

Pediatric Resident Burnout and Attitudes Toward Patients

Tamara Elizabeth Baer, MD, MPH,^{a,b} Angela M. Feraco, MD, MMSc,^{b,c,d} Selin Tuysuzoglu Sagalowsky, MD, MPH,^e David Williams, PhD,^f Heather J. Litman, PhD,^g Robert J. Vinci, MD^h

abstract

BACKGROUND AND OBJECTIVES: Burnout occurs in up to 75% of resident physicians. Our study objectives were to: (1) determine the prevalence of burnout, and (2) examine the association between burnout and self-reported patient care attitudes and behaviors among pediatric residents.

METHODS: A total of 258 residents (53% response rate) from 11 pediatric residency programs completed a cross-sectional Web-based survey. Burnout was measured with 2 items from the Maslach Burnout Inventory. Patient care attitudes and behaviors were measured with 7 questions from a standardized qualitative survey. χ^2 and logistic regression tested the association between burnout and self-reported patient care attitudes and behavior.

RESULTS: A total of 39% of respondents (mean age, 29.4 years \pm 2.3 SD; 79% female; 83% white; 35% postgraduate year [PGY] -1, 34% PGY-2, and 31% PGY-3), endorsed burnout. Residents with burnout had significantly greater odds ($P < .01$) of reporting suboptimal patient care attitudes and behaviors, including: discharging patients to make the service more manageable (adjusted odds ratio [aOR] 4.2; 95% confidence interval [CI], 1.6–11.1), not fully discussing treatment options or answering questions (aOR 3.5; 95% CI, 1.7–7.1), making treatment or medication errors (aOR 7.1; 95% CI, 2.0–25.8), ignoring the social or personal impact of an illness (aOR 9.6; 95% CI, 3.2–28.9), and feeling guilty about how a patient was treated (aOR 6.0; 95% CI, 1.6–22.1).

CONCLUSIONS: Burnout is highly prevalent among pediatric residents and is associated with self-reported negative patient care attitudes and behaviors. Residency programs should develop interventions addressing burnout and its potential negative impact on patient care.

Divisions of ^aAdolescent/Young Adult Medicine, ^bHematology/Oncology, and ^cClinical Research Center, Boston Children's Hospital, Boston, Massachusetts; ^dDepartment of Medicine, Harvard Medical School, Boston, Massachusetts; ^eDepartment of Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts ^fDivision of Emergency Medicine, Department of Pediatrics, Columbia University College of Physicians and Surgeons, New York, New York; ^gDepartment of Biostatistics and Epidemiology, Corrona, LLC, Southborough, Massachusetts; and ^hDepartment of Pediatrics, Boston Medical Center; Boston University School of Medicine, Boston, Massachusetts

Dr Baer was responsible for study design, design of data collection instruments, data collection, performed the literature review, conceptualized and designed the data analysis, and wrote the first draft of the paper; Dr Feraco was responsible for study design, design of data collection instruments, data collection, conceptualized and designed the data analysis, made substantial contributions to data analysis and interpretation, and reviewed and revised the manuscript; Dr Tuysuzoglu Sagalowsky was responsible for study design, design of data collection instruments, conceptualized and designed the data analysis, and reviewed and revised the manuscript; Drs Litman and Williams were responsible for data analysis and reviewed and revised the manuscript; Dr Vinci was responsible for study design and design of study collection instruments, data collection, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

WHAT'S KNOWN ON THIS SUBJECT: Burnout occurs in up to 75% of resident physicians and has been shown to negatively impact medical knowledge, care quality, and professional conduct among internal medicine residents. Less is known about the impact of burnout among pediatric residents.

WHAT THIS STUDY ADDS: Burnout is highly prevalent among pediatric residents across multiple programs. The self-reported negative patient care attitudes and behaviors that are associated with burnout suggest more careful approaches to improve the work environment of residency programs.

To cite: Baer TE, Feraco AM, Tuysuzoglu Sagalowsky S, et al. Pediatric Resident Burnout and Attitudes Toward Patients. *Pediatrics*. 2017;139(3):e20162163

Burnout is common among resident physicians, occurring in up to 75% of trainees across multiple disciplines.^{1,2} Burnout is defined as a state of mental and physical exhaustion related to work or care-giving activities.³ Resident physicians are at high-risk for developing burnout, likely due to the long work hours, high stress levels, sleep deprivation, and lack of leisure time associated with residency training. Previous studies have demonstrated that resident burnout negatively impacts perceived quality of patient care,^{2,4} professional conduct and attitudes,⁵ self-reported rate of medical error^{1,6,7} and medical knowledge.⁸ Once present, burnout can persist throughout residency.^{9,10}

In 2014, the American Academy of Pediatrics published a clinical report on physician health and wellness, acknowledging the high rate of burnout among pediatric practitioners and trainees and calling for pediatricians to lead a national movement to promote physician well-being.¹¹ However, the literature on burnout among resident trainees has primarily focused on internal medicine and surgery. Shanafelt et al² demonstrated a relationship between burnout and self-reported suboptimal patient care practices among internal medicine residents; however, there have been no studies to date describing the relationship between burnout and pediatric residents' self-reported patient care attitudes and behaviors. To our knowledge, among the few studies that have been published about burnout among pediatric residents, only 1 has evaluated the impact of burnout on patient care.¹ In a study of burnout in 123 residents among 3 training pediatric residency training programs, Fahrenkopf and colleagues¹ found that although burnout was highly prevalent (74%), burnout did not correlate with an increased rate of medical error.

The purpose of this study is to determine the prevalence of burnout among a large sample of pediatric residents and to examine the association between burnout and self-reported patient care attitudes and behaviors.

METHODS

Participants and Study Design

We performed a secondary data analysis of information collected as part of a larger study of stress, burnout, relationship satisfaction, and work-life balance among pediatric residents. Subjects included 486 pediatric interns and residents from 11 New England Pediatric Residency Consortium programs. All categorical pediatric residents who were not in combined programs (eg, medicine-pediatrics, pediatric neurology) were eligible to participate in the study. The Institutional Review Board of the Boston University Medical Center approved this study. The New England Region of the Association of Pediatric Program Directors endorsed the study and permitted pediatric interns and residents from the New England region of the Association of Pediatric Program Directors to participate in the study.

Pediatric interns and residents were recruited through an e-mail containing an embedded link to a SurveyMonkey electronic survey. Participation was elective and responses were anonymous. Surveys were distributed to all 486 subjects in April 2013, and 3 reminder emails were sent to nonresponders over a 6-week period. As an incentive to participate, all participants were entered into a lottery to win 1 of 5 \$200 gift certificates to Apple, Inc.

Instruments and Measures

The survey collected demographic information (age, sex, race, ethnicity), residency program information

(training year, program size, program location), average number of work hours, current rotation schedule, total hours of sleep in past week, and rating of perceived sleep deprivation. Questions regarding relationship status, living arrangements, children, distance from closest family member, annual income, and debt burden were included in the survey. To minimize bias, the survey included a mix of positively and negatively stated items.¹²

Burnout was measured by using a validated 2 single-item measure¹³ adapted from the Maslach Burnout Inventory (MBI),¹⁴ which is considered the reference standard for burnout.¹⁴ Emotional exhaustion was assessed by the prompt, "I feel burned out from my work," and depersonalization by the prompt, "I've become more callous toward people since I took this job." Each statement was answered on a 7-point Likert scale with response options ranging from "never" to "every day." Participants were classified to have burnout (and referred to as "endorsed" burnout) if they answered affirmatively (at least weekly in frequency) to either question, consistent with other studies that have defined burnout as either high emotional exhaustion and/or depersonalization.^{3,4,9,13}

Patient care attitudes and behaviors were assessed by using 7 questions from Shanafelt and colleagues.² Their original study included statements such as "I made treatment or medication errors that were not due to lack of knowledge or inexperience," and "I paid little attention to the social or personal impact of an illness on a patient." Residents were asked to "rate how frequently you find yourself exhibiting the following attitudes or behaviors for any reason (time constraints, feeling rushed, need to leave hospital, etc) over the past year". Response options ranged

TABLE 1 Demographic Characteristics

Variable	Total (n = 258), n (Column %)	Nonburnout (n = 150), n (Row %)	Burnout (n = 101), n (%)	P
Age, y				
26–29	115 (60.2)	70 (62.5)	42 (37.5)	.05
≥30	76 (39.8)	36 (48.0)	39 (52.0)	
Sex				
Male	54 (21.1)	33 (62.3)	20 (37.7)	.75
Female	202 (78.9)	117 (59.1)	81 (40.9)	
Ethnicity				
Hispanic	9 (3.5)	6 (75.0)	2 (25.0)	.48
Non-Hispanic	246 (96.5)	144 (59.5)	98 (40.5)	
Race				
White	210 (82.7)	122 (58.7)	86 (41.3)	.38
African American	5 (2)	2 (40.0)	3 (60.0)	.39
Other	39 (15.3)	25 (69.4)	11 (30.6)	.27
Year of residency training				
PGY-1	90 (35.4)	55 (61.1)	35 (38.9)	.82
PGY-2	85 (33.5)	47 (56.6)	36 (43.4)	
PGY-3	79 (31.1)	47 (61.0)	30 (39.0)	
Residency program size				
≤20 per class	131 (51.2)	75 (58.1)	54 (41.9)	.61
>20 per class	125 (48.8)	75 (61.5)	47 (38.5)	
Location of residency program				
Large city, > 500 000 people	138 (54.1)	83 (61.5)	52 (38.5)	.48
Medium sized city, 100–499 000 people	83 (32.6)	44 (54.3)	37 (45.7)	
Small city, population ≤99 000 people	34 (13.3)	22 (64.7)	12 (35.3)	
Current rotation schedule				
Day or evening shift schedule	70 (49.6)	72 (57.6)	53 (42.4)	.52
Outpatient or elective schedule with weekend responsibilities	59 (23.2)	37 (62.7)	22 (37.3)	
Q4 call schedule	44 (17.32)	23 (53.5)	20 (46.5)	
Call-free schedule without weekend responsibilities	25 (9.8)	18 (75.0)	6 (25.0)	
Feel sleep-deprived				
No	150 (59)	103 (69.1)	46 (30.9)	<.001
Yes	104 (40.9)	47 (46.1)	55 (53.9)	
Hours worked in past week				
41–60 h	125 (49.2)	82 (66.1)	42 (33.9)	.05
>61 h	129 (50.8)	68 (53.5)	59 (46.5)	
Children				
0	207 (82)	127 (61.7)	79 (38.3)	.18
≥1	46 (18)	22 (50.0)	22 (50.0)	
Married/significant relationship				
No	53 (20.7)	33 (62.3)	20 (37.7)	.75
Yes	203 (79.3)	117 (59.1)	81 (40.9)	

item. Logistic regression analysis, controlling for age, sex, and race/ethnicity, tested the association between burnout and each self-reported patient care attitude and behavior item (SAS version 9.2, SAS Institute, Inc, Cary, NC). Tests with $P < .05$ were considered statistically significant.

RESULTS

A total of 258 participants completed the survey (53% response rate). The mean age of the sample was 29.4 years \pm 2.3 SD years, and the majority of the sample was 26 to 29 years old (60.2%). The sample was predominantly female (78.9%), non-Hispanic (96.5%), and white (82.7%). The majority of the sample was married or in a significant relationship (79.3%) and did not have children (82%). Respondents were evenly distributed across 3 postgraduate year (PGY) levels (35.4% PGY-1, 33.5% PGY-2, and 31.1% PGY-3) and were from residency programs of varying sizes (< 20 per class, 51.2%; >20 per class, 48.8%) (Table 1).

Overall, 39.1% of residents endorsed burnout. There were no significant differences in burnout rates by sex, race/ethnicity, relationship or parental status. Residents 26 to 29 years of age appeared marginally less likely (37.5% vs 52%; $P = .05$) to report burnout than residents ≥ 30 years of age. Residency factors, such as year of residency training, residency program size, location of residency program, current rotation schedule, and hours worked in the past week, were not associated with burnout. However, residents who reported that they felt sleep deprived had significantly higher rates of burnout than residents who reported that they did not feel sleep deprived ($P < .001$) (Table 1). Perceived sleep deprivation and burnout were considered as independent risk factors in regression models of

from “never” to “weekly,” on a 5-point Likert scale. Similar to the Shanafelt et al study,² patient care attitudes and behaviors were considered to be suboptimal if they were reported to be monthly or weekly in frequency.

Data Analysis

Descriptive statistics were used to characterize the study population. χ^2 tests evaluated the associations between burnout and each reported patient attitude and behavior

reported poor quality of patient care. Both perceived sleep deprivation and burnout were associated with reported poor quality of patient care, and there was no significant interaction effect found between them.

In unadjusted analyses, residents who endorsed burnout reported significantly higher rates of suboptimal patient attitudes and behaviors on 5 of 7 items compared with residents who did not endorse burnout, including “felt guilty from how I treated a patient from a humanitarian standpoint” (11% vs 2%; $P = .003$), “paid little attention to the social or emotional impact of an illness on a patient” (21% vs 3%; $P < .001$), “made treatment or medication errors that were not due to lack of knowledge or inexperience” (13% vs 2%; $P < .001$), “did not fully discuss treatment options or answer a patient’s questions” (27% vs 9%; $P < .001$), and “discharged patient to make the service more manageable” (15% vs 4%; $P = .003$) (Fig 1).

Similarly, in adjusted analyses, residents with burnout had significantly higher self-reported rates of suboptimal patient attitudes and behaviors in 5 of 7 items ($P < .007$ for each) (Table 2).

DISCUSSION

This is the first study among pediatric residents to address burnout and self-reported patient care. In our study population of 258 pediatric residents across 11 pediatric residency programs, 39% experienced burnout. Residents with burnout were significantly more likely to endorse suboptimal patient care attitudes and behaviors as compared with residents without burnout. We used the validated 2-item measure based on previous work that demonstrated a strong correlation with the emotional exhaustion and depersonalization domains of burnout as measured by

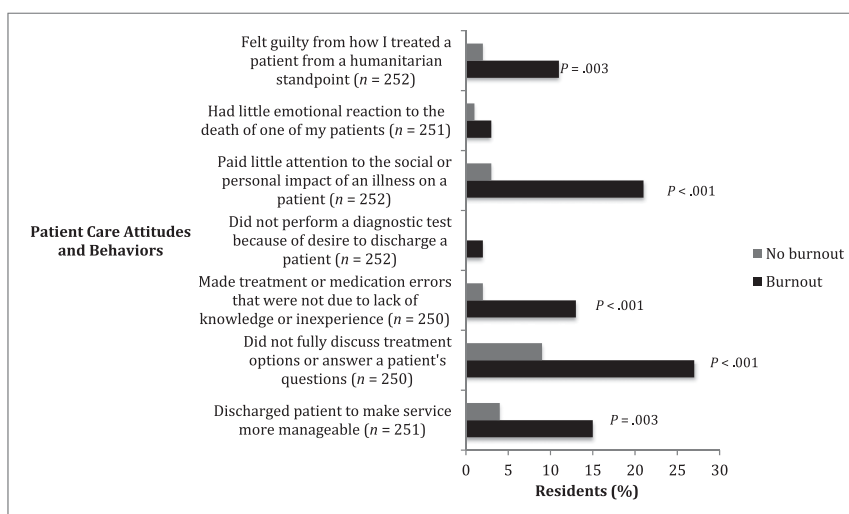


FIGURE 1

Frequency of self-reported negative patient care attitudes and behaviors (monthly/weekly) and presence of burnout.

TABLE 2 Adjusted Odds Ratios (With 95% CIs) of Negative Self-Reported Attitudes and Behaviors By Screening Positive for Burnout

Negative Self-Reported Patient Attitude and Behavior (Monthly/Weekly)	aOR (95% CI)	P
Discharged patients to make service more manageable	4.16 (1.55–11.12)	.005
Did not fully discuss treatment options or answer a patient’s questions	3.49 (1.73–7.07)	<.001
Made treatment or medication errors that were not due to lack of knowledge or inexperience	7.14 (1.98–25.76)	.003
Did not perform a diagnostic test because of desire to discharge a patient	n/a ^a	n/a
Paid little attention to the social or personal impact of an illness on a patient	9.58 (3.18–28.88)	<.001
Had little emotional reaction to the death of one of my patients	4.53 (0.46–44.14)	.19
Felt guilty from how I treated a patient from a humanitarian standpoint	5.99 (1.63–22.05)	.007

Odds ratios adjusted for age, sex, and race/ethnicity. aOR, adjusted odds ratio.

^a Not available due to there being 0 without burnout who did not perform a diagnostic test because of desire to discharge a patient.

the full MBI in a sample of >10 000 medical students, residents, and practicing physicians.¹³

Although there are limited data on the study of burnout in pediatric residents, previous studies have estimated the prevalence of burnout among pediatric residents to be from 40% to 74%. In a study of first-year pediatric and medicine–pediatric residents, Olson et al¹⁵ found that 40% endorsed ≥ 1 criteria for burnout. Pantaleoni and colleagues¹⁰ found that burnout increased from 17% to 46% between the start of

residency and mid-intern year. Two studies have demonstrated higher rates of burnout. In a study of 33 pediatric residents in 1 residency program, Milstein and colleagues¹⁶ found that 66% endorsed burnout. In a study of pediatric residents across 3 residency programs, Fahrenkopf and colleagues¹ found that burnout prevalence was 74%. Our study, the largest to date within pediatrics, demonstrated a burnout rate of nearly 40% in residents across 11 programs, a figure that is consistent with published literature.

Studies have demonstrated that sleep,¹⁷ length of work hours,¹⁸ and work schedules⁴ are predictors of burnout. Over the past decade, the Accreditation Council for Graduate Medical Education made substantial changes to standards of resident duty hours: in 2003, residents were limited to 80 hours worked per week and limited to 30 continuous hours worked, and in 2011, continuous duty hours for first-year residents were limited to 16.¹⁹ As a result, residency programs have made changes in scheduling, supervision, and coverage. Despite these changes, studies that have followed the effects of duty hour restrictions have not demonstrated improvement in well-being,²⁰ sleep,^{21,22} perceived quality of patient care,²³ or education and core competencies.²⁴ In our study, perceived sleep deprivation was a predictor of burnout, but not length of work hours or work schedules. Although perceived sleep deprivation was a predictor of burnout, it was not found to be significantly collinear with burnout in a regression model of patient care attitudes and there was no significant interaction effect between them. This finding suggests that the association between burnout and self-reported suboptimal patient attitudes and behaviors was not confounded by perceived sleep deprivation.

Our study found that residents with burnout had 3 to 9 times greater odds of endorsing 5 of 7 suboptimal patient care attitudes and behaviors on a monthly or weekly basis compared with residents without burnout. These attitudes included feeling guilty about how the resident treated a patient from a humanitarian perspective and paying little attention to the social or personal impact of an illness on a patient. Behaviors included making treatment or medication errors that were not due to lack of knowledge or inexperience, not fully discussing treatment options or answering a

patient's questions, and discharging a patient to make the service more manageable. Patient attitudes and behaviors that did not demonstrate significant differences between residents with and without burnout included having little emotional reaction to the death of a patient and not performing a diagnostic test due to the desire to discharge a patient.

Patient care attitudes and behavior questions were adapted from those used by Shanafelt and colleagues² and were modified for use with pediatric residents. In the original study, Shanafelt et al² found that residents who met criteria for burnout were significantly more likely to engage in 6 of the 8 suboptimal patient care attitudes and behaviors (no significant differences for ordering restraints/medication for an agitated patient and not performing a diagnostic test) at least several times per year compared with residents who did not meet criteria for burnout. Additionally, they found that burnout predicted self-report of suboptimal patient care behaviors at least monthly (odds ratio, 8.3; 95% confidence interval [CI], 2.6–26.5; $P < .001$), and this association was not found for other measured characteristics in their study, including depression or at-risk alcohol use or substance abuse. It is interesting to note that pediatric residents with burnout were significantly more likely to endorse these suboptimal patient care practices, a finding similar to the previous study of internal medicine residents, suggesting that the impact of burnout on self-reported patient care behaviors is seen in many types of training programs and will require a comprehensive approach across multiple clinical disciplines. Although neither study objectively measured patient care quality, errors, or outcomes to corroborate resident self-report, it remains concerning that residents with burnout report

having provided suboptimal patient care on a regular basis.

Others have looked at the prevalence of burnout and its association with patient care to best inform how and when to intervene. In a study of 44 internal medicine residents and their continuity clinic patients in 1 resident clinic, Lafreniere and colleagues²⁵ measured patient perceptions of physician burnout. Interestingly, patients perceived residents who reported higher levels of depersonalization as more empathic and patient-centered during their patient care encounters, which is counter to studies that have demonstrated an association between resident burnout and self-report of poorer quality of care. The authors posited that physicians who are more empathic may also be more aware of interpersonal dynamics and self-critical. It is possible that well-intentioned and compassionate resident physicians who experience burnout are able to compensate for a period of time before their experiences of burnout and perceived poor patient care leads to a perpetuating negative cycle.

Residency programs must not only identify burnout within their trainees, but must begin to understand potential interventions to ameliorate burnout. To date, few studies have examined burnout interventions among residents, and these are limited by small sample size and short-term follow-up.²⁶ To our knowledge, 2 studies have addressed burnout interventions among pediatric residents. In a randomized control trial of a brief self-care workshop intervention among 73 pediatric residents, no significant differences were found in the postintervention burnout rate between the experimental and control group.²⁷ Similarly, Milstein and colleagues¹⁷ did not find significant differences in the rate of reported burnout among 15 pediatric residents during a 3-month

period after a training in the use of a self-administered psychotherapeutic technique. Future studies are needed to test burnout interventions in larger groups of pediatric residents with longer-term follow-up.

Additional research is needed to identify constructive coping factors among residents that may be protective against burnout and its ultimate effects on patient care. Among 108 internal medicine and medicine–pediatrics residents, Doolittle and colleagues²⁸ found that residents who employed strategies of acceptance, active coping, and positive reframing had lower rates of burnout than residents who did not ($P < .03$). Similarly, in a study of 45 first-year pediatric and medicine–pediatric residents, Olson and colleagues¹⁶ found that self-compassion and mindfulness were positively associated with resilience and inversely associated with burnout. Future research is needed in this area and could inform the development of tools to help identify residents who might be at highest risk for burnout and interventions to promote the development of resiliency techniques that would mitigate the effect of burnout on patient care.

There are several limitations to this study. Data were collected in 1 cross-sectional survey, and burnout was not measured at multiple time points. The timing of the survey was chosen to take place at the beginning of April to avoid potential reporting bias due to the start or end of the academic calendar year and the winter season. These data also reflect residents who chose to participate in the study and may be influenced by selection bias. Residents who did not partake in

the survey may feel less connected to their residency program and may have higher rates of burnout. Although our response rate was 53%, this was similar to that of typical response rates for research among medical trainees.²⁹ Furthermore, the self-reported patient care attitudes and behavior items were adopted from those used in a previous study² and are not validated. It is possible that these items were not optimal for measuring patient care attitudes and behaviors among pediatric residents as compared with internal medicine residents. Finally, we did not measure depression or alcohol and substance use as part of this survey, and therefore, we cannot assess whether these would modify the relationship between burnout and suboptimal patient attitudes and behaviors. Although burnout and depression are both prevalent in residency populations and depression may lead to more persistent burnout,⁷ studies have previously demonstrated that the outcomes of each are unique.¹

This study has several strengths. We surveyed pediatric residents from all PGY classes across 11 programs; thus, this is the largest study of burnout in pediatric residents by number of residents surveyed and also by number of residency programs. We used the validated MBI 2-question screen to measure burnout. Furthermore, this study was conducted in 2013, 2 years after the Accreditation Council for Graduate Medical Education 2011 duty hour regulation changes and reflect current residency duty hour standards. Overall, pediatric residency populations have not been well studied in regards to the impact

of burnout, and, to our knowledge, this is the first study to explore burnout across a large and diverse sample of pediatric residents and residency programs and to evaluate the association between burnout and self-reported patient care attitudes and behaviors.

CONCLUSIONS

Burnout is highly prevalent among pediatric residents at all PGY levels across 11 pediatric residency programs, and residents with burnout are significantly more likely to report suboptimal patient attitudes and behaviors on a regular monthly or weekly basis. Residency programs should educate residents about the risks of burnout on patient care and develop interventions to address burnout and mitigate these risks. Addressing burnout is necessary to promote high quality, compassionate, and safe patient care, and educational leaders must address resident wellness to optimize the care we provide to our patients. In addition to directly addressing burnout with resident trainees, system level changes need to take place to reduce burnout and improve work satisfaction among physicians at all levels. Health care organizations should prioritize workplace improvements for physicians and the rest of the care team, such as reducing administrative burdens and fostering quality interactions with patients.³⁰

ABBREVIATIONS

CI: confidence interval
MBI: Maslach Burnout Inventory
PGY: postgraduate year

This work was previously presented in part in poster presentations at the Pediatric Academic Societies annual meeting; April 27, 2015; San Diego, CA.

DOI: 10.1542/peds.2016-2163

Accepted for publication Dec 19, 2016

Address correspondence to Tamara Elizabeth Baer, MD, MPH, Division of Adolescent/Young Adult Medicine, Boston Children's Hospital, 6th Floor, 333 Longwood Ave, Boston, MA 02115. E-mail: tamara.baer@childrens.harvard.edu

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: This study was supported by the Boston Children's Hospital's Fred Lovejoy Resident Research Award and Leadership Education in Adolescent Health Training grant T71MC00009 from the Maternal and Child Health Bureau, Health Resources and Services Administration.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2016-4233.

REFERENCES

1. Fahrenkopf AM, Sectish TC, Barger LK, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. *BMJ*. 2008;336(7642):488–491
2. 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):358–367
3. Ishak WW, Lederer S, Mandili C, et al. Burnout during residency training: a literature review. *J Grad Med Educ*. 2009;1(2):236–242
4. Block L, Wu AW, Feldman L, et al. Residency schedule, burnout and patient care among first-year residents. *Postgrad Med J*. 2013;89(1055):495–500
5. Billings ME, Lazarus ME, Wenrich M, Curtis JR, Engelberg RA. The effect of the hidden curriculum on resident burnout and cynicism. *J Grad Med Educ*. 2011;3(4):503–510
6. West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. *JAMA*. 2006;296(9):1071–1078
7. de Oliveira GS Jr, Chang R, Fitzgerald PC, et al. The prevalence of burnout and depression and their association with adherence to safety and practice standards: a survey of United States anesthesiology trainees. *Anesth Analg*. 2013;117(1):182–193
8. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. *JAMA*. 2011;306(9):952–960
9. Campbell J, Prochazka AV, Yamashita T, Gopal R. Predictors of persistent burnout in internal medicine residents: a prospective cohort study. *Acad Med*. 2010;85(10):1630–1634
10. Pantaleoni JL, Augustine EM, Sourkes BM, Bachrach LK. Burnout in pediatric residents over a 2-year period: a longitudinal study. *Acad Pediatr*. 2014;14(2):167–172
11. McClafferty H, Brown OW; Section on Integrative Medicine; Committee on Practice And Ambulatory Medicine; Section on Integrative Medicine. Physician health and wellness. *Pediatrics*. 2014;134(4):830–835
12. Guyatt GH, Cook DJ, King D, Norman GR, Kane SL, van Ineveld C. Effect of the framing of questionnaire items regarding satisfaction with training on residents' responses. *Acad Med*. 1999;74(2):192–194
13. West CP, Dyrbye LN, Sloan JA, Shanafelt TD. Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. *J Gen Intern Med*. 2009;24(12):1318–1321
14. Maslach C, Jackson SE. MBI-Human Services Survey. 1981. Available at: www.mindgarden.com/117-maslach-burnout-inventory
15. Olson K, Kemper KJ, Mahan JD. What factors promote resilience and protect against burnout in first-year pediatric and medicine-pediatric residents? *J Evid Based Complementary Altern Med*. 2015;20(3):192–198
16. Milstein JM, Raingruber BJ, Bennett SH, Kon AA, Winn CA, Paterniti DA. Burnout assessment in house officers: evaluation of an intervention to reduce stress. *Med Teach*. 2009;31(4):338–341
17. Rosen IM, Gimotty PA, Shea JA, Bellini LM. Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy, and burnout among interns. *Acad Med*. 2006;81(1):82–85
18. Gopal R, Glasheen JJ, Miyoshi TJ, Prochazka AV. Burnout and internal medicine resident work-hour restrictions. *Arch Intern Med*. 2005;165(22):2595–2600
19. Accreditation Council for Graduate Medical Education. Resident duty hours in the learning and working environment: comparison of 2003 and 2011 standards. www.acgme.org/acgmeweb/Portals/0/PDFs/dh-ComparisonTable2003v2011.pdf. Accessed July 22, 2013
20. Sen S, Kranzler HR, Didwania AK, et al. Effects of the 2011 duty hour reforms on interns and their patients: a prospective longitudinal cohort study. *JAMA Intern Med*. 2013;173(8):657–662; discussion, 663
21. 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
22. Kamine TH, Barron RJ, Lesicka A, Galbraith JD, Millham FH, Larson J. Effects of the new Accreditation Council for Graduate Medical Education work hour rules on surgical interns: a prospective study in a community teaching hospital. *Am J Surg*. 2013;205(2):163–168
23. 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):649–655
24. Antiel RM, Reed DA, Van Arendonk KJ, et al. Effects of duty hour restrictions on core competencies, education, quality of life, and burnout among general surgery interns. *JAMA Surg*. 2013;148(5):448–455
25. Lafreniere JP, Rios R, Packer H, Ghazarian S, Wright SM, Levine RB. Burned out at the bedside: patient perceptions of physician burnout

- in an internal medicine resident continuity clinic. *J Gen Intern Med.* 2016;31(2):203–208
26. Williams D, Tricomi G, Gupta J, Janise A. Efficacy of burnout interventions in the medical education pipeline. *Acad Psychiatry.* 2015;39(1):47–54
27. Martins AE, Davenport MC, Del Valle MP, et al. Impact of a brief intervention on the burnout levels of pediatric residents. *J Pediatr (Rio J).* 2011;87(6):493–498
28. Doolittle BR, Windish DM, Seelig CB. Burnout, coping, and spirituality among internal medicine resident physicians. *J Grad Med Educ.* 2013;5(2):257–261
29. Kellerman SE, Herold J. Physician response to surveys. A review of the literature. *Am J Prev Med.* 2001;20(1):61–67
30. Linzer M, Poplau S, Grossman E, et al. A cluster randomized trial of interventions to improve work conditions and clinician burnout in primary care: results from the Healthy Work Place (HWP) study. *J Gen Intern Med.* 2015;30(8):1105–1111

Pediatric Resident Burnout and Attitudes Toward Patients

Tamara Elizabeth Baer, Angela M. Feraco, Selin Tuysuzoglu Sagalowsky, David Williams, Heather J. Litman and Robert J. Vinci

Pediatrics 2017;139;

DOI: 10.1542/peds.2016-2163 originally published online February 23, 2017;

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/139/3/e20162163>

References

This article cites 28 articles, 3 of which you can access for free at:
<http://pediatrics.aappublications.org/content/139/3/e20162163#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):
Medical Education
http://www.aappublications.org/cgi/collection/medical_education_sub
Teaching/Curriculum Development
http://www.aappublications.org/cgi/collection/teaching_curriculum_dev_sub
Workforce
http://www.aappublications.org/cgi/collection/workforce_sub

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Pediatric Resident Burnout and Attitudes Toward Patients

Tamara Elizabeth Baer, Angela M. Feraco, Selin Tuysuzoglu Sagalowsky, David Williams, Heather J. Litman and Robert J. Vinci

Pediatrics 2017;139;

DOI: 10.1542/peds.2016-2163 originally published online February 23, 2017;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/139/3/e20162163>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2017 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

