World J Surg (2018) 42:1285–1292
DOI 10.1007/s00268-017-4286-y

ORIGINAL SCIENTIFIC REPORT

# The Physician Attrition Crisis: A Cross-Sectional Survey of the Risk Factors for Reduced Job Satisfaction Among US Surgeons

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Published online: 24 October 2017


## Abstract

*Introduction* A physician shortage is on the horizon, and surgeons are particularly vulnerable due to attrition. Reduced job satisfaction leads to increased job turnover and earlier retirement. The purpose of this study is to delineate the risk factors that contribute to reduced job satisfaction.

*Methods* A cross-sectional survey of US surgeons was conducted from September 2016 to May 2017. Screening for job satisfaction was performed using the abridged Job in General scale. Respondents were grouped into more and less satisfied using the median split. Twenty-five potential risk factors were examined that included demographic, occupational, psychological, wellness, and work-environment variables.

*Results* Overall, 993 respondents were grouped into more satisfied ($n = 502$) and less satisfied ($n = 491$) cohorts. Of the demographic variables, female gender and younger age were associated with decreased job satisfaction ($p = 0.003$ and $p = 0.008$). Most occupational variables (specialty, experience, academics, practice size, payment model) were not significant. However, increased average hours worked correlated with less satisfaction ($p = 0.008$). Posttraumatic stress disorder, burnout, wellness, all eight work-environment variables, and unhappiness with career choice were linked to reduced job satisfaction ($p = 0.001$).

*Conclusion* A surgeon shortage has serious implications for health care. Job satisfaction is associated with physician retention. Our results suggest women and younger surgeons may be at increased risk for job dissatisfaction. Targeted work-environment interventions to reduce work-hours, improve hospital culture, and provide adequate financial reimbursement may promote job satisfaction and wellness.

## Introduction

Data from the "2017 Update to *The Complexities of Physician Supply and Demand: Projections from 2015 to 2030*" indicate a critical physician shortage on the horizon in the USA. Among all fields studied, surgical specialties appear to be at the highest risk. The 2017 report published by the American Medical Association estimates a shortage of 29,000 surgeons by 2030 [1]. The etiology of this shortage is largely due to the rising attrition rate that will soon exceed the number of newly trained surgeons [2, 3]. This physician shortage persists outside of the USA according to *Global Health Workforce Alliance* and *World*

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*Health Organization's* 2014 projections. They state that 45% of countries around the world do not currently meet the minimum threshold of 22.8 skilled health professionals per 10,000 people [4]. Given these alarming projections, it is of substantial interest to the surgical community to investigate and identify ways to mitigate surgeon attrition. Addressing surgeon retention through improved job satisfaction is one strategy to mitigate this dilemma.

Job satisfaction in health care is important globally. Recent studies from around the world have linked job dissatisfaction to deleterious downstream consequences. These include decreased physician retention, increased job turnover, rising healthcare costs, reduced patient satisfaction, and diminished patient safety [5–10]. While these studies have done well to describe the effects of reduced job satisfaction among physicians, few studies have sought to identify risk factors for the development of dissatisfaction. The purpose of this study is to delineate the risk factors that contribute to job satisfaction.

## Materials and methods

After Institutional Review Board approval, a cross-sectional survey of practicing surgeons was conducted from September 2016 to May 2017. The survey was sent via email invitation to 6957 surgeons. The invitation included the purpose of the study, as well as an embedded anonymous link. The purpose of the study was described as an assessment of daily job satisfaction with the intention to improve the work-life balance of physicians. Participation was both voluntary and confidential. Opening the link was regarded as a received invitation. Nonresponders received three additional email reminders to improve recruitment.

The survey included questions on job satisfaction, posttraumatic stress disorder (PTSD), physician burnout (PBO), as well as demographic, occupational, wellness, work-environment, and career choice satisfaction. Screening for job satisfaction was performed using the validated abridged Job in General scale (aJIG). The aJIG is a self-reported global measure of overall job satisfaction that uses a list of phrases and adjectives to gauge overall job satisfaction [11, 12]. This screening tool was selected for its simplicity and brevity to mitigate survey fatigue. Respondents were grouped into more satisfied and less satisfied cohorts using the median split.

Screening for PTSD and physician burnout was performed using the Primary Care PTSD Screen (PC-PTSD) and a validated abbreviated burnout tool. Three or more "yes" responses to the PC-PTSD were considered screening positive for PTSD. The burnout tool was adapted from the standard 22-question Maslach Burnout Inventory and has been used by other large-scale national studies [13].

Demographic components included age, gender, ethnicity, and current geographic location. Occupational questions covered surgical specialty, current practice type, practice size, payment model, and average hours of work per week. Four wellness questions assessed satisfaction with time for family and friends, time for extracurricular activities, feeling well-rested, and overall perception of health. Eight additional work-environment variables evaluated satisfaction with autonomy, patient diversity, patient ownership, safe patient load, hospital culture, hospital support, camaraderie, and salary. Lastly, we conducted a self-assessment of overall happiness with career choice.

Questions on wellness, work-environment, and career choice happiness were formatted using a Likert-type scale. Wellness question response options included "never," "a few times a year," "once a month or less," "once a week," "a few times a week," and "every day." A response of "never" or "a few times a year" was grouped as unhealthy. Options for work-environment questions were "agree," "somewhat agree," "neutral," "somewhat disagree," and "disagree." "Somewhat disagree" and "disagree" were grouped together as dissatisfied. Finally, happiness with career choice responses was comprised of "yes," "probably yes," "neutral," "probably not," and "no." We categorized "probably not" and "no" as unhappy with one's career choice.

IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA), was utilized for data analysis. For large or small sample sizes, a Chi-square or Fisher's exact test was used, respectively. Hypothesis tests were two-sided and a $p$ value of $< 0.05$ was considered statistically significant.

## Results

From September 2016 to May 2017, 6957 US surgeons were emailed the survey. Of the respondents who opened the survey, there was an overall response rate of 80%. A total of 993 surgeons completed the survey. Using a median split, respondents to the aJIG were grouped into more or less satisfied. There were 491 respondents in the increased job satisfaction cohort (49%) and 502 respondents in the reduced job satisfaction cohort (51%).

Of the demographic variables, females and surgeons less than 60 years old demonstrated decreased job satisfaction ($p = 0.003$ and $p = 0.008$, respectively). The remaining demographic variables (ethnicity, geographic location) were not statistically different (Table 1). Most occupational characteristics (surgical specialty, years in practice, academic career, practice size, and payment model) did not play a role in job satisfaction. However, those surgeons who worked more than 60 h per week on average were less

**Table 1** Demographic variables

| | More satisfied ($n = 491$) | Less satisfied ($n = 502$) | $p$ value |
|---|---|---|---|
| Gender, $n$ (%) | | | |
| Female | 164 (34%) | 215 (44%) | 0.003 |
| Male | 314 (66%) | 277 (56%) | |
| Age, $n$ (%) | | | |
| 30–39 | 109 (23%) | 116 (24%) | 0.008 |
| 40–49 | 152 (32%) | 177 (36%) | |
| 50–59 | 113 (23%) | 131 (27%) | |
| 60+* | 108 (23%) | 69 (14.0%)* | |
| Ethnicity, $n$ (%) | | | |
| Arabic/Indian/Middle East | 14 (3%) | 26 (5%) | 0.302 |
| Asian | 44 (9%) | 37 (7%) | |
| Black | 25 (5%) | 20 (4%) | |
| Hispanic | 16 (3%) | 15 (3%) | |
| White | 390 (80%) | 403 (80%) | |
| Geographic location, $n$ (%) | | | |
| Midwest | 138 (28%) | 133 (27%) | 0.615 |
| New England | 77 (16%) | 88 (18%) | |
| South | 180 (37%) | 196 (395%) | |
| West | 92 (19%) | 83 (17%) | |

* Significant difference from all age groups ($p < 0.05$)

satisfied than those surgeons who worked 60 h or less($p = 0.008$) (Table 2).

Overall, 16% ($n = 156$) of respondents screened positive for PTSD. The prevalence of screening positive for PTSD was significantly higher in the less satisfied cohort (24 vs 7%; $p < 0.001$). Our data also demonstrated 26% ($n = 259$) of respondents screened high risk for PBO. The prevalence of burnout was higher in the less satisfied cohort compared with the more satisfied cohort (42 vs 10%; $p < 0.001$) (Table 3).

All work-life wellness variables examined were linked to reduced job satisfaction ($p < 0.001$) (Table 3). This includes inadequate time with family or friends, inadequate time for extracurricular activities, feeling well-rested, and overall perception of health.

Career satisfaction was explored through both work-environment variables and overall happiness with career choice. Work-environment variables (autonomy, patient diversity, patient ownership, safe patient load, hospital culture, hospital support, camaraderie, and salary) were all associated with reduced job satisfaction ($p = 0.001$) (Table 4). When asked, "If you could revisit your career choice, would you become a physician again?" overall, 14% of surgeons were unhappy with their career choice. However, surgeons in the less satisfied cohort were more likely to be unhappy with their career choice (25 vs 2%; $p < 0.001$) (Table 4).

## Discussion

Job satisfaction is defined as the level of contentment one feels regarding his or her job [14]. Studies have shown job dissatisfaction, and burnout among surgeons can lead to reduced productivity, increased job turnover, and earlier retirement [15–18]. However, there is a paucity of literature on the risk factors associated with physician job dissatisfaction. Our study examined twenty-five potential risk factors for job satisfaction among surgeons. Of the demographic variables considered, our data demonstrated females and surgeons less than 60 years old were less satisfied with their jobs. Interestingly, previous studies have demonstrated concordant findings of increased work-related stress and burnout among females and young/less experienced surgeons [19, 20]. According to the US Bureau of Labor Statistics, American women spend 45 min more than men per day on household activities [21]. Inequitable household and childcare responsibilities in conjunction with equal professional demands may be one contributing factor to decreased job satisfaction among females. Future studies should explore variances in job

**Table 2** Occupational variables

| | More satisfied ($n = 491$) | Less satisfied ($n = 502$) | $p$ value |
|---|---|---|---|
| Specialty, *n* (%) | | | |
| Breast/endocrine/Surg Onc | 27 (6%) | 20 (4%) | 0.156 |
| Cardiothoracic surgery | 28 (6%) | 28 (6%) | |
| Colorectal surgery | 19 (4%) | 15 (3%) | |
| Critical care/trauma | 83 (17%) | 112 (22%) | |
| General surgery | 62 (13%) | 50 (10%) | |
| HPB/transplant | 15 (3%) | 12 (2%) | |
| Minimally invasive surgery | 19 (4%) | 15 (3%) | |
| Neurological surgery | 10 (2%) | 7 (1%) | |
| OB/Gyn | 121 (25%) | 144 (29%) | |
| Orthopedic surgery | 20 (4%) | 12 (2%) | |
| Otolaryngology | 13 (3%) | 18 (4%) | |
| Pediatric surgery | 22 (5%) | 12 (2%) | |
| Plastic surgery | 22 (5%) | 17 (3%) | |
| Urology | 7 (1%) | 14 (3%) | |
| Vascular surgery | 23 (5%) | 26 (5%) | |
| Years in practice, *n* (%) | | | |
| 0–10 years | 195 (40%) | 216 (43%) | 0.388 |
| 11–20 years | 134 (27%) | 139 (28%) | |
| 21+ years | 162 (33%) | 146 (29%) | |
| Practice type, *n* (%) | | | |
| Academic | 415 (85%) | 413 (82%) | 0.270 |
| Nonacademic | 74 (15%) | 89 (18%) | |
| Practice size, *n* (%) | | | |
| Group practice | 270 (55%) | 270 (54%) | 0.880 |
| Large multispecialty | 209 (43%) | 221 (44%) | |
| Solo practice | 12 (2%) | 11 (2%) | |
| Payment model, *n* (%) | | | |
| Fee for service | 92 (19%) | 83 (17%) | 0.354 |
| Salary | 398 (81%) | 419 (84%) | |
| Average hours of work per week, *n* (%) | | | |
| 21–60 h | 194 (47%) | 160 (38%) | 0.008 |
| 61+ h | 215 (53%) | 257 (62%) | |

satisfaction between single and married women, as well as those with children. Further, we hypothesize the increased satisfaction among senior surgeons may be related to control over work schedule, appreciation from peers, and accomplished career goals [22].

Of the six occupational characteristics we examined, those surgeons who averaged more than 60 h of work per week had reduced job satisfaction. Interestingly, no single surgical specialty or particular work model was associated with more job satisfaction.

Physician wellness has come to the forefront of the medical community in response to all-time high levels of physician burnout [23]. Previous studies have shown that psychological distress among physicians, including burnout and depression, exert negative effects on the quality of patient care [24]. A recent study of trauma surgeons demonstrated elevated rates of PTSD compared to the general population [25]. Mental fortitude is of particular interest to the authors and prompted our examination of PBO, PTSD, and physician wellness, as well as their relationships to reduced job satisfaction. Each was found to be significant.

Interestingly, we identified a relationship between decreased job satisfaction and PBO. A similar relationship was noted for PTSD. To our knowledge, these relationships have not been delineated previously. While PBO has

**Table 3** Wellness variables

| | More satisfied ($n = 491$) | Less satisfied ($n = 502$) | $p$ value |
|---|---|---|---|
| Psychological wellness | | | |
| PTSD, *n* (%) | | | |
| PTSD+ | 35 (7%) | 121 (24%) | <0.001 |
| PTSD− | 456 (93%) | 379 (76%) | |
| Physician burnout, *n* (%) | | | |
| Low risk | 278 (57%) | 70 (14%) | <0.001 |
| Medium risk | 166 (34%) | 219 (44%) | |
| High risk | 46 (10%) | 213 (42%) | |
| Work-life wellness | | | |
| Time with family and friends, *n* (%) | | | |
| Healthy | 431 (88%) | 335 (67%) | <0.001 |
| Unhealthy | 59 (12%) | 165 (33%) | |
| Time for extracurriculars, *n* (%) | | | |
| Healthy | 421 (86%) | 298 (60%) | <0.001 |
| Unhealthy | 68 (14%) | 202 (40%) | |
| Feel well-rested, *n* (%) | | | |
| Healthy | 416 (85%) | 291 (58%) | <0.001 |
| Unhealthy | 74 (15%) | 209 (42%) | |
| Perception of health, *n* (%) | | | |
| Healthy | 441 (90%) | 338 (68%) | <0.001 |
| Unhealthy | 48 (10%) | 163 (33%) | |

*PTSD+* positive posttraumatic stress disorder screen, *PTSD−* negative posttraumatic stress disorder screen

recently been a predominant topic in medical research, our knowledge of PTSD among physicians is much more limited. A US study has demonstrated a rising prevalence of physician burnout (46% in 2011 to 54% in 2014) [23], and rates of PTSD among trauma surgeons are nearly double that of the general population [25]. Our data has echoed this finding with respect to PTSD with a 15% prevalence rate of PTSD among US surgeons.

All wellness variables examined (time for family, friends, and extracurriculars, feeling rested, and perception of overall health) were linked to reduced job satisfaction. This data highlights the need for improved work-life balance among surgeons to increase overall job satisfaction. Further, it begs the question, how do we expect physicians to take care of others, if they themselves are not taken care of?

A key aspect of this study was determining potential work-environment risk factors that contribute to reduced surgeon job satisfaction. Previous studies have shown autonomy, workflow, workload, appreciation, reimbursement, and lifestyle are tied to surgeon job satisfaction [26, 27]. Our study similarly found all eight work-environment variables surveyed associated with lower satisfaction (Table 4). The three most prevalent variables included dissatisfaction with hospital culture, hospital support, and financial reimbursement. However, no single variable had universal dissatisfaction among the less satisfied group of surgeons. This highlights the unique perspective of each surgeon with regard to job satisfaction. While one surgeon may weigh autonomy and safe patient load highly, another may place importance on fair compensation and hospital support. Satisfying all surgeons is an impossible feat, but making focused efforts to improve one or two areas may shift the pendulum toward satisfaction for the majority.

Finally, we asked our respondents to classify their happiness with career choice. It is concerning that approximately 14% of surgeons would be unlikely to choose medicine as a career again. The prevalence of unhappiness with career choice was 2% among more satisfied surgeons. In contrast, 25% of surgeons in the less satisfied cohort were unhappy with their career choice. This further highlights the importance of job satisfaction in physician retention.

Despite the increasing emphasis healthcare leaders have placed on physician wellness, patient satisfaction remains the focus for administrators. This emphasis is in large part due to changes in reimbursement, despite little to no

**Table 4** Career satisfaction

| | More satisfied ($n = 491$) | Less satisfied ($n = 502$) | $p$ value |
|---|---|---|---|
| Work-environment variables | | | |
| Autonomy, *n* (%) | | | |
| Dissatisfied | 8 (2%) | 37 (9%) | <0.001 |
| Patient diversity, *n* (%) | | | |
| Dissatisfied | 7 (2%) | 25 (6%) | 0.001 |
| Patient Ownership, *n* (%) | | | |
| Dissatisfied | 4 (1%) | 32 (8%) | <0.001 |
| Safe patient load, *n* (%) | | | |
| Dissatisfied | 15 (4%) | 71 (17%) | <0.001 |
| Hospital culture, *n* (%) | | | |
| Dissatisfied | 29 (7%) | 136 (33%) | <0.001 |
| Hospital support, *n* (%) | | | |
| Dissatisfied | 23 (6%) | 123 (32%) | <0.001 |
| Camaraderie, *n* (%) | | | |
| Dissatisfied | 17 (4%) | 122 (30%) | <0.001 |
| Salary, *n* (%) | | | |
| Dissatisfied | 72 (18%) | 183 (45%) | <0.001 |
| Career choice satisfaction | | | |
| Overall happiness with career choice, *n* (%) | | | |
| Unhappy | 10 (2%) | 123 (25%) | <0.001 |

evidence supporting a link between improved patient satisfaction and improved patient outcomes [28]. There is, however, a plethora of data supporting a correlation between physician job satisfaction and improved patient care, as well as increased physician productivity and improved physician retention [29, 30]. While health policy is unlikely to change, medical administration can play a role in improving physician satisfaction. The US physician shortage is unavoidable, and surgery will be among the most impacted specialties. No single solution will resolve surgeon attrition, but focusing on job satisfaction and the perception of wellness may slow the outflow.

Work-life balance is defined as the "prioritizing between work (career and ambition) and lifestyle (health, pleasure, leisure, family, and spiritual development/meditation)" [31]. Given our findings of a relationship between decreased job satisfaction, PBO, and PTSD, we believe work-life balance interventions should begin early in a surgeon's career. Our previous study found younger surgery residents are higher risk for PTSD and PBO. Other studies have similarly noted rates of burnout in not only residents but medical students as well [32, 33]. Concerted efforts to mitigate PBO and to improve work-life balance can be successful [34, 35]. Potential interventions include stress management, self-care interventions, support groups, and resident assistance programs [36–38].

Populations to focus on include targeting our female and younger surgeons to improve their work-environment and work-life balance. Interventions aimed at hospital culture, hospital support, and financial reimbursement may provide the greatest impact in terms of improving surgeon job satisfaction. We advocate for the establishment of wellness programs with early implementation in residency to prophylactically address job dissatisfaction and burnout. Finally, prospective studies evaluating reduction in PTSD and PBO while improving overall wellness may be fundamental to understanding job satisfaction.

This study has several limitations. The cross-sectional nature of this study gives us insight into only a single point in time, and surveys carry the inherent risk of response bias. The reliance on self-reported responses may result in exaggeration or inaccurate reporting of data. While this is one of the largest surveys of its kind, our cohort may not represent all surgeons as a whole due to nonresponse bias. Lastly, a multivariate analysis was not performed due to the number of variables, and we cannot establish cause and effect for our findings.

## Conclusion

The projected physician shortage has serious implications for health care, and surgery will be among the most impacted of medical fields. While the problem is multifaceted, rising attrition rates appear to be the primary cause [2, 3]. No single solution will resolve surgeon attrition. Focusing on the job satisfaction and wellness of surgeons could mitigate the problem. The authors advocate for targeted efforts at improving work-environment and work-life balance, particularly among females and young surgeons, even as early as medical school. Interventions aimed at hospital culture, hospital support, and adequate financial reimbursement may provide the greatest impact.

**Acknowledgements** We thank Dr. Diane Jackson for her tireless support and assistance throughout this project and for her ever willingness to help even at the most inconvenient hours. Her hard work, research expertise, thoroughness, and humanitarian spirit kept us on track and humble. We thank Jake Morgan, Taylor Cook, and Kevin McLean for the hundreds of hours they provided in data collection. Without their help, this project could never have happened. Their dedication and teamwork exemplify the great doctors they are sure to become.

**Compliance with ethical standards**

**Conflict of interest** The authors have no conflict of interest to declare.

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