

A National Cross-Sectional Study of Surgery Residents Who Underreport Duty Hours

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OBJECTIVE: Previous work demonstrates that many surgery residents underreport duty hours. The purpose of this study was to identify characteristics of these residents and better understand why they exceed duty hours.

DESIGN: During the winter of 2015 we conducted an anonymous cross-sectional survey of Accreditation Council for Graduate Medical Education accredited general surgery programs.

SETTING: A total of 101 general surgery residency programs across the United States.

PARTICIPANTS: A total of 1003 general surgery residents across the United States. Respondents' mean age was 29.9 ± 3.0 years; 53% were male.

RESULTS: Study response rate was 31.9%. Residents age <30 were more likely to exceed duty hours to complete charting/documentation (68% vs. 54%, $p < 0.001$). Females more often cited guilt about leaving the hospital (32% vs. 24%, $p = 0.014$) as to why they exceed duty hours. Programs with >40 residents had the highest rates of underreporting (82% vs. 67% in other groups $p < 0.001$) and residents who worked >90 hours on an average week more frequently cited external pressure ($p = 0.0001$), guilt ($p = 0.006$), and feeling it was expected of them ($p < 0.0001$) as reasons why they underreport compared to those who worked fewer hours.

CONCLUSIONS: Underreporting and duty-hour violations are a complex issue influenced by many variables including age, sex, and internal and external pressures. (J Surg Ed ■■■■-■■■. © 2017 Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery)

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INTRODUCTION

The Accreditation Council for Graduate Medical Education's (ACMGE) 2011 duty-hour reforms caused significant controversy in the medical education community.¹⁻⁵ Advocates of the reforms feel that they decrease medical errors and reduce resident fatigue⁶; critics argue that the reforms are detrimental to residents' education, increase hand-offs, and negatively affect patient care.^{2,4} However, general surgery patient outcomes, resident examination performance, and readmission rates following these duty-hour reforms showed no significant change.²⁻⁴ Thus, some have questioned the 2011 reforms and called for more flexible policies.^{1,4,7} Relevant to past and current duty-hour policies are underreporting.

Underreporting is a known issue among residency programs, including general surgery.^{1,5,8} We recently reported preliminary findings from a similar national study of general surgery residents where 72% of respondents underreported duty hours.⁸ That study ran at the same time as the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) Trial⁴; further, 52 of the hospitals enrolled in the FIRST Trial were dual-enrolled in our study.

A subsequent follow-up report from authors of the FIRST Trial confirms that multiple types of duty-hour violations were present in this study.⁹ Many residents in this study attribute providing clinical care, completing documentation, and ward rounding as reasons behind duty-hour violations; however, this study was unable to explore what

role internal and external pressures such as guilt or coercion may play.⁹ Further, little is known regarding the characteristics of those who underreport and whether there are age-, sex-, or program-specific differences. Given the high rates of burnout, depression, substance abuse, and suicide among resident physicians across the country, it is important to better understand these characteristics and motivations.^{10,11}

MATERIAL AND METHODS

We conducted a cross-sectional survey of general surgery residents enrolled in any ACGME-accredited US general surgery residency program during the winter of 2015. Program directors and coordinators from 256 programs were solicited via publicly available e-mail addresses. Programs that expressed an interest were enrolled and provided a hyperlink to an anonymous, online, Qualtrics-based questionnaire (Provo, UT) that could be forwarded to their residents. Programs that were not interested were excluded from further solicitation and programs that did not respond after a total of 3 solicitation attempts were presumed to be not interested; neither of these groups were given access to the survey. Our manner of solicitation was based on previously published methods.^{1,5} Institutional review board approval for the study, survey vehicle, and solicitation material was received from The University of North Carolina at Chapel Hill (institutional review board 15-0053). To help ensure respondent anonymity, demographic questions were limited to age, sex, state, and residency program size; information regarding postgraduate year was not obtained. For individual survey questions, subjects who did not answer the question were excluded from the analysis. For bivariate analysis, chi-square tests were used to compare survey responses among different groups characterized by resident age, sex, region/program size of residency program, and self-reported average hours worked per week. For multivariable analysis, logistic regression models were used to examine the independent effects of each factor on dichotomized survey responses. The cut points for age (<30 vs. ≥30) were chosen because of median age of respondents (29.9); given the structure of the results, a cutoff of 30 resulted in the highest power for statistical comparisons. For program size, original questioning allowed for 6 possible categories (1-10, 11-20, 21-30, 31-40, 41-50, and >50); these groups were collapsed into 3 symmetrical groups (as opposed to dichotomization) to preserve the original order of size while increasing sample size of individual groups for analysis. These analyses were repeated using multiple cutoffs for age and program size, and the trends that were observed remained consistent. All analyses were conducted using SAS (SAS Institute, Cary, NC) version 9.4.

RESULTS

Participants

A total of 101 programs expressed interest and were provided with access to the survey. We received responses from 1003 of the total 3146 possible residents (31.9% response rate). Respondents represented 30 states across the United States, the District of Columbia, and Puerto Rico; 53.2% (534) were male and the average age was 29.9 years (standard deviation ± 3.0 y). Most residents (48.7%) were in programs of between 21 and 40 residents (Table 1).

Age

Given that the mean age of respondents was 29.9, respondents were split into the following 2 groups: less than 30 years old and 30 years or older in the analysis (Table 2). Respondents age 30 or older were not more likely to underreport duty hours in the bivariate analysis (74% vs. 69%, $p = 0.07$) but a difference became statistically significant after adjusting for other factors in the multivariable model with an adjusted odds ratio of 1.35 (1.02-1.80). Age was also found to be a significant predictor for some reasons why residents exceeded duty hours; residents younger than 30 more frequently cited charting and documentation (68% vs. 54%, $p < 0.001$) and preventing signing out unfinished tasks (84% vs. 75%, $p = 0.0002$).

Sex

There were no differences in rates of underreporting between males or females, but females were more likely to

TABLE 1. Respondent Demographics

	N	%
All	1003	100
Age		
<30	477	48
>30	503	50
Sex		
Female	466	46
Male	534	53
Other	3	0
Region		
Midwest	276	28
Northeast	305	30
South	241	24
West	174	17
Program size		
1-10	58	6
11-20	175	17
21-30	229	23
31-40	260	26
41-50	142	14
>50	139	14

Not all questions equal given that not all respondents answered all questions. Age mean (+SD) was 29.9 (+3). SD, standard deviation.

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