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Comparing Burnout Across Emergency Physicians, Nurses, Technicians, and Health Information Technicians Working for the Same Organization

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Abstract: Studies on the topic of burnout measure the effects of emotional exhaustion (EE), depersonalization (DP) (negative or cynical attitudes toward work), and reduced sense of personal accomplishment (PA). While the prevalence of burnout in practicing emergency medicine (EM) professionals has been studied, little is known of the prevalence and factors across physicians, nurses, technicians, and health information technicians working for the same institution. The aim of this study was to assess burnout differences across EM professional types.

The total population of 250 EM professionals at 2 public urban hospitals in Turkey were surveyed using the Maslach Burnout Inventory and basic social- and work-related demographics. Descriptive statistics, ANOVA, and additional post hoc tests were computed.

Findings show that EE and DP scores were high across all occupational groups, while scores on PA were low. There was a statistically significant difference between nurses and medical technicians ($P < 0.05$) for EE; and between physicians and both nurses and medical technicians ($P < 0.05$) for PA; while no group differences were found for DP. Age, gender, economic well-being, and income level were all significant; while patient load and marital status showed no significance.

Burnout can be high across occupational groups in the emergency department. Burnout is important for EM administrators to assess across human resources. Statistically significant differences across sociodemographic groups vary across occupational groups. However, differences between occupational groups may not be explained effectively by the demographic factors assessed in this or other prior studies. Rather, the factors associated with burnout are incomplete and require further institutional, cultural, and organizational analyses including differentiating between job tasks carried out by each EM job type.

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Abbreviations: DNV = det norske veritas, DP = depersonalization, ED = emergency department, EE = emotional exhaustion, EM = emergency medicine, EMT = emergency medical technician, HSD = honest significant difference, MBI = maslach burnout inventory, PA = personal accomplishment.

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INTRODUCTION

The practice of EM involves dealing with a combination of workplace circumstances that have been associated with high stress and burnout.[1–3] The potential negative effects on providers, their patients, and healthcare institutions have generated interest and have motivated research to further understand the potential causes, affects, and predictors of burnout.[3,4]

Professional burnout has been described as a psychological syndrome arising in response to chronic interpersonal stressors on the job. It is manifested by an inability to cope with emotional stress at work or as excessive use of energy and resources leading to feelings of failure and exhaustion.[5] The most widely used and studied instrument in the literature for measuring burnout is the maslach burnout inventory (MBI).[5] This instrument measures the effects of emotional exhaustion (EE), depersonalization (DP) (negative or cynical attitudes toward work), and reduced sense of personal accomplishment (PA). The 3 indicators should be assessed independently from each other, and EE has been identified as the primary indicator.[5–7] Loss of energy, lack of motivation, negative attitudes toward others, desire to avoid colleagues, physical illness, emotional distress, workplace turnover, absenteeism, poor job performance, and negative attitudes (generally) are among the many symptoms that have been associated with burnout.[1,8–14] Of particular interest to healthcare organizations is that both the wellbeing of providers, as well as the quality of patient care, may be affected.[14–16]

Many workplace circumstances have been associated with high stress and burnout in the emergency medical profession including: multiple sources of uncertainty, work-time pressures, high patient volumes with high acuity, erratic and long work schedules, and limited available resources. More specifically, provider burnout has been associated with the need to make critical decisions without complete information, repeated exposure to life threatening and other traumatic events, high complexity of disease combined with the need for rapid decision making, concerns over litigation risk, provider–patient as well as provider–provider dissonance, and mounting pressure regarding work quality, patient safety, and performance.[2,3,7,16–23]

Socio-Demographic and Workplace Factors

Both work-related (hours of work, years of practice, professional development activities, nonclinical duties, etc.) and nonwork-related factors (demographics and other lifestyle factors) are associated with burnout.[24] A survey of recent literature suggests that socio-demographic factors such as age, gender, marital status, and ethnicity have been linked to increasing job burnout rates.[25] Furthermore, demographic, professional, and organizational factors (income, position, education, work load, etc.) may influence the rate and level of burnout.[26] Given this understanding and based on the findings of other studies,[27] the socio-demographic and workplace variables were carefully selected to represent traits that were commonly identified in

healthcare professionals. For instance, burnout occurs less in men, younger people, and married individuals compared to others.[28] It should be noted that a plethora of research has uncovered these factors with mixed results, some showing an effect, while others showing no effect. For example, for socio-demographics such as gender,[29,30] age,[6] marital status,[4,29–32] and number of years in practice.[28] These, and other studies, show variation in results. As there is a lack of clear consensus about the factors related to burnout, it is difficult for individuals or institutions to predict which members of their team are going to be burned out.[1,24] A better understanding of the relationship between these factors and burnout could assist hospital and emergency department administrators to take precautionary and proactive steps to build an effective and resilient workforce. Thus, the importance of conducting research to better understand these topics.

For this study, we look to understand some of the demographic factors assessed in other prior studies, but focus on 2 workplace factors: workload and occupational role. Workload has been an important predictor of burnout measured in different ways including the number of night shifts per month, time period from the last nonworking week, and scheduled night shifts.[29] Additional studies investigating the impact of workload on burnout are needed, including the effects of patient volume, which we investigate here.

Many prior studies have investigated burnout among emergency physicians and intensivists[3,6,19,22,29,31,33] and intensive care unit physicians,[31] while others have addressed the prevalence of burnout in emergency department residents,[4,16,21,24,34] paramedics,[18,20,23,35–37] nurses,[13,32,38,39] and emergency and disaster first responders.[20,40] All studies show a higher level of burnout compared to other professions. Some show varying degrees of burnout between different medicine and EM career types.[24,38,39,41] Few studies have compared different emergency professional roles from across an emergency medical care system within the same study, utilizing the same measures. One nationwide study in Romania found that emergency physicians have the highest burnout levels across occupational groups.[42] Another study in Turkey found that paramedics had significantly lower EE scores compared to both doctors and nurses.[43] In this study, we look at the entire population of physicians, nurses, technicians [radiology, lab, emergency medical technicians (EMTs)], as well as health information technicians. The latter group is a growing and evolving job category in healthcare. Job tasks include ensuring the quality of medical records, using computer applications to document, assemble, and analyze patient data, and coding diagnoses and procedures in patient records (www.ahima.org/certification/RHIT). These workers may also include a variety of job tasks including patient intake, provider note transcription, data management of specialty medical registries (e.g., trauma, cancer, stroke), and administration of patient discharge.

Our hypothesis is that different emergency department occupations will show different levels of burnout. More specifically, burnout will differ across emergency physicians, nurses, technicians (lab, radiology, nursing assistants, EMTs), and health information technicians—all working in the same hospital emergency departments. Further, different patient loads on emergency practitioners, measured by the number of patient encounters during a shift, will impact burnout.

METHODS

Study Design and Setting

This was a descriptive, multicenter, cross-sectional study of EM physicians, nurses, technicians, and health information technicians from 2 public det norske veritas (DNV)-GL accredited hospitals in urban Midwest Turkey: Eskisehir State Hospital and Eskisehir Yunus Emre State Hospital. DNV-GL is 1 of the largest accreditation, quality management, and certification organizations in health care having accredited over 500 hospitals in the United States and abroad (www.dnvglhealthcare.com). As with all public hospitals in Turkey, the hospitals are government operated, and all providers working therein are government paid employees working for the National Turkish Health System. The study protocol was reviewed and approved by the Public Hospitals Authority in Turkey (Eskisehir Province General Secretariat of the Association of Public Hospitals). Public hospitals were specifically targeted due to access to participants and availability of organizational data. Written consent was obtained from each participant.

Procedure

All 250 EM physicians, nurses, technicians (lab, radiology, nurse assistants, EMTs), and health information technicians from the 2 participating hospitals were asked to participate in the study. The study invitation came from the government's provincial authority, the emergency department (ED) employees being asked to participate as a part of their daily work responsibilities. A face-to-face interview method was used to collect data from each ED employee and interviews continued until full participation was achieved. Interviews were conducted during March and April 2014. Participants self-generated identification codes according to a prescribed algorithm to assure anonymity, while allowing for matching of the various surveys and questionnaires. There were no other exclusion criteria. These hospitals represent collaborating institutions with the university for which 1 of the authors' is affiliated.

Consenting participants took a combined survey consisting of the MBI survey and a demographic questionnaire. The survey instrument was divided into 2 parts. The first part consisted of open-ended and close-ended demographic and personal information questions for age range, gender, marital status, occupation, shift hours, patient volume, perceived household economic wellbeing, income range. The second part consisted of the 22 questions from the MBI. A 7-point Likert scale was used for the MBI measurement. The questions were composed of 3 sections—EE (9 questions), DP (5 questions), and PA (8 questions). The EE subscale defines the burnout level of an individual according to her/his job and work overload including exhaustion, weariness and decrease in emotional energy. The DP subscale assesses the degree to which an individual responds emotionally to those with whom he/she works. The PA dimension assesses the degree to which the employee feels a sense of accomplishment or success in his/her job. Low scores in this dimension suggest that the level of burnout is high, while high scores indicate that burnout is low. A decrease in one's personal sense of accomplishment indicates that a person feels inadequate and believes he/she is going to fail. In this study, the reliability coefficients of the MBI (internal consistency coefficient, Cronbach alpha values) were calculated and found to be as follows: EE dimension = 0.887, DP dimension = 0.759, and PA dimension = 0.851. The internal consistency coefficient was determined to be 0.912 for all questions.

Data Analysis

All analyses were conducted in SPSS version 22.0, and significance was considered at the $P < 0.05$ level. First, standard scoring of the MBI for healthcare workers was assessed. Those

TABLE 1. Participant Demographics

Study Group's Demographic Characteristics	N	%
Gender		
Female	115	46.0
Male	135	54.0
Employee shift		
Work only day or night shift	21	8.4
Work only 24-h shifts	114	45.6
Work day shift and night rotation	115	46.0
Age, y		
<30	67	26.8
30–40	130	52.0
>40	53	21.2
Patient volume, patient/d		
<150	91	36.4
150–350	76	30.4
>350	83	33.2
Annual income (in Euros)		
<8000	50	20.0
8000–12,000	170	68.0
>12,000	30	12.0
Household economic well-being		
Bad	10	4.0
Fair	167	66.8
Good	69	27.6
Very good	4	1.6
Role in emergency department		
Physician	38	15.2
Medical technician	84	33.6
Nurse	89	35.6
Information technologist	39	15.6
Marital status		
Single	81	32.4
Married	139	55.6
Other	30	12.0
Total (for each group)	250	100.0

considered to have a high degree of burnout in each dimension are as follows: scores on the EE subscale exceeding 27, scores on the DP subscale exceeding 10, or scores lower than 33 on the PA subscale.[10–12] Next, 1-way between subjects ANOVA was conducted to compare the effect of each of the participant characteristics listed in Table 1 on burnout scores, including EE, DP, and PA. Post hoc comparisons using the Tukey honest significant difference (HSD) were conducted on statistically significant results from ANOVA. The Tukey HSD test is designed to compare conditions with each other. Statistically significant results from ANOVA in terms of position, age, annual income, economic well-being, and employee shift on EE, DP, and PA were assessed.

RESULTS

A total of 250 responses (100% response rate) were received and determined usable representing the whole population across 2 participating institutions. Study participant demographics are shown in Table 1. Of the 250 emergency health professionals who responded, 115 (46%) were female and 135 (54%) were male. Of respondents, 81 (32.4%) were single and 139 (55.6%) were married; 67 (26.8%) were under the age of 30 years, 130 (52%) were between 30 and 40 years, and 53 (21.2%) were over the age of 40 years. In terms of occupation, 38 (15.2%) were doctors, 89 (35.6%) were nurses, 84 (33.6%) were medical technicians, and 39 (15.6%) were health information technicians. Further, 170 (68%) had annual income ranging between 8000 and 12,000 Euros, and 167 (66.8%) rated their household economic wellbeing as fair, while 69 (27.6%) rated it as good.

Burnout scores across occupations are shown in Table 2. Of the 250 participants, 189 (75.6%) met the criteria for high levels of EE, 211 (84.40%) for high levels of DP, and 142 (56.80%) for low levels of PA. Between groups, 71 (84.52%) of medical technicians reported high levels of EE, followed by information technicians 32 (82.05%), physicians 27 (71.05%), and nurses 59 (66.29%). For those reporting high levels of DP, results showed 36 (92.30%) of information technicians, 74 (88.09%) of medical technicians, 71 (79.77%) of nurses, and 30 (78.94%) of physicians. Reporting low levels of PA were 56 (66.66%) of medical technicians, 58 (65.16%) of nurses, 17 (43.58%) of information technicians, and 11 (28.94%) of physicians.

Combining both moderate and high levels of EE scores, physicians were the largest group with 37 (97.36%), followed by information technicians with 37 (94.87%), medical technicians with 79 (94.04%), and nurses with 77 (86.51%). Combining moderate and high levels of DP found all 4 groups to report 100%. PA scores, combining moderate and low levels, found physicians to report the lowest with 38 (100%), followed closely by nurses with 87 (97.74%), information technicians with 37 (94.86%), and medical technicians with 78 (92.85%).

As shown in Table 3, the number of daily patient encounters varied across occupational groups. For this study, a patient encounter constituted unique patient contact per day between ED employee and patient during an emergency department visit. While the nature of these patients' contacts is very different, we determined to further assess the impacts. A total of 31 physicians (81.57%) encountered fewer than 150, most medical technicians encountered fewer than 350 ($n = 70$, 83.33%) per day, the number of patient encounters across nurses varied significantly, and most information technicians encountered over 350 per day ($n = 36$, 92.30%). While the number and type of encounters differ, we sought to assess statistical differences across occupational groups on burnout.

Results from ANOVA are shown in Table 4. Patient load (number of encounters per day) showed no statistical significance on EE ($F[2247] = 1.565$, $P = 0.211$), DP ($F[2247] = 0.247$, $P = 0.781$), or PA scores ($F[2247] = 2.719$, $P = 0.068$). Marital status showed no statistical significance with EE ($F[2247] = 2.075$, $P = 0.128$), DP ($F[2247] = 2.474$, $P = 0.086$), or PA ($F[2247] = 0.655$, $P = 0.520$), and gender also showed no statistical significance on EE ($F[1248] = 2.909$, $P = 0.089$), DP ($F[1248] = 0.000$, $P = 0.983$), or PA ($F[1248] = 2.211$, $P = 0.138$).

There was a statistically significant effect of occupational/position type on EE ($F[3246] = 2.959$, $P = 0.033$) and PA ($F[3246] = 4.471$, $P = 0.004$), but not on EP ($F[3246] = 1.683$, $P = 0.171$); age on EE ($F[2247] = 6.282$, $P = 0.002$) and DP ($F[2247] = 5.802$, $P = 0.003$), but not on PA ($F[2247] = 1.411$, $P = 0.246$); income level on EE ($F[2247] = 3.672$, $P = 0.027$) and DP ($F[2247] = 4.175$, $P = 0.016$), but not on PA ($F[2247] = 2.345$, $P = 0.098$); household economic well-being on EE ($F[3246] = 7.003$, $P = 0.000$) and DP ($F[3246] = 6.382$, $P = 0.000$), but not on PA ($F[3246] = 0.389$, $P = 0.761$); and work shift on EE

TABLE 2. Cross Tabulation of Position Held in Emergency Department by Burnout Category Scores

	Physician	Medical Technician	Nurse	Information Technician	Total	Pearson Chi-Square*
Emotional exhaustion score						
Low	1 (2.63)	5 (5.95)	12 (13.48)	2 (5.12)	20 (8.00)	0.035
Moderate	10 (26.31)	8 (9.52)	18 (20.22)	5 (12.82)	41 (16.40)	
High	27 (71.05)	71 (84.52)	59 (66.29)	32 (82.05)	189 (75.60)	
Depersonalization score						
Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.170
Moderate	8 (21.05)	10 (11.90)	18 (20.22)	3 (7.69)	39 (15.6)	
High	30 (78.94)	74 (88.09)	71 (79.77)	36 (92.30)	211 (84.40)	
Personal accomplishment score						
Low	11 (28.94)	56 (66.66)	58 (65.16)	17 (43.58)	142 (56.80)	0.000
Moderate	27 (71.05)	22 (26.19)	29 (32.58)	20 (51.28)	98 (39.2)	
High	0 (0.00)	6 (7.14)	2 (2.24)	2 (5.12)	10 (4.00)	
Total (%) for each group and category	38 (100)	84 (100)	89 (100)	39 (100)	250 (100)	

* $P < 0.05$.

(F[2247] = 5.622, $P = 0.004$), but not on DP (F[2247] = 0.828, $P = 0.438$) or PA (F[2247] = 0.342, $P = 0.710$).

Results from Tukey HSD post hoc tests indicated that for the EE score, nurses (M = 2.53, SD = 0.724) were significantly different than medical technicians (M = 2.79, SD = 0.539), and for the PA score, physicians (M = 1.71, SD = 0.460) were significantly different from medical technicians (M = 1.40, SD = 0.623) and nurses (M = 1.37, SD = 0.530). Tukey HSD post hoc test results of age on EE resulted in participants over 40 years (M = 2.43, SD = 0.797) having a statistically significant difference from those under 30 years (M = 2.82, SD = 0.490) and those between the ages of 30 and 40 years (M = 2.70, SD = 0.566); while age on DP resulted in participants over 40 years (M = 2.72, SD = 0.455) showing significant difference from those <30 years (M = 2.94, SD = 0.239). Analysis of income groups on EE resulted in participants making over 12,000 Euros/year (M = 2.40, SD = 0.724) being significantly different from those making <8000 Euros (M = 2.76, SD = 0.517) as well as those making between 8000 and 12,000 Euros (M = 2.70, SD = 0.614); while analysis of income on DP showed the middle income group (M = 2.87, SD = 0.337) being significantly different from the upper income group (M = 2.67, SD = 0.479). Post hoc analysis of economic well-being on EE resulted in those expressing fair levels (M = 2.80, SD = 0.544) being significantly different from those reporting good levels (M = 2.45, SD = 0.654); and for DP scores, those reporting very good (M = 2.25, SD = 0.500) being different from those reporting fair (M = 2.89, SD = 0.318) and good (M = 2.81, SD = 0.394). Analysis of work shift on EE resulted in statistically significant differences between those who work only 24-h shifts (M = 2.82, SD = 0.525) and those who work both day shifts and night rotations (M = 2.57, SD = 0.677).

DISCUSSION

Taken together, these results suggest that all types of emergency department occupations studied herein experience moderate to high levels of burnout. Occupational position held seems to have an effect on burnout, with only the nurse group showing statistically significant differences in their EE scores from those of medical technicians, and only physicians showing significant difference from nurses and medical technicians for PA scores. DP is not significantly different across occupational groups. Other factors that showed an effect on EE are age, work shift, economic status, and income level. For this study population, patient load, marital status, and gender do not appear to significantly affect burnout scores. Further studies are needed to understand these effects.

IMPLICATIONS

As health systems struggle with human resource shortages, resource allocation issues, and expanding wait times in the

TABLE 3. Cross Tabulation of Patient Encounters per Day

	Patient Encounters, Patient/d			
	<150	150–350	>350	Count (Total, 100%)
Physician	31 (81.57)*	4 (10.52)	3 (7.89)	38
Medical technician	28 (33.33)	42 (50.00)*	14 (16.66)	84
Nurse	31 (34.83)*	28 (31.46)	30 (33.70)*	89
Information technicians	1 (2.56)	2 (5.12)	36 (92.30)*	39
Total	91 (36.40)	76 (30.40)	83 (33.20)	250
Pearson chi-squared ($P < 0.05$)				

* Pearson chi-squared ($P < 0.05$).

TABLE 4. ANOVA Results of Participant Characteristics on Burnout

	EE Score		DP Score		PA Score	
	F	**Sig.**	**F**	**Sig.**	**F**	**Sig.**
Position	2.959	0.033*	1.683	0.171	4.471	0.004*
Patient load	1.565	0.211	0.247	0.781	2.719	0.068
Gender	2.909	0.089	0.000	0.983	2.211	0.138
Age	6.282	0.002*	5.802	0.003*	1.411	0.246
Marital status	2.075	0.128	2.474	0.086	0.655	0.520
Annual income, Euro	3.672	0.027*	4.175	0.016*	2.345	0.098
Economic well-being	7.003	0.000*	6.382	0.000*	0.389	0.761
Employee shift	5.622	0.004*	0.828	0.438	0.342	0.710

EE = emotional exhaustion, DP = depersonalization, PA = personal accomplishment.
* $P < 0.05$.

emergency department, the extent to which these burdens could be potentially decreased through prevention and promotion activities to address burnout among healthcare workers is important. Understanding factors that contribute to burnout aid in the development of programs for training, retention of employees, and consideration of work responsibilities for different employee roles. While the occupations studied herein differ from each other in terms of work tasks, type of patient interaction, and other ways, it is important to understand burnout and its affects among and across groups as they often interact with and/or depend on each other to complete healthcare organizational goals. In an environment where healthcare workers function as closely knit teams, administrators need to be aware of how 1 group of workers may be affected by burnout, how burnout from that group may affect the work environment for their colleagues, and if and how burnout proliferates across various human resources. This study suggests that some prevention and promotion activities for burnout may need to be tailored for specific groups (e.g., EE and PA issues), while an overall awareness and understanding across occupational groups (i.e., teams) may also be important. Future investigations should assess the impact of specific job tasks, patient interactions, and patient load on burnout in the EM profession and specifically in and across work shift groups/teams.

LIMITATIONS

This is a cross-sectional study that represents a snapshot in time limited to participants at 2 public hospitals in Turkey. Thus, the results may not be generalizable to all hospitals inside or outside of Turkey. Nevertheless, they may be representative of some publically owned and operated, integrated (centralized) hospital systems in a variety of settings across the globe. A broader sample may reveal differences among different regions of the country or beyond. As with other survey studies, this study used subjective, self-reported measures of burnout. While the MBI is the most widely used instrument for measuring burnout, some have called into question its relevancy as a diagnostic tool.[44] The 3 components of the tool have also been debated, with some believing that EE alone should define burnout. Further, it is unclear whether EM professionals experience burnout at specific times only, or as an ongoing condition; or if/how resolution is associated with changes in one's profession or lifestyle. It is possible that response bias contributed to our findings.

CONCLUSIONS

This study sought to broaden the types of emergency health occupations assessed in a single study and compare scores across occupational types working for the same healthcare institutions. While physicians, nurses, and medical technicians all show high burnout scores, health information technicians, a growing category of workers, is also high. That these professionals work for the same 2 organizations is also important as the study participants were all subject to many of the same workplace factors; and the emergency medical field poses a range of workplace and work type challenges that may influence these high burnout rates. The issue of burnout, taken alone, may be important for emergency healthcare administrators to assess across various human resources to address individual employee and organizational needs. For this study, statistically significant differences across occupational groups is limited, and factors such as gender, age, income level, economic well-being, and work shift type demonstrate a range of intergroup differences that highlight some of the complexities of measuring burnout. Differences between occupational groups may not be explained effectively by the demographic factors assessed in this study. Rather, the factors associated with burnout in EM may be incomplete and require further analysis. As the occupational groups studied herein differ in the types of tasks performed and the type of interaction with colleagues and patients, future studies may seek to understand how task type, task repetition, and task variation play a role in burnout. As this study was conducted across 2 public hospitals owned and operated by a centralized government healthcare entity—the Republic of Turkey—there may be other institutional, organizational, governmental, and cultural factors that better explain differences in findings from other studies and should be investigated in the future.

REFERENCES

1. Bragard I, Dupuis G, Fleet R. Quality of work life, burnout, and stress in emergency department physicians. *Eur J Emerg Med.* 2015;22:227–234.
2. Harrison P. Life in the ER: wild nights, mounting stress and mid-40s burnout. *CMAJ.* 1993;148:1598–1600.
3. Keller KL, Koenig WJ. Management of stress and prevention of burnout in emergency physicians. *Ann Emerg Med.* 1989;18:42–47.

4. Takayesu KJ, Ramoska EA, Clark TR, et al. Factors associated with burnout during emergency medicine residency. *Acad Emerg Med.* 2014;21:1031–1035.
5. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol.* 2001;52:397–422.
6. Kuhn G, Goldberg R, Compton S. Tolerance for uncertainty, burnout, and satisfaction with the career of emergency medicine. *Ann Emerg Med.* 2009;54:106–113e6.
7. Gundersen L. Physician burnout. *Ann Intern Med.* 2001;135: 145–148.
8. Maslach C, Leiter MP. Early predictors of job burnout and engagement. *J Appl Psychol.* 2008;93:498–512.
9. Cordes CL, Dougherty TW. A review and an integration of research on job burnout. *Acad Manag Rev.* 1993;18:621–656.
10. Maslach C, Jackson SE. Maslach Burnout Inventory. 2nd ed. Palo Alto: Consulting Psychologists Press; 1986.
11. Maslach C. Job burnout: new directions in research and intervention. *Curr Dir Psychol Sci.* 2003;12:189–192.
12. Maslach C, Jackson SE. The measurement of experienced burnout. *J Occup Behav.* 1981;2:99–113.
13. Parker PA, Kulik JA. Burnout, self- and supervisor-rated job performance, and absenteeism among nurses. *J Behav Med.* 1995;18:581–599.
14. Schaufeli WB, Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *J Organ Behav.* 2004;25:293–315.
15. McCue JD. The effects of stress on physicians and their medical practice. *N Engl J Med.* 1982;306:458–463.
16. Shanafelt TD. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med.* 2002;136:358–367.
17. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet.* 2009;374:1714–1721.
18. Bentley MA, Crawford JM, Wilkins JR, et al. An assessment of depression, anxiety, and stress among nationally certified EMS professionals. *Prehospital Emerg Care.* 2013;17:330–338.
19. Doan-Wiggins L, Zun L, Cooper MA, et al. Practice satisfaction, occupational stress, and attrition of emergency physicians. *Acad Emerg Med.* 1995;2:556–563.
20. Donnelly E. Work-related stress and posttraumatic stress in emergency medical services. *Prehospital Emerg Care.* 2011;16:76–85.
21. Eckleberry-Hunt J, Lick D, Boura J, et al. An exploratory study of resident burnout and wellness. *Acad Med.* 2009;84:269–277.
22. Lloyd S, Streiner D, Shannon S. Burnout, depression, life and job satisfaction among Canadian emergency physicians. *J Emerg Med.* 1994;12:559–565.
23. Nirel N, Goldwag R, Feigenberg Z, et al. Stress, work overload, burnout, and satisfaction among paramedics in Israel. *Prehosp Disaster Med.* 2008;23:537–546.
24. Panagopoulou E, Montgomery A, Benos A. Burnout in internal medicine physicians: differences between residents and specialists. *Eur J Intern Med.* 2006;17:195–200.
25. Madhavappallil T, Kohli V. Correlates of job burnout among human services workers: implications for workforce retention. *J Sociol Soc Welf.* 2014;XLI:69–91.
26. Senter A, Morgan RD, Serna-Mc Donald C, et al. Correctional psychologist burnout, job satisfaction, and life satisfaction. *Psychol Serv.* 2010;7:190–201.
27. Oyefeso A, Clancy C, Farmer R. Prevalence and associated factors in burnout and psychological morbidity among substance misuse professionals. *BMC Health Serv Res.* 2008;8:39–48.
28. Chiron B, Michinov E, Olivier-Chiron E, et al. Job satisfaction, life satisfaction and burnout in French anaesthetists. *J Health Psychol.* 2010;15:948–958.
29. Arora M, Asha S, Chinnappa J, et al. Review article: burnout in emergency medicine physicians. *Emerg Med Australas.* 2013;25:491–495.
30. Gautam M. Women in medicine: stresses and solutions. *West J Med.* 2001;174:37–41.
31. Embriaco N, Azoulay E, Barrau K, et al. High level of burnout in intensivists: prevalence and associated factors. *Am J Respir Crit Care Med.* 2007;175:686–692.
32. Cañadas-De la Fuente GA, Vargas C, San Luis C, et al. Risk factors and prevalence of burnout syndrome in the nursing profession. *Int J Nurs Stud.* 2015;52:240–249.
33. Goldberg R, Boss RW, Chan L, et al. Burnout and its correlates in emergency physicians: four years' experience with a wellness booth. *Acad Emerg Med.* 1996;3:1156–1164.
34. Hall KN, Wakeman MA, Levy RC, et al. Factors associated with career longevity in residency-trained emergency physicians. *Ann Emerg Med.* 1992;21:291–297.
35. Balch CM, Freischlag JA, Shanafelt TD. Stress and burnout among surgeons: understanding and managing the syndrome and avoiding the adverse consequences. *Arch Surg.* 2009;144:371–376.
36. Grisby DW, McKnew MA. Work-stress burnout among paramedics. *Psychol Rep.* 1988;63:55–64.
37. Hammer JS, Mathews JJ, Lyons JS, et al. Occupational stress within the paramedic profession: an initial report of stress levels compared to hospital employees. *Ann Emerg Med.* 1986;15:536–539.
38. Gillespie M, Melby V. Burnout among nursing staff in accident and emergency and acute medicine: a comparative study. *J Clin Nurs.* 2003;12:842–851.
39. Hooper C, Craig J, Janvrin DR, et al. Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected inpatient specialties. *J Emerg Nurs.* 2010;36:420–427.
40. Durham TW, McCammon SL, Allison EJ Jr. The psychological impact of disaster on rescue personnel. *Ann Emerg Med.* 1985;14:664–668.
41. Renzi C, Tabolli S, Ianni A, et al. Burnout and job satisfaction comparing healthcare staff of a dermatological hospital and a general hospital. *J Eur Acad Dermatol Venereol.* 2005;19:153–157.
42. Popa F, Arafat R, Purc?rea VL, et al. Occupational burnout levels in emergency medicine—a stage 2 nationwide study and analysis. *J Med Life.* 2010;3:449–453.
43. Gökçen C, Zengin S, Oktay MM, et al. Burnout, job satisfaction and depression in the healthcare personnel who work in the emergency department. *Anadolu Psikiyatr Derg.* 2013;14:122–128.
44. Bianchi R. A reflection on the measurement of the burnout syndrome. *Acad Emerg Med.* 2015;22:378.