Disease and global health International Journal
ISSN: 2997-3333 |
Volume 10 Issue 2, April-June, 2022
Journal Homepage: https://ethanpub.online/Journals/index.php/E30
Official Journal of Ethan Publication

ORTHOPAEDIC SURGERY RESIDENCY: SHEDDING LIGHT ON BULLYING AND ITS EFFECTS

Alexander James Mitchell
Department of Orthopaedic Surgery, Saint Louis University School of Medicine, 1008 South Spring Avenue, First Floor, Saint Louis, Missouri 63110

Abstract
Orthopaedic surgery residents operate in an environment marked by high stress, encompassing various professional and personal demands. Burnout is prevalent in this field, with 42.5% of orthopedic residents experiencing it. Orthopaedic surgeons, in general, report burnout rates ranging from 28.4% to 85.1%. Bullying is a pervasive issue in modern society, defined as unwarranted aggressive behavior causing harm or distress with an imbalance of power. In the context of the medical profession, workplace bullying includes actions intended to cause distress, such as assigning menial tasks, withholding information, or offering unfair criticism. The repercussions are significant, leading to decreased performance, errors, and strained relationships. This study highlights the prevalence of bullying in graduate medical education, with a recent survey indicating a 48% prevalence across all resident types. Specifically, among general surgery residents, 66.9% reported experiencing bullying, with 18.1% facing frequent bullying. Risk factors included gender, race, international medical school origin, and in-training exam scores. Understanding the impact of bullying on orthopedic surgery residents and identifying strategies for mitigation is vital in addressing the well-being and professional development of these healthcare professionals.

Keywords: Orthopaedic Surgery, Burnout, Workplace Bullying, Medical Education, Well-being

Introduction

Orthopaedic surgery residents live in a high stress environment with many demands upon their time and energy including clinical, operative and call duties, educational responsibilities, research requirements and obligations outside of work. Orthopaedic residents rank amongst the highest for prevalence of burnout at 42.5% of residents (1). Overall burnout rates for orthopaedic surgeons range from 28.4 to 85.1% (2).

Bullying is a form of mistreatment that is prevalent in modern society. The CDC and US Department of Education define bullying as unwanted or aggressive behaviors with a perceived imbalance of power that may cause harm or distress to the target (3). When adapted to the workplace, bullying can include negative actions with the intention to cause distress such as assigning menial tasks, removing responsibilities, setting one up for failure, withholding information, and unfair criticism. Bullying can lead to negative effects such as decreased performance, workplace errors and poor interpersonal relationships (4). The prevalence of bullying in graduate medical education is known to be high. A recent cross-sectional survey showed that the prevalence of bullying was 48% across all types of residents (5).

In a recent survey of general surgery residents, 66.9% reported at least one instance of bullying, 43.8% reported occasional bullying and 18.1% of respondents were frequently bullied (6). Risk factors for bullying included female gender, nonwhite race, being from an international medical school or low in-training exam scores. (5,6).
In the orthopaedic literature, a recent survey sent to members of American Academy of Orthopaedic Surgeons demonstrated that the prevalence of bullying was 55% amongst respondents and it was noted that women were more likely than men to be subjected to negative behaviors (7). To our knowledge, there are no studies specifically examining bullying during orthopaedic surgery residency training. The purpose of this study is to determine the prevalence and risk factors associated with bullying for orthopaedic surgery residents in the United States as well as relate bullying to burnout and grit using an anonymous survey. We hypothesize that bullying will be associated with female gender, non-white race, lower in training exam scores, higher levels of burnout and lower grit.

Methods

After Institutional Review Board approval was obtained from our institution, a voluntary, anonymous survey was distributed to all current orthopaedic surgery residents in the United States via three mailings asking program directors to distribute the surveys to their residents. The respondents were asked if they were bullied and how often. The Short-Negative Act Questionnaire (S-NAQ), a validated instrument to measure workplace bullying, was included. Scores greater than 16 indicate frequent bullying and scores greater than 12 indicate occasional (8). The abbreviated Maslach Burnout Inventory, a tool to measure emotional exhaustion and depersonalization symptoms, was included. Burnout was indicated by high emotional exhaustion (score >/=11), high depersonalization (score >/=7) or low personal accomplishment (score </=15) (9). These domains are scored separately and there is no overall score for this tool. The short grit scale, a validated questionnaire to which measures trait-level perseverance and passion, was also collected, higher scores signifying higher grit (10). Demographic data collected included gender, post-graduate year, relationship status, and race. Residency data was also collected including residency class size, program geographic area, program type (community or academic), chair gender, program director gender and percentage of female residents. Additionally, thoughts of suicide, thoughts of leaving a residency program (attrition), and OITE exam quartile were also collected.
Chi squared tests were used to compare categorical variables with two categories and IndependentSamples Mann Whitney U Test was used to compare variables with greater than 2 categories. SPSS 28.0 (IBM) was used for statistical analysis.

Results

87 surveys were returned. 12 surveys were partially completed, and 75 surveys were completed. The response rate was approximately 2.3% (calculated by 742 positions offer in 2018 multiplied by 5 years) (11). The demographic and residency information are summarized in Table 1. Residents were asked a binary question whether they had experienced bullying during their time in residency and how often it occurred. 30 (36.5%) of residents indicated that they were bullied. No respondent was bullied daily, 6 (7.3%) were bullied weekly, 1 was bullied monthly, 26 were bullied now and then and 49 (59.8%) were never bullied.
80 respondents completed the Short Negative Acts Questionnaire. 27 (33.8%) scored higher than 16, the cutoff value for frequent bullying. 12 (21.2%) scored >/=12 but <16 demonstrating occasional bullying. The remainder scored beneath these cutoff levels. Frequent bullying was significantly associated with an affirmative answer to the binary bullying question (63% vs 15%, $p<0.001$), suicidal ideation (75% vs 32%, $p=0.009$) and with thoughts of attrition (57% vs 23%, $p<0.001$). Frequent bullying was not significantly associated with any of the other demographic factors or residency factors, such as gender, post-graduate year, relationship status, race, residency class size, program geographic area, program type (community or academic), chair gender, program director gender or percentage of female residents, and is summarized in Table 1. 75 responded to the Abbreviated Maslach burnout inventory. 15 (20%) had low personal accomplishment scores, 32 (42.7%) had high depersonalization scores and 28 (37.5%) had high emotional exhaustion scores. All of these subcategories of burnout were significantly associated with bullying on the SNAQ score ($p=0.05$, 0.036, 0.004 respectively).

72 responded to the Short Grit Scale. The mean score was 3.86 +/- 0.57. The short grit score was not significantly associated with bullying (p=0.404)

Discussion

Workplace bullying is a common phenomenon in various workplaces and around the world. According to a Cochrane review, estimates vary widely on the overall rates of workplace bullying from 2.7% to 70% based upon the population studied, definition of bullying and research methods (12).

In residency education, rates varied from 18%-66.9% depending on the frequency and timeframe studied (5, 6). The goal of this study was to determine the prevalence and risk factors associated with bullying for orthopaedic surgery residents in the Unites States. We found that over 1/3 of orthopaedic residents experience bullying, and that bullying was significantly associated with suicidal ideation, thoughts of attrition and burnout. We did not find any association with female gender, non-white race, lower in training exam scores that had been shown in previous literature.

In a recent survey of 6264 general surgery residents, Zhang, et. al demonstrated similar associations of bullying with suicidal ideation, attrition, and burnout as our study. They found that 18.1% of residents were frequently bullied and 43.8% were occasionally bullied. Our study demonstrated 33.8% of residents were frequently bullied and 21.2% were occasionally bullied. They also demonstrated more frequent bullying in women, divorced/widowed, racial or ethnic minorities, training at a community program, training in the Northeast, and lower in training exam scores. They also attempted to identify sources of bullying behavior and found that attending surgeons and senior residents were the perpetrators of the majority of bullying behaviors (6).

Gianakos, et. al. published a systematic review of 25 studies with 29,980 residents included detailing the prevalence of bullying discrimination, harassment, and sexual harassment in surgical residency training. They found that 63% of residents experienced bullying with female residents experiencing it more frequently. Attendings and senior residents were again the most common perpetrators. Concerningly, only 29% of this behavior was reported, 51% feared retaliation from reporting and 56% who did report had a negative experience with reporting the behavior (13). This study outlines the need for anonymous or confidential reporting systems that residents feel safe reporting unwelcome behavior to. In our institution, there is the Office of Professional Oversight which provides either confidential or completely anonymous reporting, a safe area to discuss incidents, and protocols for investigating and resolving incidents.

Orlino, et. al. conducted a survey of 132 vascular surgery trainees. They found that 48% were bullied. They did not find associations between gender, marital status or social support with bullying. Additionally, only 36% of respondents reported bullying and of those that reported, 56% stated that the bullying behavior continued (14). They also compared bullying to grit and, like our study, grit score was not associated with bullying. Grit is defined as trait-level perseverance and passion for long-term goals. It has been shown to be predictive of psychological well-being and protective from attrition in residency programs (15, 16). The fact that grit is not associated with bullying rates suggests that bullying may be more related to outside factors instead of personal resiliency.

In the orthopedic literature, Samora et. al. published a survey of 927 female and under-represented minority members of the American Academy of Orthopedic Surgeons (including resident members) and randomly matched men. They found that 55% respondents experienced bullying and 16% left their job due to bullying. Bullying was not associated with race, sex, ethnicity or age in their study, but women were more likely to experience other behaviors such as harassment and discrimination. The most common perpetrators were attending surgeons. Those surveyed wanted greater leadership, better support mechanisms and resources to resolve these issues (7).

Research shows that bullying has consequences both at the individual and organizational levels. Studies demonstrate that bullying leads to lower levels of job satisfaction, higher rate of attrition and higher levels of anxiety and depression (17, 18). Similarly, our study demonstrates that bullying is associated with burnout, attrition, and suicidal ideation. At the organizational and societal level, costs of workplace bullying can be substantial. In the United Kingdom, costs from bullying were estimated at £13.75 billion. The costs arose from higher absence rates, higher recruitment costs from attrition and decreased productivity (19, 20).

Patient care can be negatively affected by the consequences of bullying. Panagioti et. al. demonstrated two-fold increased odds for patient safety incidents, poor quality of care due to lack of professionalism and reduced patient satisfaction in physicians suffering from burnout (21). In our study, burnout is significantly related to bullying, thus workplace bullying may be contributing to lower quality patient care.

Research concerning interventions for bullying in graduate medical education are lacking. Clements, et. al. performed a survey of 1412 surgical trainees in the United Kingdom and Republic of Ireland and used data from their survey to form consensus recommendations to combat bullying in their workplaces. Their recommendations included establishment of clear standards and policies on bullying and enforcement of these policies. They suggest training in identifying and correcting negative behaviors and improving reporting mechanisms for bullying. They also recommended named advocates for trainees and suggested the trainee organizations should provide support to improve awareness of the problem. Unfortunately, the efficacy of such interventions suggested on bullying in surgical training is not known (22).

A recent Cochrane review identified 5 publications that addressed interventions for workplace bullying. The overall level of evidence was very low (23). Two studies evaluated a workplace cultural intervention: Civility, Respect and Engagement in the Workforce, which is a flexible workplace program that focused on increasing civility between the employee and employer (24, 25). This intervention increased civility 5% and decreased the number of days absent from work. One study demonstrated that an expressive writing exercise lowered incivility perpetrations levels (26). Another study demonstrated no difference in bullying after cognitive behavioral therapy (27). Relyea, et. al explored how bystander intervention training affected harassment in a VA hospital setting. They found that after training, staff reported increased awareness of harassment in the workplace and increased intention to intervene if they witnessed harassment in the future (28). Programs such as these could be instituted in orthopaedic training programs, but further studies are needed to elucidate the effectiveness of these interventions to prevent bullying.

Victims of bullying are more likely to be women or minority groups (6, 7, 13). Orthopaedic surgery is overwhelmingly white and overwhelmingly male. The American Academy of Orthopaedic Surgeons identified diversity as one of its strategic goals in 2018. According to the 2018 AAOS census, only about 15% of practicing orthopaedic surgeons identified as non-white race. Only 7% of orthopedic surgeons identified as female with about 15% of trainees identifying as female (29). This is despite female students comprising a small majority of medical students in the United States. Though our survey did not identify female gender as a risk factor for bullying, as it may have been underpowered to detect this, our survey had a higher percentage of female respondents than demographics suggest (27% vs 15% estimated percentage of female trainees). At the current rate, by 2072 >30% of orthopedic surgeons will be female (30). Programs and groups promoting diversity in orthopedics including the Ruth Jackson Society, the Perry Initiative and Nth Dimensions exist, but more must be done to bring more inclusivity to orthopaedic surgery.

Limitations of this study include the low response rate of the survey and the lack of data on perpetrators of bullying. Respondents of the survey may have been more likely to have experienced bullying and increased the rate of bully in our data. Previous research has identified women as more likely to experience bullying and our survey had a higher proportion of female respondents than demographic data suggest. More responses may have increased the power of the study to detect more groups that may be at risk of bullying, such as women or nonwhite respondents. We did not ask respondents to identify perpetrators of bullying; this information may have been helpful in identifying appropriate interventions to reduce bullying. Neither of the authors identify as part of a minority group and as such, implicit bias may have been introduced into the study.

In conclusion, bullying in a problem in orthopaedic residency training with over 1/3 of respondents experiencing frequent bullying. Research shows detrimental effects of bullying in the workplace and on patient care. Data on interventions to reduce bullying are limited and poor quality. Proposed interventions should be tested for their efficacy to reduce bullying in the setting of residency training.

Tables and Figures

Table 1 Demographics and residency factors association with frequent bullying

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Characteristic		N (%)	Frequent Bullying, %	P value
Sex				0.069
	Male	63 (72.4)	29	
	Female	24 (27.6)	38	
PGY				0.142
	1	16 (18.4)	19	
	2	20 (23)	40	
	3	10 (11.5)	20	
	4	23 (26.4)	35	
	5	12 (13.8)	8	
	6	5 (5.7)	100	
Relations hip				0.457
	Married	49 (56.3)	29	
	Single	38 (43.7)	34	
Race				0.848
	White	75 (86.2)	31	
	Non white	12 (13.8)	33	
Class size				0.657
	1 to 3	9 (10.3)	22	
	4 to 6	60 (69)	30	
	7 to 9	8 (9.2)	63	
	10 to 12	3 (3.4)	0	
	13+	7 (8)	29	
OITE Sc ore %				0.23
	0-25th	6 (8.5)	50	
	26-50th	22 (31)	36	
	51-75th	26 (36.6)	31	
	75-100th	17 (23.9)	24	

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Program Location				0.703
	Southeast	17 (19.5)	18	
	Northeast	12 (13.8)	33	
	Midwest	35 (40.2)	37	
	Southwest	9 (10.3)	44	
	West	14 (16.1)	21	
Program type				0.801
	Community	25 (28.7)	32	
	Academic	62 (71.3)	31	
Chair Ge nder				0.244
	Male	85 (97.7)	32	
	Female	2 (2.3)	0	
Program Director Gen der				0.589
	Male	80 (92)	30	
	Female	7 (8)	43	
Percent Female in Residency				0.247
	1-25%	59 (68.6)	36	
	26-50%	25 (29.1)	24	
	51-75%	1 (1.2)	0	
	76-100%	1 (1.2)	0	
Suicidal I deation				0.009
	Yes	8 (9.1)	75	
	No	66 (90.9)	32	
Thought s of attrition				<0.001
	Yes	21 (24.1)	57	
	No	66 (75.9)	23	
* Score of >/= 16 on Short Negative Acts Questionnaire				

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