

Burnout Among Osteopathic Residents: A Cross-sectional Analysis

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Context: Burnout is a known problem among physicians in training but has not been extensively studied in osteopathic residents.

Objective: To evaluate the relationship of burnout to sex, age, marital status, and residency program type (surgical vs nonsurgical) and length (3, 4, 5, or 6 years) across 12 residency programs at Doctors Hospital in Columbus, Ohio.

Methods: An anonymous, voluntary questionnaire was given to residents in their 10th month of residency. Thirty questions were provided, including general background questions and the Maslach Burnout Inventory Human Services Survey to assess burnout.

Results: A total of 131 of 180 residents (72.8%) returned the questionnaire, and 129 provided complete responses in most categories. Of the 129 respondents, 89 (69.0%) reported emotional exhaustion and 96 (74.4%) reported depersonalization at a moderate or high level. In addition, 70 respondents (54.4%) experienced a moderate or high level of burnout in relation to personal accomplishment. No statistically significant association was found between the burnout factors (emotional exhaustion, depersonalization, and personal accomplishment) and sex, age, marital status, and residency program type and length.

Conclusions: The majority of the osteopathic residents surveyed reported experiencing burnout. More data on burnout among osteopathic residents and associated factors are needed.

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Herbert Freudenberger first conceptualized burnout in the 1980s, associating work-related stress with job dissatisfaction.¹ Since this time, several studies have demonstrated burnout as a topic of public interest.²⁻⁴ Burnout is higher among physicians when compared with the general US population, and it peaks during residency training.² Extended work hours, increased training demands, interference with personal life, and a sense of decreased control generate an environment in which burnout develops.³

Christina Maslach created what is currently known as the criterion standard of burnout questionnaires, the Maslach Burnout Inventory (MBI), which recognizes 3 elements of burnout: emotional exhaustion, depersonalization, and personal accomplishment. Emotional exhaustion is defined as the overextension of one's work emotionally. Depersonalization reflects indifference and impersonal responses toward patients. Personal accomplishment is how well one believes he or she has achieved success and competence through work.⁴

Doctors Hospital is a 262-bed, general medical and surgical hospital located in Columbus, Ohio. Accredited by the American Osteopathic Association, Doctors Hospital is nationally recognized for quality care, safety, and efficiency. As a major teaching hospital, Doctors Hospital has the second largest osteopathic training program in the United States, training more than 160 residents each year in 12 different specialties (anesthesia, emergency medicine, family medicine, general surgery, internal medicine, neurological surgery, obstetrics/gynecology, ophthalmology, orthopedic surgery, otorhinolaryngology, pediatrics, and radiology).

Previous studies have shown high levels of burnout in residents in various specialties.^{2,3,5,6} Using the MBI, Martini et al⁷ found that 50% of the residents studied experienced burnout. Although not statistically significant, they found differences in burnout rates by specialty, with a rate of 75% in obstetrics and gynecology and 27% in family medicine.⁷ Dyrbye et al² reported that burnout was more prevalent among medical students, residents, fellows, and early-career physicians than in the general US population.

Few studies have specifically addressed osteopathic resident specialties. As the number of trainees in osteopathic graduate medical education programs increases,⁸ resident burnout in osteopathic programs has become a topic of controversial debate, with little known on the factors associated with burnout.

In the current study, we hoped to raise awareness of the stress and exhaustion experienced by residents in the osteopathic medical profession. The purpose of this study was to evaluate burnout in residents at Doctors Hospital and compare burnout rate with factors including sex, age, marital status, and residency program type (surgical vs nonsurgical) and length (3, 4, 5, or 6 years). Our hypothesis was that no association exists between these factors and burnout rate and that all residents experience burnout equally.

Methods

Approval for exemption status from the Grant Medical Center/Doctors Hospital Institutional Review Board was received before the surveys were distributed.

Study Design and Implementation

In April 2014, first-year residents in 12 residency programs (anesthesia, emergency medicine, family medicine, general surgery, internal medicine, neurological surgery, obstetrics/gynecology, ophthalmology, orthopedic surgery, otorhinolaryngology, pediatrics, radiology) were approached by the resident investigators during all-resident meetings and didactics throughout the month and asked to fill out a questionnaire. Participants did not receive any compensation. The investigators distributed the paper questionnaire to the residents, who were informed of the anonymous, voluntary nature of participation.

Burnout rates were measured by the MBI Human Services Survey.⁴ The MBI, a 22-item valid and reproducible survey, evaluates 3 elements of burnout: emotional exhaustion, depersonalization, and personal accomplishment.

The internal reliability of the MBI was assessed using the Cronbach α coefficient. Study variables included age (continuous measure), sex (male vs female), marital status (unmarried vs married), residency program type (surgical vs nonsurgical), program length (3, 4, 5, or 6 years), and MBI score (emotional exhaustion, depersonalization, personal accomplishment).

Data collection ended 1 month after the initial request was made to the residents.

Data Storage and Confidentiality

All reported data were either deidentified or nonidentifiable. Only the research investigators had access to patient information. All surveys were destroyed after data entry was completed. All data were stored in electronic format; files were stored on a password-protected computer in a secured facility with limited access. Partici-

pants were not excluded on the basis of socioeconomic, racial, or religious identity. No form of deception was used. The data collection and storage processes followed Health Insurance Portability and Accountability Act guidelines, in accordance with 21 CFR 46.115(b), to protect the confidentiality and privacy of each participant.

Statistical Analysis

We tested the hypothesis that clinically high levels of burnout are seen in resident physicians. Descriptive statistics were produced, using means, medians, ranges, and SDs for continuous variables and percentages for categorical variables. Independent variables included sex, age, marital status, residency program, and survey responses. All statistical analyses were done using SPSS version 22.0 (IBM) and MedCalc version 15.8.

Results

Resident Demographics

Of the 12 residency programs, 131 of 180 residents (72.8%) returned the questionnaire, and 129 provided complete responses in most categories. Two questionnaires were discarded from the study because of incomplete answers and negligence.

A total of 91 participants were men, and the mean (SD) age of all participants was 30.2 (2.8) years. Fifty-seven participants (44%) were single, and 69 (53.5%) were in a surgical residency program. Of 129 participants, 34 (26.4%), 44 (34.1%), 43 (33.3%), and 8 (6.2%) were in a 3-, 4-, 5-, and 6-year residency length, respectively (Table 1).

Of the 129 respondents, 69 were in surgical residencies (anesthesiology, general surgery, neurosurgery, obstetrics/gynecology, ophthalmology, orthopedic surgery, otolaryngology), and 60 were in nonsurgical residencies (emergency medicine, family medicine, internal medicine, pediatrics, radiology). During the 10 months leading up to the questionnaire distribution, surgical resi-

Table 1.
Burnout Among Osteopathic Residents:
Sample Characteristics of Respondents (N=129)

Characteristic	No. (%)
Sex	
Male	91 (70.5)
Female	38 (29.5)
Program Length, y	
3	34 (26.4)
4	44 (34.1)
5	43 (33.3)
6	8 (6.2)
Marital Status	
Single	57 (44.2)
Married	72 (55.8)
Residency Type	
Surgical	69 (53.5)
Nonsurgical	60 (46.5)

dents reported working 11.4 hours and sleeping 6.1 hours daily on average. In comparison, nonsurgical residents reported working 10.7 hours and sleeping 6.5 hours (Table 2).

Burnout

High levels of emotional exhaustion and depersonalization were seen in 51 (39.5%) and 64 (49.6%) respondents, respectively. A high level of burnout in relation to personal accomplishment was experienced in 17.1% of respondents. In addition, 89 (69.0%), 96 (74.4%), and 70 (54.4%) respondents experienced a moderate or high level of burnout in relation to emotional exhaustion, depersonalization, and personal accomplishment, respectively (Table 3).

No statistically significant association was found between burnout factors (emotional exhaustion, depersonalization, and personal accomplishment) and respondent characteristics (sex, age, marital status, and residency program type and length) ($r=-0.19$ to 0.19) (Table 4).

Reliability

The reliability of the MBI as a 3-factor structure has been supported by studies.⁹⁻¹¹ For each dimension, the Cronbach α was greater than .70, similar to the results of Iwanicki and Schwab⁹ (Table 5).

Discussion

Burnout factors have been widely studied. The present study is one of few that documents burnout in osteopathic residents. Although a higher risk of physician burnout has been reported in men as a result of high educational debt and increased time demands, small sample sizes and variable results have led to ambiguous findings for specific resident burnout characteristics.^{3,5,6} Higher burnout rates have also been reported in women and younger residents.^{6,10} In addition, studies have found high levels of emotional exhaustion and depersonalization in both surgical and nonsurgical residents.⁸ The current study showed that more than half of all residents across 12 specialties exhibited moderate to high levels of emotional exhaustion, depersonalization, and decreased personal achievement. Although reported burnout-related factors have been inconsistent, burnout rates in medical residents have been found to range from 27% to 75%.^{5,7}

Limitations

The current study had a small sample size at a single institution. Therefore, the findings may not be indicative of burnout in residencies across the osteopathic medical profession. In addition, although questionnaire results were kept confidential and anonymous, residents may have provided dishonest answers because of discriminating resident characteristics (eg, age, sex, specialty).

Imposed time constraints may have compelled residents to quickly finish the questionnaire without considering authentic answers. Questionnaires were provided during all resident meetings and didactic sessions, when the residents may have been preoccupied with other work.

Table 2.
Burnout Among Osteopathic Residents:
Residency Program and Hours Worked and Slept (N=129)

Residency Type	Residents No. (%)	Mean Hours Worked	Mean Hours Slept
Surgical Residency			
Anesthesiology	7 (5.4)	12.4	6.2
General surgery	14 (10.9)	12.7	5.6
Neurosurgery	8 (6.2)	10.9	6.1
Obstetrics/gynecology	13 (10.1)	10.9	6.1
Ophthalmology	3 (2.3)	10.2	7.3
Orthopedic surgery	20 (15.5)	11.1	5.9
Otolaryngology	4 (3.1)	9.8	7.0
Total	69 (53.5)	11.4	6.1
Nonsurgical Residency			
Emergency medicine	21 (16.3)	10.2	6.7
Family medicine	13 (10.1)	9.9	6.5
Internal medicine	9 (7.0)	11.3	5.4
Pediatrics	12 (9.3)	11.7	6.8
Radiology	5 (3.9)	10.7	6.9
Total	60 (46.5)	10.7	6.5

Table 3.
Burnout Among Osteopathic Residents:
Total Resident Frequency of MBI Burnout Factors^a (N=129)

Burnout Factor	Frequency (%)	Cumulative %
Emotional Exhaustion		
High	51 (39.5)	39.5
Medium	38 (29.5)	69.0
Low	40 (31.0)	100.0
Depersonalization		
High	64 (49.6)	49.6
Medium	32 (24.8)	74.4
Low	33 (25.6)	100.0
Personal Accomplishment		
High	22 (17.1)	17.1
Moderate	48 (37.2)	54.4
Low	59 (45.7)	100.0

^a Emotional exhaustion, depersonalization, and personal accomplishment are subscales from the Maslach Burnout Inventory (MBI) Human Services Survey.

Table 4.
Burnout Among Osteopathic Residents:
Correlation Between Burnout Factors^a in Residents and Related Variables (N=129)

Variables	Pearson Correlation Coefficient ^b		
	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Sex	0.15	0.03	0.15
Age	0.18	0.04	-0.05
Program length	-0.03	-0.08	-0.00
Marital status	-0.08	0.11	-0.13
Surgical vs nonsurgical residency	-0.10	0.04	-0.13

^a Emotional exhaustion, depersonalization, and personal accomplishment are subscales from the Maslach Burnout Inventory Human Services Survey.

^b $r = 0.01$ to 0.19 or $r = -0.01$ to -0.19 indicates no or negligible relationship.

Table 5.
Burnout Among Osteopathic Residents:
Reliability (Cronbach’s α) at Doctors Hospital vs Iwanicki & Schwab (1981)⁹ vs Gold (1984)¹⁰

Burnout Factor	Reliability (Cronbach α)		
	Doctors Hospital	Iwanicki & Schwab	Gold
Emotional exhaustion	0.90	0.90	0.88
Depersonalization	0.75	0.76	0.74
Personal accomplishment	0.75	0.76	0.72

The questionnaire was given during the 10th month of residency. A variable spectrum of burnout can be seen in different rotations, in the number of hours spent at work, and in different seasons. The time frame may have affected residents’ answers.

For future research, a longitudinal study with an adequate sample size and fewer questionnaire time constraints should be considered. In addition, different protective factors that affect burnout (culture, sleep, number of children, hours at work) should be investigated and compared.

Conclusion

Osteopathic residents were found to have elevated incident rates of burnout. Target populations and components affecting burnout should be further investigated to identify individual susceptibility.

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Author Contributions

All authors provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; all authors drafted the article or revised it critically for important intellectual content; all authors gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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