported often feeling they were working too hard. Although faculty in both groups agreed that there were too few staff to handle the workload, 53% of faculty who were burned out agreed that getting work done was more important than quality (versus 3% for those who were not burned out) and 80% agreed that work was often done in crisis mode (versus 50% for those who were not burned out). These differences suggest that workload is a primary driver of burnout, and that some faculty have developed coping mechanisms to avoid burnout while others have not.

Client interaction has been recognized as a potentially major contributor to health sciences research faculty stress, particularly for statisticians (Sloan & Dueck, 2004). In our data, MBI items associated with negative interactions with clients occurred rarely, and many faculty felt exhilarated when working with clients and believed

that they dealt effectively with their clients' problems. Collectively, these data suggest that burnout among research faculty is not associated directly with client interactions.

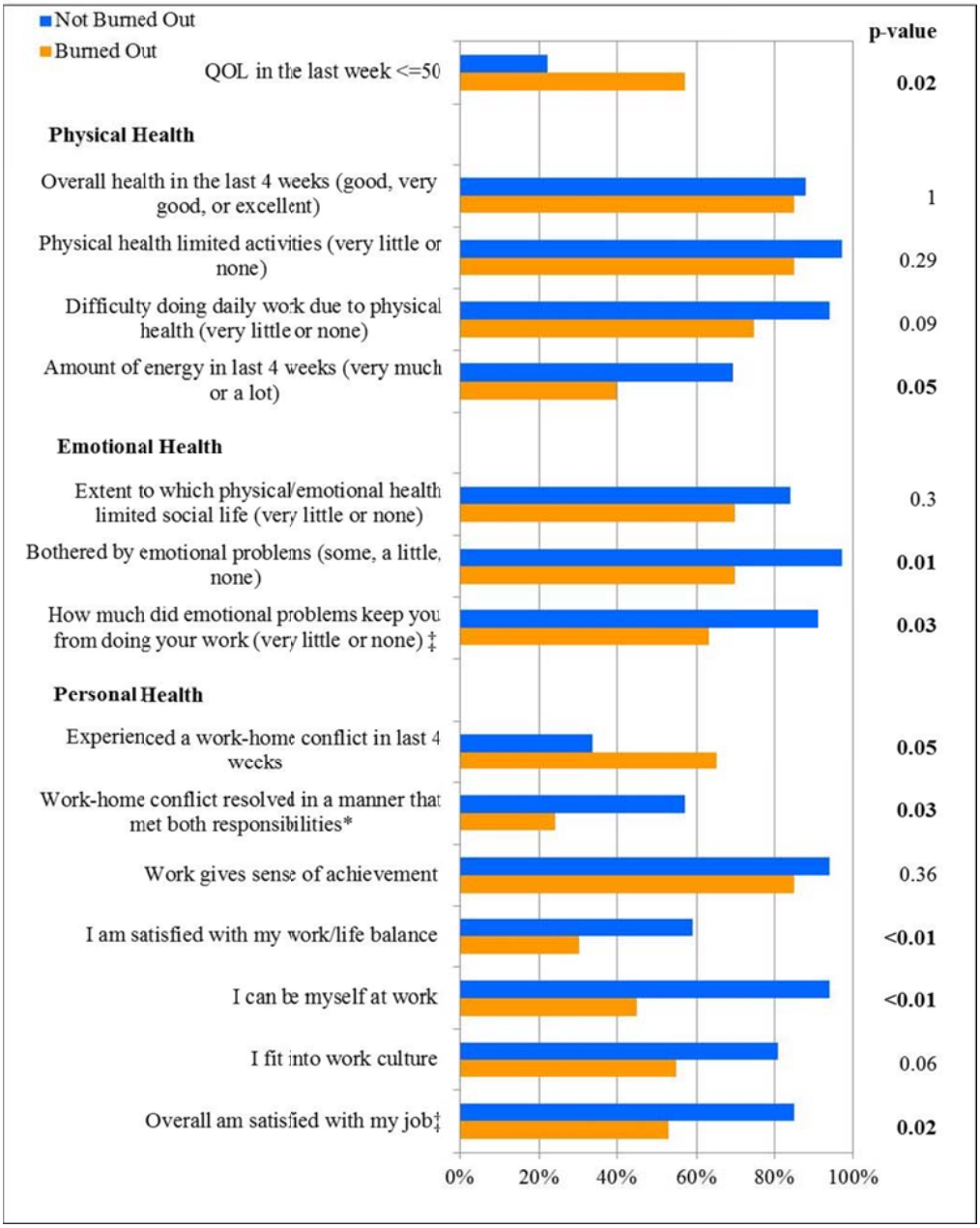

Figure 1. Comparison of Quality of Life and Related Physical Health, Emotional Health, and Personal Items between Faculty with (*N*=21) † and without (*N*=32) Burnout

† One individual in the burnout group consistently did not respond to this series of questions, so the actual *N* in this group was 20 unless otherwise stated.

‡ There were two non-responders in the burnout group for this item.

* Four individuals in each group did not respond to this item

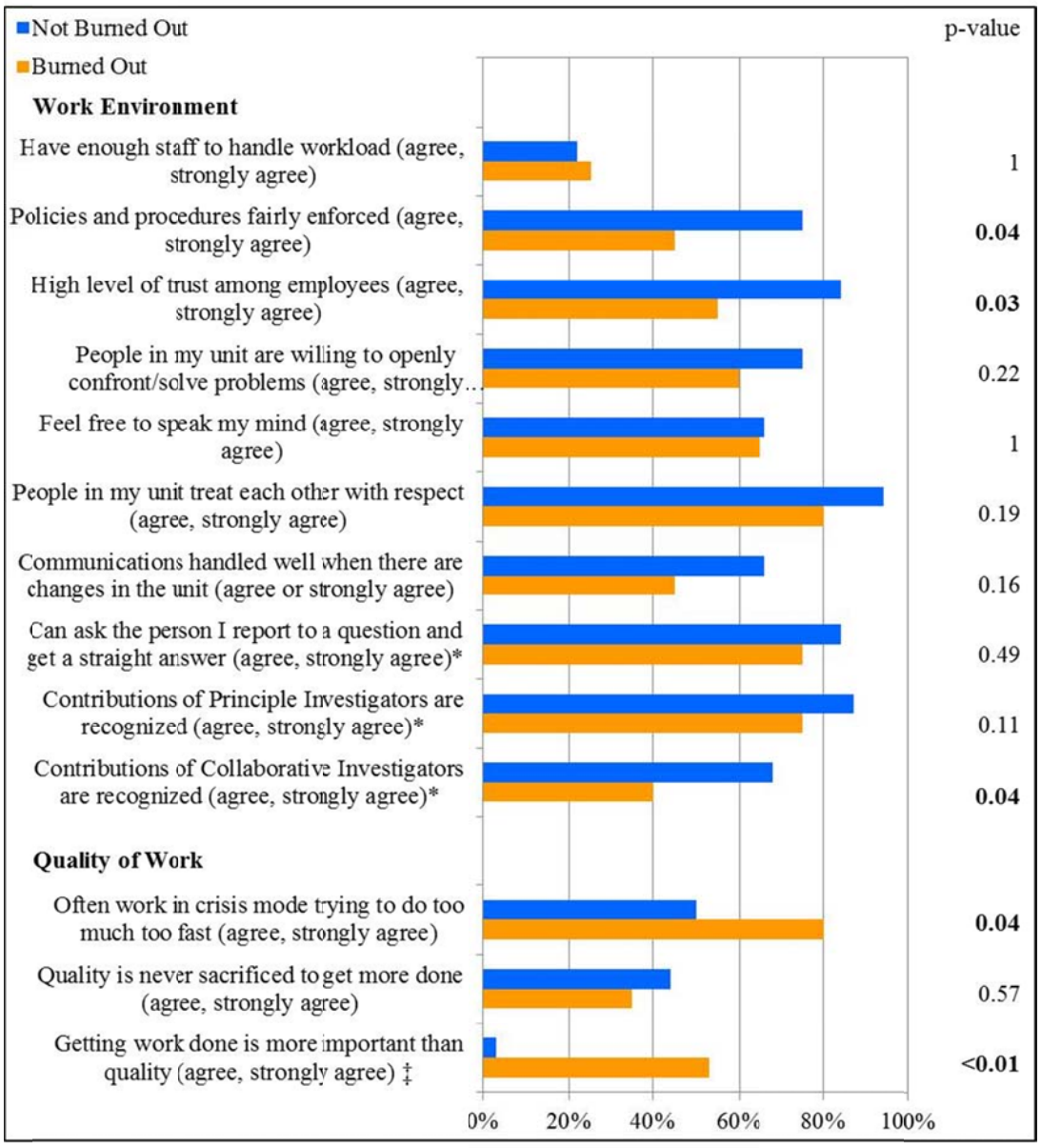

Figure 2. Comparison of Work Environment and Quality of Work Items between Faculty with (*N*=21) † and without (*N*=32) Burnout

† One individual in the burnout group consistently did not respond to this series of questions, so the actual *N* in this group was 20 unless otherwise stated.

‡ There were two non-responders in the burnout group for this item.

* There was one non-responder in the non-burnout group for this item.

Quality of Life

The association between burnout and QOL was substantial. Over half of the faculty who were deemed "burned-out" by standard criteria had a QOL in a range indicative of the need for clinical intervention; nearly one-fourth of those not burned out also had QOL in this range

(p=0.02). Though HCR faculty overall had similar levels of burnout to physicians assessed via the American Medical Association, research faculty had significantly lower quality of life than physicians, with differences exceeding half a standard deviation, an amount previously shown to be meaningful (Norman, Sloan, & Wyrwich, 2003). The reduced QOL observed in HCR faculty relative to their clinical colleagues might be attributable in part to differences in salary, prestige, promotion practices, or job security; unfortunately our survey was not able to measure these factors.

Sequellae of Burnout

The literature suggests that burnout may lead to performance issues (West et al., 2012). Our data suggest that an important result of burnout in HCR faculty may be a reduction in the quality of work, concurring with Maslach's anticipated sequellae of ineffectiveness (Maslach, Jackson, & Leiter, 1996). The item "getting work done is more important than quality" assesses an overall perception rather than a personal assertion. Faculty with burnout were much more likely to agree with the statement, as well as to agree with the statement "we often work in crisis mode trying to do too much too fast." As typical work for these faculty includes performing healthcare research, writing papers on healthcare research, and writing grants to obtain funding for healthcare research, ineffectiveness may have direct consequences for research quality and funding at the institutional level.

Goldberg et al. (1996) suggested that employee retention may be lower for those with burnout. In our study, overall job satisfaction was substantially negatively associated with self-perceived burnout. Satisfaction with work/life balance and reported comfort in the workplace were also lower among faculty with evidence of burnout. Employee retention was not measured in this cross-sectional study, but our results highlight the need for a longitudinal assessment.

Strengths and Limitations

This study was performed at a single institution and included only doctoral-level staff. Within this setting, results were substantive and consistent. Our data need to be confirmed by a larger assessment of well-being including researchers at multiple institutions and at different levels. Furthermore, this assessment included little participant demographic information, as the sample size was such that key demographics offered the potential for the inadvertent revealing of subjects. A larger study would thus also afford an opportunity to collect further information such as percentage of time spent as a PI, as a collaborator, and on administrative efforts; the type of research in which the person typically engages (i.e., statistics, epidemiology, informatics, etc.); sources of

funding (private or federal); staff available to help the faculty member; and total dollar amount of annual awards. While our study indicated a need for an intervention of some sort, we did not collect sufficient data to determine what type of intervention might be effective for healthcare research faculty. Discussions with faculty in the context of informal comments following a presentation on the results of the study were informative regarding potential avenues for intervention. These comments indicated three areas in which changes could reduce the potential for burnout (Table 4). The coping strategies involved behavioral changes in both the individual and the institution. First, time management was considered critical for all individuals, who should be actively engaging in time management behaviors while being mentored and encouraged to do so by the institution. Numerous suggestions were proposed in this area, such as using agendas for all meetings to ensure best use of time, limiting typical meeting times to 30 minutes, and grouping meetings and establishing "no meetings" days to increase the amount of undisrupted time available for work. Second, the ability for an individual, especially a junior faculty member, to say "no" to new requests when they become overwhelmed was highly desirable, especially if coupled with express managerial support for such decision-making empowerment. Third, work-life balance was viewed as critical for long-term satisfaction. Suggestions were made to encourage offsite work when needed by supporting videoconferencing, facilitating VPN to office computer, and providing access to office email and calendar tools on widely-used smartphone platforms.

Table 4
Areas of Potential Intervention for Individuals and Organizations

Areas for Personal Change	Areas for Administrative Change
Time management	Helping with time management
Saying no	Helping to say no
Work-life balance	Coaching on work-life balance

Further research should be directed at developing well-being interventions for research faculty. Although diminishing workload itself is unlikely for many research faculty, there may be opportunities to reduce the impact of workload on burnout by helping faculty prioritize work and utilizing administrative support as more effective gatekeepers. Our finding that the perception of high workload did not differ for those who were and were not burned out suggests that qualitative

assessments may help identify coping mechanisms already in use within the workforce. Broadly sharing and reinforcing such existing successful coping mechanisms seems a logical next step. Our results suggest that addressing burnout may be an opportunity for administrators to improve performance, job satisfaction, and retention.

CONCLUSION

The need to prevent and ameliorate burnout among healthcare professionals has previously been demonstrated. Our study indicates that there is also considerable burnout among healthcare researchers. Significant burnout in healthcare researchers has the potential to impact not only their retention at an institution but the quality of the research in which they engage.

ACKNOWLEDGMENTS

John Smith helped structure the survey for this audience. Mary LaBrash distributed the survey online to ensure study staff would not be able to identify respondents.

LITERATURE CITED

Campbell, D. A., Jr., Sonnad, S. S., Eckhauser, F. E., Campbell, K. K., & Greenfield, L. J. (2001). Burnout among American surgeons. *Surgery, 130*(4), 696–702.

Edwards, N., Kornacki, M. J., & Silversin, J. (2002). Unhappy doctors: What are the causes and what can be done? *British Medical Journal, 324*(7341), 835–838.

Goldberg, R., Boss, R. W., Chan, L., et al. (1996). Burnout and its correlates in emergency physicians: Four years' experience with a wellness booth. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine, 3*(12), 1156–1164.

Gunderson, L. (2001). Physician burnout. *Annual of Internal Medicine, 135*(2), 145–148.

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics, 42*(2), 377–381.

Lackritz, J. R. (2004). Exploring burnout among university faculty: Incidence, performance, and demographic issues. *Teaching and Teacher Education, 20*, 709–713.

Linzer, M., Visser, M. R., Oort, F. J., Smets, E. M., McMurray, J. E., & de Haes, H. C. (2001). Predicting and preventing physician burnout: Results from the United States and the Netherlands. *American Journal of Medicine, 111*(2), 170–175.

Locke, D. E., Decker, P. A., Sloan, J. A., et al. (2007). Validation of single-item linear analog scale assessment of quality of life in neuro-oncology patients. *Journal of Pain Symptom Management, 34*(6), 628–638.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory manual, 3rd ed.* Palo Alto, CA: Consulting Psychologists Press.

Norman, G. R., Sloan, J. A., & Wyrwich, K. W. (2003). Interpretation of changes in health-related quality of life: The remarkable universality of half a standard deviation. *Medical Care, 41*(5), 582–592.

Shanafelt, T. D., Boone, S., Tan, L., et al. (2012). Burnout and satisfaction with work-life balance among U.S. physicians relative to the general U.S. population. *Archives of Internal Medicine, 172*(18), 1377–1385.

Shanafelt, T. D., Oreskovich, M. R., Dyrbye, L. N., et al. (2012). Avoiding burnout: The personal health habits and wellness practices of U.S. surgeons. *Annual of Surgery, 255*(4), 625–633.

Shanafelt, T. D., West, C. P., Sloan, J. A., et al. (2009). Career fit and burnout among academic faculty. *Archives of Internal Medicine, 169*(10), 990–995.

Sirota Survey Intelligence. (2010). *Mayo Clinic culture of safety survey*.

Sirota Survey Intelligence. (2011). *Mayo Clinic all staff Survey.*

Sloan, J. A., & Dueck, A. (2004). Issues for statisticians in conducting analyses and translating results for quality of life end points in clinical trials. *Journal of Biopharmaceutical Statistics, 14*(1), 73–96.

Thomas, N. K. (2004). Resident burnout. *JAMA: Journal of the American Medical Association, 292*(23), 2880–2889.

Valetta, R. M., & Harkness, A. (2013). Five strategies for improving performance of academic medical centers. *Healthcare Financial Management 67*(6):124-8.

West, C. P., Dyrbye, L. N., Satele, D. V., Sloan, J. A., & Shanafelt, T. D. (2012). Concurrent validity of single-item measures of emotional exhaustion and depersonalization in burnout assessment. *Journal of General Internal Medicine, 27*(11), 1445–1452.

West, C. P., Dyrbye, L. N., Sloan, J. A., & Shanafelt, T. D. (2009). Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. *Journal of General Internal Medicine, 24*(12), 1318–1321.