

Factors associated with burnout amongst medical students, residents, and attendings in Orthopaedics ☆,☆☆

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A B S T R A C T

Background: Burnout is an important and timely topic in medicine as a whole and spine orthopaedics as a specialty. Prior studies analyzing burnout in orthopaedics generally assess for the prevalence of burnout, without using a targeted analysis on possible causes and/or the potential association with work hours. In addition, burnout has not been assessed along the spectrum of the orthopaedist's career.

Methods: An anonymous survey was given to 24 medical students on surgical rotations, 20 orthopaedic residents, and 20 orthopaedic surgeons between June 2019 and August 2019 at a single academic institution. The survey inquired about demographics, general attributes, work hours, and included the aMBI (abbreviated Maslach Burnout Inventory [aMBI]).

Results: Residents worked the most hours per week ($p < 0.0001$). Job satisfaction and home support were not significantly different between students, residents, and attendings. Control over life/schedule was greatest for attendings ($p = 0.0036$).

In terms of the aMBI scores, depersonalization was highest for residents ($p = 0.0020$), and personal accomplishment was highest for attendings ($p = 0.0095$).

Taking all survey participants together, increased work hours correlated with greater depersonalization ($p = 0.015$), greater sense of personal accomplishment ($p = 0.049$), but was not correlated with emotional exhaustion. Higher job satisfaction correlated with lower emotional exhaustion and higher personal accomplishment.

Conclusion: With work hours correlating with depersonalization and personal accomplishment, continuing to focus on these factors seems important. With higher job satisfaction correlating with lower emotional exhaustion and higher personal accomplishment, burnout is a topic that will need to continue to be addressed for the well-being of our profession.

Background

Physician burnout is an important and timely topic in medicine as a whole and in spine orthopaedics as a specialty. While burnout can be variably defined, an overarching description is “a state of physical, emotional, or mental exhaustion caused by long term involvement in situations that are emotionally demanding” [1]. One study by Shanafelt et al. found doctors in general were more burnt out (38%) than the general US population (28%) [2]. Burnout can have profound detrimental effects on physicians themselves, patients, and the entire US healthcare system.

A standardized questionnaire tool (the abbreviated Maslach Burnout Inventory [aMBI]) is commonly used to assess burnout [3]. The aMBI

consists of three facets: emotional exhaustion, depersonalization, and personal accomplishment. Each facet in the aMBI is scored on a 0–18 scale. For emotional exhaustion and depersonalization, higher scores indicate more burnout. For personal accomplishment, higher scores indicate less burnout. According to Maslach et al, these three facets can interact in different gradations, making burnout presentation heterogeneous [3].

Daniels et al. found emotional exhaustion to be associated with physical exhaustion and poor judgment, depersonalization to be associated with cynicism and impaired patient and colleague relationships, and feelings of low personal accomplishment to be associated with decreased effectiveness and productivity [4]. Shanafelt et al. further found a correlation between all three metrics of burnout in the aMBI, and increased medical error [2].

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With long work hours in stressful environments in medicine, links have been made between workhours and burnout. This has been particularly studied in residents due to the well-known Libby Zion case of 1984 [5]. In fact, resident work hour restrictions from the Accreditation Council for Graduate Medical Education (ACGME) have evolved as a result of such considerations. In 2006, Martini et al. compared burnout among medical residents before and after implementation of work hours restriction and found a marked reduction in burnout post work hours mandate (as measured by aMBI) [6].

Most physician burnout studies have been conducted in general medicine. In a 2008 study by Halbesleben et al. on 178 physicians, it was found that physician burnout, especially the depersonalization dimension, was associated with lower patient satisfaction and longer post discharge recovery time for patient [7]. Similarly, a study by Williams et al in 2010 found high job stress led to decreased job satisfaction and decreased mental and physical health for physicians [8]. This resulted in feelings to withdraw from practice and less concern for patients [8].

A few burnout studies were performed specifically in orthopaedics. In 2007, Saleh et al. assessed burnout in 282 orthopaedic department chairs and reported 43% scored in the highest range for emotional exhaustion and 27% scored in the highest range for depersonalization [11]. When asked how these feeling affected their lives, 70% of respondents indicated the stressors had a moderate to extreme impact. Interestingly, survey responses also suggested perceived job satisfaction had declined substantially over the previous five years, and there was anticipation that, in a year, the job satisfaction would decrease even further [11]. Such data may imply the problem of burnout in orthopaedics is only getting worse.

In 2004, Sargent et al. conducted a burnout survey on 21 orthopaedic residents and 25 orthopaedic full time faculty [9]. Residents reported substantial burnout, with a high level of emotional exhaustion and depersonalization and an average level of personal achievement, whereas faculty reported minimal burnout, showing a low level of emotional exhaustion, an average level of depersonalization, and a high level of personal achievement [9]. A different study in 2009 by Sargent et al. revealed a similar trend, with high levels of burnout in 56% of residents and 28% of faculty [10].

Prior studies analyzing burnout in orthopaedics have limitations. Many studies analyzing burnout in orthopaedics assess for the prevalence of burnout, without using a targeted analysis on possible causes. Further, the potential linkage of work hours on burnout in orthopaedics has not been directly assessed. Finally, burnout has not been assessed along the full spectrum of the orthopaedist's career. The current study targets possible protective factors for burnout in orthopaedics, incorporating control over life/schedule into analysis, a variable not yet assessed in orthopaedics burnout literature. The full hierarchy of medical training is also included in our study, from medical students to attendings, to assess the potential progression of burnout through spine/orthopaedic surgeon's career.

Methods

Survey

A survey was developed, optimized on trial subjects, and then anonymously administered to a convenience sample of medical students on surgical rotations, orthopaedic residents, and orthopaedic attendings at our institution between June 2019 and August 2019. The study was approved by our institutional Investigational Review Board.

The initial part of the survey inquired about demographics and general attributes.

Demographic questions asked about age, gender, marital status, level of medical training (medical student, resident, or attending), and year in program. General attribute questions consisted of rating job satisfaction, home support, and control over life/schedule on a 1-5 scale (5 being

Table 1
Demographics of those completing survey.

	Student	Resident	Attending
Sample size (n)	24	20	20
Age (years [SD])	26.5 (2.83)	30.25 (3.58)	52.47 (14.77)
Year in Program (years [SD])	3.04 (0.20)	3.11 (1.41)	17.59 (14.60)
Female (n [%])	11 (46%)	4 (20%)	4 (20%)
Married (n [%])	4 (17%)	9 (45%)	17 (85%)

SD= standard deviation

most job satisfaction etc). The subsequent portion of the survey inquired about work hours. These were assessed in tabular form.

The survey then included the standardized aMBI which consists of 9 burnout questions, each rated on a 0-6 scale (6 being the most severe). Three questions ask about emotional exhaustion, three questions ask about feelings of depersonalization, and three questions ask about personal accomplishment.

Data analysis

When correlations were assessed for one variable vs another, such as total work hours across all academic levels, unpaired t-tests were used. Two tailed analyses were used, as directionality of findings were not known.

When correlations were assessed between more groups, such as the correlation between emotional exhaustion and job satisfaction across medical students, residents, and attendings, ANOVA test were used. For such ANOVA tests, Turkey's multiple comparisons test was used to determine where significance existed within the comparisons.

To assess trends between variables across entire cohorts, linear regressions were used. For example, this was used to assess hours at work vs emotional exhaustion across all academic levels.

Alpha level was set at 0.05 for all statistical tests. Data was analyzed using Graphpad Prism Version 8.0.

Results

Demographics

In total, 24 medical students on surgical rotations, 20 orthopaedic residents, and 20 orthopaedic attendings completed the survey. Demographics of these groups are presented in Table 1.

The average (standard deviation) age of students was 26.5 (2.83) years old, residents 30.25 (3.58) years old, and attendings 52.47 (14.77) years old. The percent of females for students, residents, and attendings were 46%, 20%, and 20%, respectively. The percent married were 17%, 45%, and 85%, respectively.

Work Hours

Work hour results are shown in Table 2 and Fig. 1. The mean (standard deviation) hours at work/week was 52.65 (17.24) hours for students, 71.30 (13.14) hours for residents, and 49.20 (10.34) hours for attendings (greatest for residents, $p < 0.0001$).

Hours worked at home was not significantly different for students, residents, and attendings. The mean total work hours were 66.63 (20.68) for students, 80.38 (18.43) for residents, and 58.55 (14.83) for attendings (greatest for residents, $p < 0.0015$).

General Attributes

Job satisfaction and home support were not significantly different between students, residents, and attendings (Table 2 and Fig. 2). Control over life/schedule for students was 2.67 (1.24) out of 5, for residents was 2.25 (0.91) out of 5, and for attendings was 3.45 (1.10) out of 5 (greatest for attendings, $p = 0.0036$).

Table 2
Work hours and results from the standardized aMBI survey.*

	Student	Resident	Attending	p-value
Work hours				
Hours at Work	52.65 (17.24)	71.30 (13.14)	49.20 (10.34)	<0.0001
Hours at Home	13.98 (14.59)	9.08 (10.22)	9.35 (7.76)	0.2806
Total Work Hours	66.63 (20.68)	80.38 (18.43)	58.55 (14.83)	<0.0015
Overview questions				
Job Satisfaction (1-5)	4.00 (0.93)	4.30 (0.66)	3.80 (0.95)	0.1873
Home Support (1-5)	4.59 (0.59)	4.70 (0.47)	4.55 (0.60)	0.6816
Control Over Life/Schedule (1-5)	2.67 (1.24)	2.25 (0.91)	3.45 (1.10)	0.0036
Standardized aMBI survey scores				
Emotional Exhaustion (1-18)	7.54 (4.37)	9.50 (5.26)	8.40 (4.92)	0.4138
Depersonalization (1-18)	3.63 (3.31)	7.10 (4.13)	3.25 (3.55)	0.0020
Personal Accomplishment (1-18)	14.25 (2.85)	15.30 (2.74)	16.60 (1.39)	0.0095

*Values presented as mean(SD).

#All P-Values calculated using a one-way ANOVA test with alpha set at 0.05. Bold indicates statistical significance.

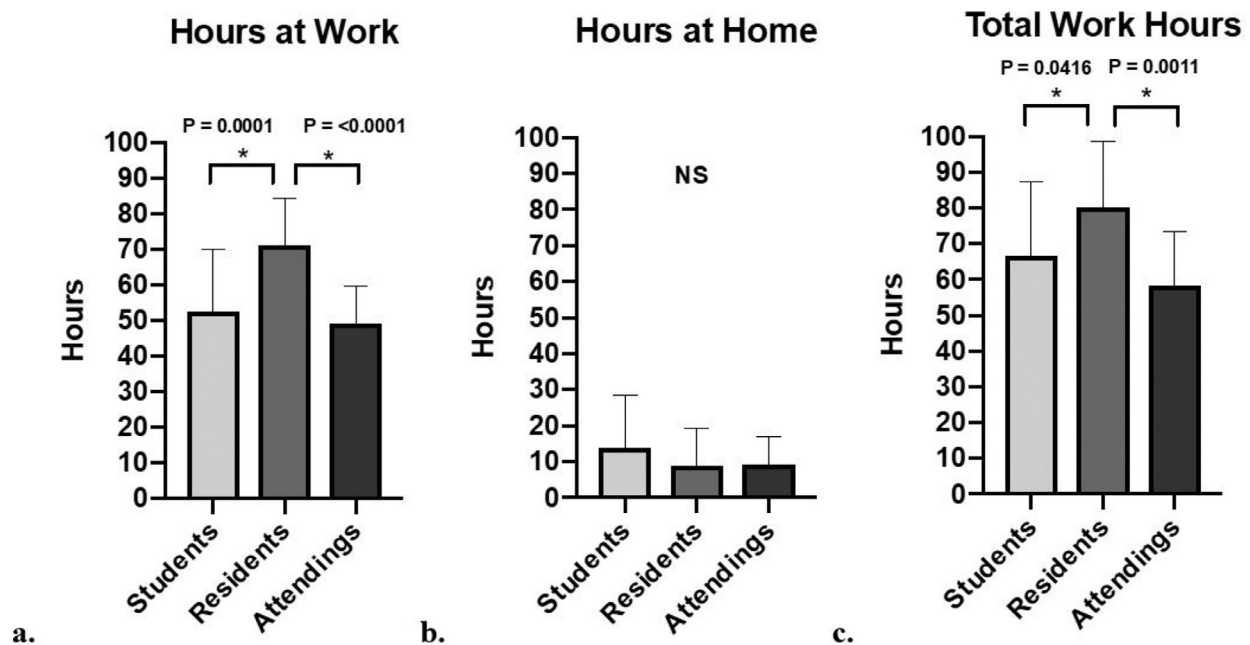


Fig. 1. A-C. Depicts a bar graph illustrating A) hours at work, B) hours at home, and C) total work hours compared across medical students, residents, and attendings. The Y-axis represents hours worked. The X-axis represents the different stages of medical training analyzed in this study. For each Fig., the difference in means between the three groups was determined with a one way ANOVA test. * represents significance based on an alpha level of 0.05. NS means there were no significant differences found between means.

aMBI Scores

Emotional exhaustion was not reported to be different between students, residents, and fellows overall (not statistically different, Table 2 and Fig. 3). However, looking at specific emotional exhaustion questions, residents most frequently were emotionally drained from work, with 30% of residents experiencing this exhaustion at least “a few times a week”, while students most commonly experienced it once per week, and attendings once per month (Table 3). Students, residents, and attendings all felt tired waking in the morning, but residents experienced strain from working with people more often, with 20% of residents experiencing this once a week, while students/attendings experienced it a few times a year.

Depersonalization was found to be significantly higher for residents (7.10 [4.13]) than for students (3.63 [3.31], $p=0.0073$) or attendings (3.25 [3.55], $p=0.0042$) (Table 2 and Fig. 3). Residents were also more likely to treat patients as if they were impersonal objects and become callous toward people (Table 3). Students, residents, and attendings, overwhelmingly cared what happens to patients all the time.

Personal accomplishment was found to be significantly higher for attendings (16.60 [1.39]) than for students (14.25 [2.85], $p=0.0066$), but not significantly different than residents (15.30 [2.74]) (Table 2 and Fig. 3). Residents and attendings were more likely to be able to deal effectively with their patient’s problems and to feel they were positively influencing other’s lives through their work (Table 3). All participants felt exhilarated after working closely with patients on a regular basis.

Cumulative analysis

Taking all survey participants together, increased work hours significantly correlated with greater depersonalization ($p=0.0155$) and personal accomplishment ($p=0.0492$), but not emotional exhaustion (Fig. 4). When considering work hours within each training level, work hours vs burnout was not significant for any of the three metrics of burnout for attendings. The same is true for resident data. Interestingly, hours at work correlated significantly with higher ratings of personal accomplishment for medical students ($P = 0.0137$).

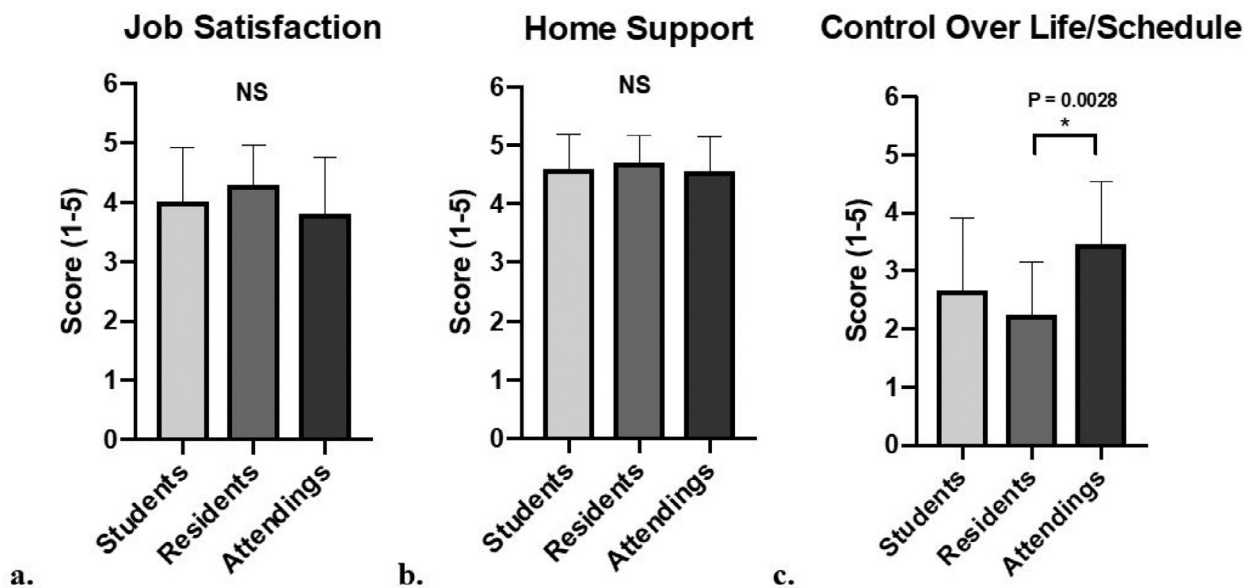


Fig. 2. A-C. A bar graph that depicts how A) job satisfaction, B) home support, and C) control over life/schedule differ for medical students, residents, and attendings. The Y-axis represents survey ratings on Job Satisfaction, Home Support, and Control Over Life/Schedule, scored 1-5. The X-axis represents the different stages of medical training analyzed in this study. For each Fig., the difference in means between the three groups was determined with a one-way ANOVA test. * represents significance based on an alpha level of 0.05. NS means there were no significant differences found between means.

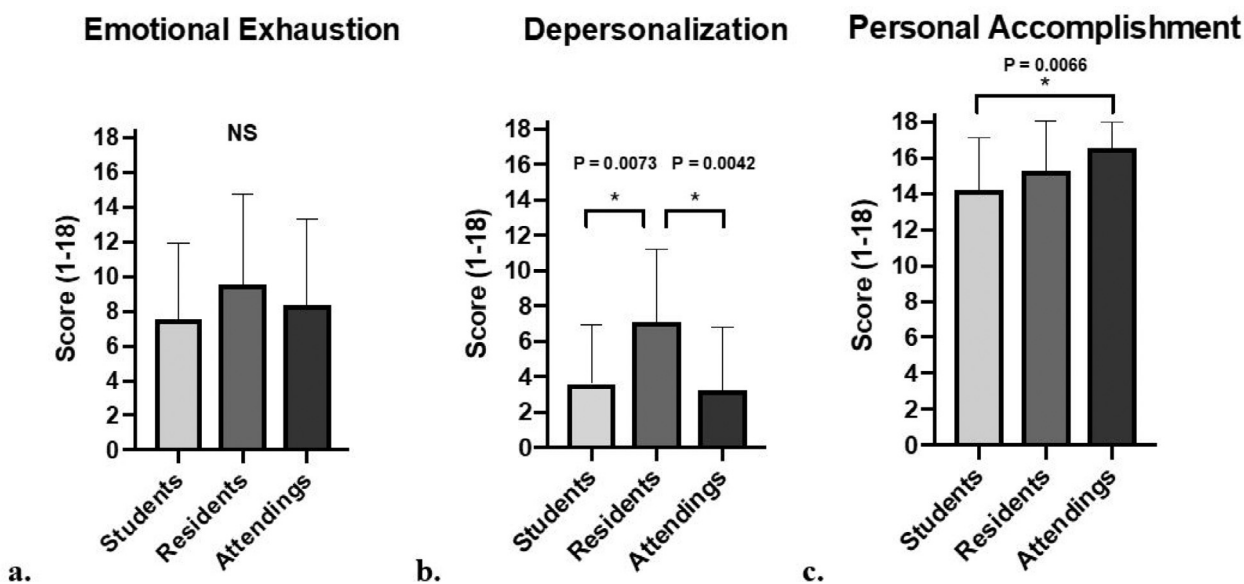


Fig. 3. A-C. A bar graph that depicts how A) emotional exhaustion, B) depersonalization, and C) personal accomplishment differ for medical students, residents, and attendings. The Y-axis represents survey ratings for the three burnout metrics on the aMBI, scored 1-18. The X-axis represents the different stages of medical training analyzed in this study. For each Fig., the difference in means between the three groups was determined with a one-way ANOVA test. * represents significance based on an alpha level of 0.05. NS means there were no significant differences found between means.

In addition, incremental comparisons showed higher job satisfaction correlated with significantly lower emotional exhaustion and higher personal accomplishment but not depersonalization (Fig. 5).

Gender did not correlate with level of burnout in our study, with two notable exceptions. Considering all levels of training, females scored significantly higher for emotional exhaustion compared to males (p=0.0375). For resident data specifically, females also scored significantly higher for emotional exhaustion compared to males (P= 0.0175).

Age was not significantly correlated with differences in burnout when assessing all training levels together, or either of the three training levels specifically.

Discussion

Burnout is critical to manage for medicine in general, and surgical fields such as spine/orthopaedics in particular. This topic is garnering increasing attention and is needed to help limit its occurrence and consequences. To our knowledge, this is the first study to look at metrics of and potential contributors to burnout across three different levels of training in orthopaedics using the validated aMBI [2, 5, 11-15].

Total work hours were highest for residents, driven by the hours at work. The average reported for this group was an average of 71.30 hours/week at work, and 80.38 hours/week if including the hours at home. This suggests that all of the allowable 80 hours of work per week

Table 3
Answers to aMBI.

	Every day	A few times a week	Once a week	A few times a month	Once a month or less	A few times a year	Never
Emotional Exhaustion Questions							
I feel emotionally drained from my work	S = 0 (0%) R = 1 (5%) A = 2 (10%)	S = 3 (13%) R = 6 (30%) A = 4 (20%)	S = 6 (25%) R = 5 (25%) A = 3 (15%)	S = 3 (13%) R = 0 (0%) A = 3 (15%)	S = 4 (17%) R = 3 (15%) A = 5 (25%)	S = 3 (13%) R = 4 (20%) A = 2 (10%)	S = 5 (21%) R = 1 (5%) S = 2 (8%)
I feel fatigued when I get up in the morning and have to face another day on the job	S = 2 (8%) R = 4 (20%) A = 2 (10%)	S = 8 (33%) R = 4 (20%) A = 5 (25%)	R = 3 (15%) A = 3 (15%)	S = 3 (13%) R = 3 (15%) A = 3 (15%)	S = 4 (17%) R = 1 (5%) A = 3 (15%)	S = 2 (8%) R = 3 (15%) A = 2 (10%)	S = 2 (8%) R = 2 (10%) A = 2 (10%)
Working with people all day is really a strain for me	S = 0 (0%) R = 1 (5%) A = 1 (5%)	S = 1 (4%) R = 3 (15%) A = 2 (10%)	S = 3 (13%) R = 4 (20%) A = 1 (5%)	S = 4 (17%) R = 3 (15%) A = 3 (15%)	S = 3 (13%) R = 2 (10%) A = 2 (10%)	S = 8 (33%) R = 4 (20%) A = 4 (20%)	S = 5 (21%) R = 3 (15%) A = 7 (35%)
Depersonalization Questions							
I feel I treat some patients as if they were impersonal objects	S = 0 (0%) R = 3 (15%) A = 1 (5%)	S = 2 (8%) R = 1 (5%) A = 2 (10%)	S = 2 (8%) R = 5 (25%) A = 1 (5%)	S = 1 (4%) R = 2 (10%) A = 0 (0%)	S = 5 (21%) R = 0 (0%) A = 3 (15%)	S = 6 (25%) R = 5 (25%) A = 4 (20%)	S = 8 (33%) R = 4 (20%) A = 10 (50%)
I've become more callous toward people since I took this job	S = 1 (4%) R = 2 (10%) A = 1 (5%)	S = 2 (8%) R = 6 (30%) A = 2 (10%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)	S = 2 (8%) R = 4 (20%) A = 1 (5%)	S = 3 (13%) R = 2 (10%) A = 1 (5%)	S = 7 (29%) R = 3 (15%) A = 8 (40%)	S = 9 (38%) R = 3 (15%) A = 7 (35%)
I don't really care what happens to some patients	S = 0 (0%) R = 0 (0%) A = 0 (0%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)	S = 1 (4%) R = 4 (20%) A = 2 (10%)	S = 1 (4%) R = 2 (10%) A = 0 (0%)	S = 3 (13%) R = 1 (5%) A = 0 (0%)	S = 2 (8%) R = 3 (15%) A = 4 (20%)	S = 17 (71%) R = 10 (50%) A = 14 (70%)
Personal Accomplishment Questions							
I deal very effectively with the problems of my patients	S = 8 (33%) R = 12 (60%) A = 17 (85%)	S = 10 (42%) R = 6 (30%) A = 3 (15%)	S = 2 (8%) R = 1 (5%) A = 0 (0%)	S = 2 (8%) R = 1 (5%) A = 0 (0%)	S = 1 (4%) R = 0 (0%) A = 0 (0%)	S = 1 (4%) R = 0 (0%) A = 0 (0%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)
I feel I'm positively influencing other people's lives through my work	S = 7 (29%) R = 14 (70%) A = 15 (75%)	S = 8 (33%) R = 4 (20%) A = 5 (25%)	S = 3 (13%) R = 0 (0%) A = 0 (0%)	S = 4 (17%) R = 1 (5%) A = 0 (0%)	S = 2 (8%) R = 1 (5%) A = 0 (0%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)
I feel exhilarated after working closely with my patients	S = 7 (29%) R = 4 (20%) A = 7 (35%)	S = 11 (46%) R = 10 (50%) A = 8 (40%)	S = 3 (13%) R = 3 (15%) A = 3 (15%)	S = 2 (8%) R = 0 (0%) A = 2 (10%)	S = 1 (4%) R = 0 (0%) A = 0 (0%)	S = 0 (0%) R = 2 (10%) A = 0 (0%)	S = 0 (0%) R = 0 (0%) A = 0 (0%)

S = Students. R = Residents. A = Attendings. The format is as follows “xx (%)”, where “xx” represents the number of responses for that question for that group (S, R, or A), and “(%)” represents the number of responses for that question for that group as a percentage. For each question, the answer with the highest response for students, residents, and attendings was bolded, respectively. In the case of a tie, both answers were bolded.

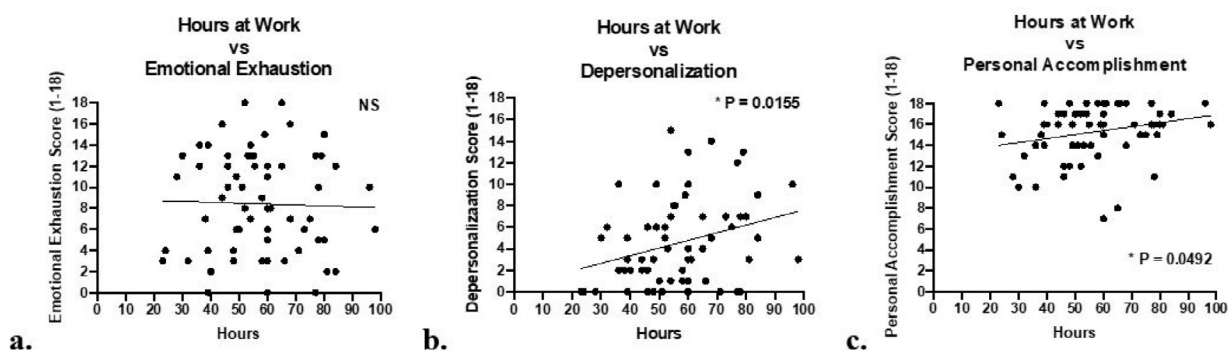


Fig. 4. A-C. A linear regression that depicts how hours at work correlates with A) emotional exhaustion, B) depersonalization, and C) personal accomplishment across all academic levels. The Y-axis represents survey ratings for the three burnout metrics on the aMBI, scored 1-18. The X-axis represents hours at work. For each Fig., the difference in means between the three groups was determined with a one-way ANOVA test. * represents significance based on an alpha level of 0.05. NS means there were no significant differences found between means.

are being done, but does not rule out that there could be errors with reporting.

Control over life/schedules was found to be greatest for attendings. This is not a surprise, as there is typically increasing independence as

one advances in their career. It was interesting that job satisfaction and home support did not differ for students, residents, and attendings.

We ultimately found residents experienced significantly higher levels of depersonalization, and depersonalization correlated with more hours worked per week. This supports the notion that more hours worked

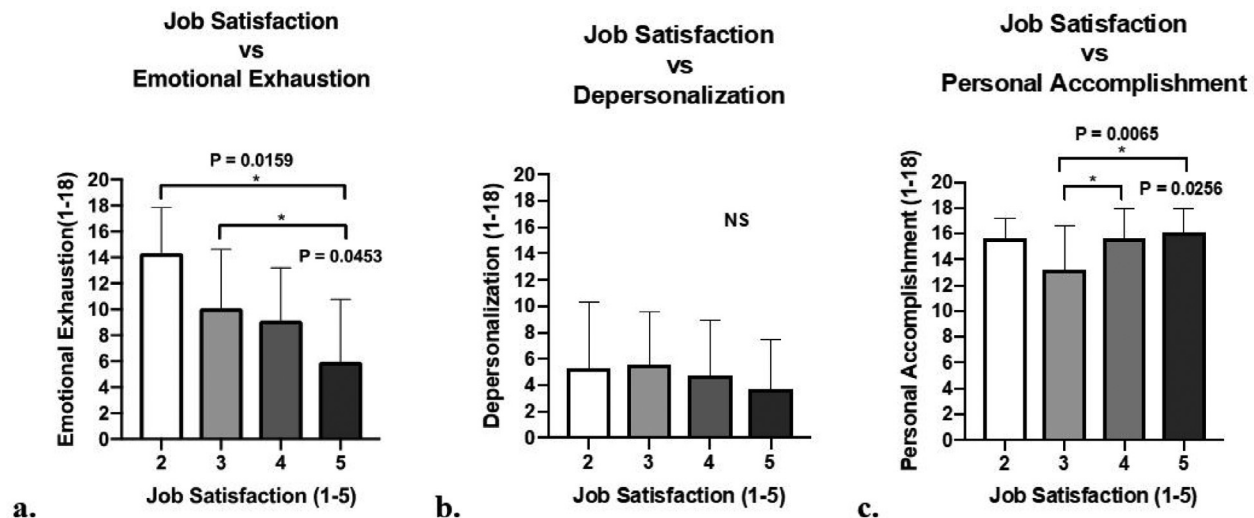


Fig. 5. A-C. A bar graph that depicts how job satisfaction correlates with A) emotional exhaustion, B) depersonalization, and C) personal accomplishment across all academic levels. The Y-axis represents survey ratings for the three burnout metrics on the aMBI, scored 1-18. The X-axis represents survey ratings on Job Satisfaction, scored 1-5. For each Fig., the difference in means between the three groups was determined with a one-way ANOVA test. * represents significance based on an alpha level of 0.05. NS means there were no significant differences found between means. One-way ANOVA tests were done between the three metrics of burnout and Home Support, and the three metrics of burnout and Control Over Life/Schedule, each yielding an insignificant result.

contributes to burnout, and poor patient outcomes, corroborating the ACGME restriction on duty hours [2].

Personal accomplishment increased in our study with increased level of training, a finding consistent with previous studies of residents and attendings [16]. It is possible more senior members of the orthopaedic team are able to dedicate more time toward patient care, or are more practiced in documenting efficiently and can thus dedicate more time to fulfilling clinical tasks. It is interesting hours worked correlated with personal accomplishment. This is likely due to the increase in personal accomplishment from medical student to resident, along with the increased work hours with this transition.

Taking all survey participants together, increased work hours correlated with greater depersonalization and personal accomplishment, but not emotional exhaustion. Interestingly, longer work hours correlated with higher personal accomplishment for medical students specifically. It is possible medical students work longer hours because of the wonder and novelty in their jobs, while longer hours for residents have a negative effect.

In support of this, we found a higher degree job of satisfaction trended toward lower emotional exhaustion and higher personal accomplishment, supporting the theory burnout presents heterogeneously with factors interacting dynamically to produce feelings of burnout. More concretely, Strauss et. al. found in-training accomplishment examination scores were lower for residents who reported symptoms of burnout [17].

Although control over life/schedule did not correlate significantly with metrics of burnout, it was close, with a p-value of 0.08 for emotional exhaustion and depersonalization. Future studies may find a significant result between control over life/schedule and burnout with a bigger sample size.

The relationship between work hours and burnout has been observed in every surgical field [11, 13, 14, 18-21]. With our finding of increased depersonalization and longer work hours in residents, one might suggest duty hours should be further restricted. Many cringe at the thought, and there is good reason to believe aspects of long work hours are beneficial for surgical training. If duty hours are not going to be reduced further, other strategies to decrease burnout can be implemented, such as aiming to increase job satisfaction in residents. Our finding that residents work the most time in the hospital is consistent with the historical norms of a surgical residency. Of note this number is lower than the 88 hours a

similar burnout survey study reported fifteen years earlier [10]. Recent literature draws attention to the possible increase in hours spent working with electronic medical records and the detrimental effect they have on the productivity of orthopaedic practitioners in the clinic [22, 23].

This study has several limitations. Firstly, while the surveys were anonymous, it is possible residents were reluctant to report working more than the limit of 80 hours. Secondly, the medical students surveyed were on surgical rotations which spanned a variety of surgical specialties, not just orthopaedics. Medical student's interests are capricious this early in their training, and may not be indicative of their future career. Similarly, the residents surveyed were on a mix of services at the time of completion. This study was conducted at a single large tertiary academic institution in the Northeast, and our conclusions may differ for other geographic, educational, and practice settings. Analyzing burnout at multiple sites has many advantages such as a larger sample size and diversity in culture. However, one of the main focuses of this study is to isolate the changes in burnout based on rank, which is more easily isolated at a single institution. Using multiple institutions brings up a host of confounding factors in this regard including institutional culture, mental health resources and support, and geographic location. We hope this study can function as a pilot for further burnout studies at other locations, with more robust sample sizes. On a similar note, our study did not compare burnout levels amongst different subspecialties within orthopaedics, which is an interesting point of analysis in future iterations. Assessing burnout over multiple time points also may yield interesting trends. To augment this sentiment, the survey assessed burnout over an entire week, to avoid daily mercurial sentiments. Lastly, the aMBI is not amendable to stratifying burnout levels as low, moderate, and high, so comparing rank based on burnout level was not done in our study.

Conclusion

In summary, residents reported the longest work hours and greatest depersonalization. Attendings reported the highest control over life/schedule and sense of personal accomplishment. With work hours correlating with depersonalization and personal accomplishment, continuing to focus on these factors seems important. However, job satisfaction correlating with lower levels of burnout presents an alternative avenue to decrease burnout, without changing duty hour restrictions for residents. Implementing strategies to increase job satisfaction for resi-

dents, for instance with more resident appreciation events, may bring down levels of burnout for residents without changing hours worked.

Burnout is clearly a key topic which needs attention in spine/orthopaedics, with job satisfaction correlating with lower emotional exhaustion and a higher sense of personal accomplishment. In the post COVID-19 era, this will only be more critical to acknowledge. Burnout needs to continue to be addressed for the well-being of our profession.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.xnsj.2021.100074](https://doi.org/10.1016/j.xnsj.2021.100074).

Declarations of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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