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# The role of extracurricular activities and lectures in mitigating medical student burnout

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## Abstract

**Context:** Strong evidence throughout the literature highlights burnout as a significant and increasing problem among medical students, impacting students' ability to effectively care for and empathize with patients.

**Objectives:** To examine how involvement in extracurricular activities and attendance at burnout lectures can impact burnout among medical students.

**Methods:** An anonymous digital survey including the Maslach Burnout Inventory (MBI) was sent to all students (n=765) at Rowan University School of Osteopathic Medicine. The survey included questions regarding the number of burnout/wellness lectures respondents had attended, the number of clubs in which the respondents participated, the number of hours spent in these clubs, and any leadership positions held by the respondents.

**Results:** Of the 765 students enrolled, 597 completed the survey. Results indicated that women participated in significantly more clubs than men ( $t[456]=-4.30$ ;  $p<0.001$ ). Men had higher scores on the depersonalization subscale of the MBI than women ( $t[463]=2.98$ ;  $p<0.01$ ). There were no gender differences in emotional exhaustion or personal accomplishment. Linear regression analyses including gender and club participation as predictors of each of the

burnout subscales indicated a significant interaction between gender and number of clubs ( $\beta=0.34$ ;  $p<0.05$ ), in that more club participation was associated with higher depersonalization scores for women, but lower depersonalization scores for men. The number of wellness/burnout prevention lectures attended was not predictive of scores on any of the burnout subscales.

**Conclusions:** Our results indicate the importance of understanding what drives burnout on the individual level and adapting interventions to suit the needs of individual students, rather than the student body as a whole.

**Keywords:** burnout; extracurricular activities; medical student education; wellness.

Burnout is a common research topic across various levels of medical education, training, and practice. Burnout is defined as emotional exhaustion, depersonalization, and a decreased sense of personal accomplishment [1]. Strong evidence throughout the literature highlights burnout as a significant and increasing problem among medical students, and it occurs more frequently in the medical field than in the general population [2, 3]. Medical residents and physicians have historically been the focus of burnout research in the medical field; however, the rigors of medical practice are no longer confined to the period after graduation as a student begins residency. Rather, they present as early as the beginning of medical education and intensify as education progresses [2, 3]. Only in recent years have medical schools increased focus on managing burnout among students, due to the large impact burnout has on students' ability to effectively care for and empathize with patients [4, 5].

The prevalence of burnout in medical students has been estimated at 50% [6] and it affects medical students globally [7, 8]. In a previous study of 873 students, only a third of medical students with burnout asked for help due to lack of resources, fear of stigma, concerns over confidentiality, and uncertainty around impact on future career [9]. Feeling emotionally unsupported has been cited as a key predictor of burnout, while feeling supported reduced the risk for

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psychological distress and burnout in one study of undergraduate and postgraduate medical trainees in Canada [10]. Burnout was shown to be negatively related to both perceived social support and perceived faculty support in previous research [11].

Perceived stress is positively related to burnout [11], of which medical students report higher levels [12]. Higher perceived stress is associated with higher emotional exhaustion, higher depersonalization, and lower personal accomplishment [13]. Medical students have identified their educational studies as a significant source of stress in their life in previous research [14, 15], with higher mean hours spent studying linked to a higher rate of burnout in a prior study of 1,294 osteopathic medical students [16]. Three other major stressors identified in a previous study were negative role models, difficult rotations, and United States Medical Licensing Examination Step 1 [17]. One study [18] confirmed excessive workload, difficulties with studying, time management, conflicts in work life balance and relationships, and health concerns as common stressors of medical students. Other stressors cited in that study of 1,137 medical students included medical school administrative failures, lack of assistance with career planning, and assessment related performance pressure [18].

Gender can also have an effect on burnout. Previous studies have demonstrated that women experience higher rates of overall burnout [19, 20] and female gender was a significant predictor of emotional exhaustion and depersonalization in a study of 276 medical students [21]. Alternatively, men demonstrated lower personal accomplishment scores in a survey of 1,294 osteopathic medical students [16]. Due to these gender differences, it is important to target the specific needs of each gender for burnout support [22].

Researchers and educators have continued to search for the most effective way to decrease the risk of burnout during medical education, recognizing that students may be ill equipped to deal with the complex emotions they encounter while practicing medicine and many will conceal or suppress challenging emotions [23]. Approaches examined in previous studies have included identifying and building upon a person's innate qualities and implementing interventions or curriculum changes aimed at training effective coping skills for managing the stressors of medical school [12, 24–36].

Innate qualities such as resiliency, mental toughness, adaptive coping, positive emotions, and empathy can act as protective factors against burnout when strengthened [12, 24–29]. One previous study [24] of 165 preclinical medical students demonstrated that participation in certain

types of extracurricular activities was associated with statistically significantly better burnout outcomes such as increased empathy and compassion, reduced anxiety sensitivity, lower reported stress levels, and lower total burnout scores [24]. Other research has shown that resiliency can moderate against burnout and depressive symptoms [25], can be associated with moderating perceived stress and emotional distress [12], and can mitigate the effects of physical demands and professional quality of life during clerkship [26]. Improved resiliency can be achieved through building social support networks with friends, family, and peers, engaging in physical activity [27], as well as utilizing explicit resiliency training to help medical students cope with conflict and high stakes decision making situations [28]. Likewise, higher mental “toughness,” defined as the natural or developed psychological edge that enables a person to generally cope better and be more consistent in remaining determined, focused, confident, and in control under pressure [29], resulted in lower rates of mental health complaints and fewer depressive symptoms in a study of 207 medical students [30].

Researchers have also assessed the benefits of curriculum change on student burnout [4, 5, 31–37]. Mindfulness, the practice of increased awareness to the present moment without judgment [38], has been assessed regularly in previous research [31–34]. Previous study outcomes from a 7 week mindfulness meditation intervention occurring once per week for 50 minutes with 90 medical, premedical undergraduate, and biomedical science graduate students documented decreased stress, anxiety, and depressive symptoms after mindfulness-based training [31]. Similarly, an 8 week mindfulness based stress reduction course including 40 medical and premedical students occurring for 1 hour per week with an added 5 hour mindfulness retreat showed significantly lower rates of burnout among students who received the mindfulness course compared with the control group of students who received stress reduction training without the mindfulness instruction course [32]. Additionally, a 4 week stress management and self care workshop study delivered to 44 medical and physician-scientist (MD/PhD) students resulted in participants more skillfully coping with stress and the emotional challenges of academia by learning new ways to deal with stress, anxiety, frustration, and inadequacy; the course increased their self reported engagement in self care behaviors, decreased perceived stress, and increased mindfulness [33]. Mindful meditation facilitated by a mobile audio application used daily over the course of 1 month also showed effectiveness in decreasing perceived stress in a previous study of 88

medical students [34]. Alternative trainings demonstrating promise during previous studies in managing burnout include facilitated discussion groups which improve physicians' meaning and engagement in their work with sustained effects of decreased depersonalization [4]; compassion cultivation training aimed at influencing students' compassion toward themselves and others [5]; trainee toolkits to facilitate stress reduction, resiliency, and mindfulness [35]; and comprehensive wellness programs in medical school [36] to prevent empathy erosion, decreases in professionalism, and effects on quality of care [4, 5, 35, 36]. In terms of format, one previous study [37] of 661 adult medicine and 242 pediatric basic physician trainees suggested that sustained activities (not isolated training events) produced optimal effectiveness in changing workplace culture when compared with isolated half day workshops aimed at promoting wellness.

One prior study [17] identified four factors – positive role models, support networks, faith/spirituality, and passion – motivating medical students to view their struggles as more worthwhile and helping them push through challenges. These factors highlight students' desire to feel connected and less isolated in their journey through medical school. That research led us to wonder about patterns of extracurricular activity selection among medical students at Rowan University School of Osteopathic Medicine (Rowan SOM). Though the literature assessing the impact of extracurricular activities on burnout in medical students is limited, club participation was shown in a previous study [16] to be a protective factor against burnout, although that study did not specify type, quantity, or quality of clubs. However, another study [39] suggested that better outcomes are achieved when students participated in a qualitative way rather than focusing on the quantity of extracurricular activities.

We examined how involvement in extracurricular activities can either contribute to or decrease burnout among medical students across all 4 years of education. Additionally, we assessed whether personalizing burnout interventions would benefit medical students. Last, we surveyed whether lectures on burnout provided burnout prevention or affected burnout levels in students, since Rowan SOM students have various opportunities to attend voluntary lectures on burnout or physician wellness throughout their 4 years, including a specific lecture given to students during their third year clerkship in family medicine. We aimed to better understand how these factors affect medical students at a single institution, in the hope of providing guidance for medical schools on reducing or improving burnout among students.

## Methods

This study was approved by the Institutional Review Board at Rowan SOM (no. Pro2018000254). All respondents gave informed consent for participation.

For the study, we developed an anonymous digital survey that included the Maslach Burnout Inventory – Human Services Survey (MBI-HSS) [1]. The survey (Supplementary Material) was introduced to each class cohort of students (i.e., OMS I, OMS II, OMS III, and OMS IV) by two authors (J.S., L.B.) at the start of mandatory lectures when the entirety of each class was gathered. Introduction of the survey included an explanation of the project and description of the voluntary nature of the project, as completion of the survey was not mandatory. Emails containing the survey were then sent to all 765 Rowan SOM students immediately after the introduction of the study at their respective cohort gatherings; these emails were sent to third year students on January 7, 2019, to first and second year students on January 22, 2019, and to fourth year students on March 19, 2019. No follow up emails were sent and the study was closed on April 17, 2019. No compensation was provided for participation or penalty given for nonparticipation.

## Measures

The survey used in this study (Supplementary Material) included 16 questions regarding the number of burnout or physician wellness lectures attended, the number of school sanctioned clubs in which the respondent participated, the number of hours spent each month in these clubs, and any leadership positions held by the respondent. Club participation was categorized in the survey as medicine related, nonmedical academic clubs, community service, exercise/physical activity, team sports, religious activities, art/theater, music, and other clubs. The MBI-HSS [1], included at the end of the survey, is commonly used for burnout measurement and assesses three dimensions of burnout: emotional exhaustion, depersonalization, and personal accomplishment. Scores on each MBI-HSS item indicated how often participants experienced each symptom of burnout, ranging from 0 (never) to 6 (every day). We examined whether the number of wellness/burnout prevention lectures attended by respondents was associated with MBI-HSS score using a linear regression analysis. For the total MBI-HSS score, Cronbach's  $\alpha=0.82$ . For the emotional exhaustion subscale, Cronbach's  $\alpha=0.89$ . For the depersonalization subscale, Cronbach's  $\alpha=0.79$ , and for the personal accomplishment subscale, Cronbach's  $\alpha=0.82$ . Descriptive statistics were calculated to examine the distribution of all variables and checked for normality.

## Results

### Preliminary analyses

Of the 765 students enrolled, 597 (78.0%) completed the survey. The mean percentage of missing data across all study variables was 15.4%, and for the MBI-HSS variables it

was 17.7%. Of the 471 students (78.9%) who reported their gender, 229 (38.4%) identified as men, 238 (39.9%) identified as women, and 4 (0.7%) identified as another gender. Among the 467 (78.2%) participants who chose to report their race, 229 (38.4%) identified as White, 22 (3.7%) identified as Black or African American, 165 (27.6%) identified as Asian, and 51 (8.5%) identified as another race. For the 468 students reporting ethnicity (78.4%), 31 (5.2%) identified as Hispanic and 437 (73.2%) identified as non-Hispanic. One hundred and thirty six respondents (22.8%) were in their first year at Rowan SOM, 125 (20.9%) were in their second year, 126 (21.1%) were in their third year, and 144 (24.1%) were in their fourth year. Most (495; 82.9%) were enrolled in the traditional program track rather than the problem based learning track (34; 5.7%) offered at Rowan SOM. Additional respondent demographic characteristics are described in Table 1.

Respondents had attended a mean of 2.4 wellness/burnout prevention lectures (standard deviation [SD], 2.1) and had participated in a mean of 1.8 school sanctioned clubs (SD, 1.3). The most common type of club was exercise/physical activity (418; 70.0%), followed by medicine related clubs (260; 43.6%), community service (241; 40.4%), nonmedical academic clubs (152; 20.9%), religious activities (100; 16.8%), music (99; 16.6%), other clubs (59; 9.9%), team sports (52; 8.7%), and art/theater (39; 6.5%). Reasons for club participation included to build one's CV for the future (387; 64.8%), engaging with peers with similar interests (354; 59.3%), to help people through community service (245; 41.0%), for extra learning purposes (210; 35.2%), to spend time with friends (141; 23.6%), to relax (100; 16.8%), and because of a parent's encouragement (10; 1.7%).

Next, gender differences in the primary variables were examined. Results indicated that women participated in significantly more clubs than men (women: mean, 2.0 [SD, 1.2]; men: mean, 1.5 [SD, 1.3];  $t(456)=-4.3$ ;  $p<0.001$ ). Men had higher scores on the depersonalization subscale of the MBI-HSS than women (men: mean, 2.9 [SD, 1.4]; women: mean, 2.6 [SD, 1.3];  $t(463)=3.0$ ,  $p<0.01$ ). There was no gender difference found in the emotional exhaustion or personal accomplishment subscales. There was also no gender difference found in terms of lecture attendance.

Pairwise correlations between each of the burnout subscales, number of lectures, and number of clubs are presented in Table 2. As expected, emotional exhaustion and depersonalization were positively correlated with personal accomplishment ( $r=0.6$ ;  $p<0.01$ ), and both emotional exhaustion ( $r=-0.2$ ;  $p<0.001$ ) and depersonalization ( $r=-0.2$ ;  $p<0.001$ ) were negatively correlated with personal accomplishment.

**Table 1:** Descriptive statistics for respondents' demographic and primary variables (n=567).

Variable	n (%)
Gender	
Men	229 (38.4%)
Women	238 (39.9%)
Other	4 (0.7%)
Race	
Asian	165 (27.6%)
Black or African American	22 (3.7%)
White	229 (38.4%)
Other	51 (8.5%)
Ethnicity	
Hispanic	31 (5.2%)
Non-Hispanic	437 (73.2%)
Marital status	
Single (never married)	415 (69.5%)
Married	47 (7.9%)
Widowed	1 (0.2%)
Divorced	5 (0.8%)
Separated	1 (0.2%)
Program track	
Traditional	495 (82.9%)
Problem based learning	34 (5.7%)
Year of study	
First	136 (22.8%)
Second	125 (20.9%)
Third	126 (21.1%)
Fourth	144 (24.1%)
Variable	Mean (standard deviation)
Maslach Burnout Inventory score	
Emotional exhaustion score	2.8 (1.3)
Depersonalization score	4.0 (1.3)
Personal achievement score	5.4 (1.2)
Number of clubs	1.8 (1.3)
Lectures attended	2.4 (2.1)

## Primary analyses

Linear regression analysis results are presented in Table 3. The number of lectures attended by respondents did not predict scores on any of the burnout subscales, although there was a trend level effect for lecture attendance and emotional exhaustion ( $R^2=0.01$ ;  $b=0.01$ ; standard error=0.00;  $\beta=0.09$ ;  $p=0.054$ ), suggesting that more lecture attendance was associated with higher emotional exhaustion scores.

We next examined whether the number of clubs reported by respondents predicted burnout (Table 4). Given the gender differences in club participation and burnout, we included gender in the regression equations.

**Table 2:** Pairwise correlations between burnout subscales, lecture attendance, and club participation.

	Emotional exhaustion	Personal accomplishment	Depersonalization	Number of lectures	Number of clubs
Emotional exhaustion	–	–0.20***	0.59**	0.09	0.03
Personal accomplishment	–	–	–0.16**	–0.04	–0.04
Depersonalization	–	–	–	0.08	0.00
Number of lectures	–	–	–	–	0.02

\*\*p<0.01, \*\*\*p<0.001.

**Table 3:** Linear regression analyses for lecture attendance predicting burnout subscales.<sup>a</sup>

	Emotional exhaustion				Personal achievement				Depersonalization			
	R <sup>2</sup>	b	SE (b)	β	R <sup>2</sup>	b	SE (b)	β	R <sup>2</sup>	b	SE (b)	β
Lectures	0.01	0.01*	0.00	0.09	0.00	–0.00	0.00	–0.04	0.01	0.00	0.00	0.08

R<sup>2</sup>, proportion of variance in the dependent variable explained by the model; b, unstandardized regression coefficient; SE, standard error of b; β, beta (standardized) regression coefficient. \*p=0.054.<sup>a</sup>This table examines whether the number of wellness/burnout prevention lectures medical students attended was associated with burnout scores using a linear regression analysis. Number of lectures attended did not predict scores on any of the burnout subscales, although there was a trend level effect for lecture attendance and emotional exhaustion (β=0.09, suggesting that more lecture attendance was associated with higher emotional exhaustion scores.

Linear regression analyses including gender and club participation as predictors of each of the burnout subscales indicated a significant interaction between gender and number of clubs (R<sup>2</sup>=0.11; b=–0.60; SE=0.20; β=–0.24; p<0.05), in that more club participation was associated with higher depersonalization scores on the MBI-HSS for women, but lower depersonalization scores for men (Figure 1).

## Discussion

In our survey study, the number of lectures attended by Rowan SOM medical student respondents on physician burnout or physician wellness was not a significant predictor of burnout. This finding is important for several reasons. The number of articles published and lectures given on the topic of burnout has increased in recent years [2, 3, 13]. While these lectures bring attention to the risk and possibility of burnout, our results suggest that they may not actually reduce the risk of

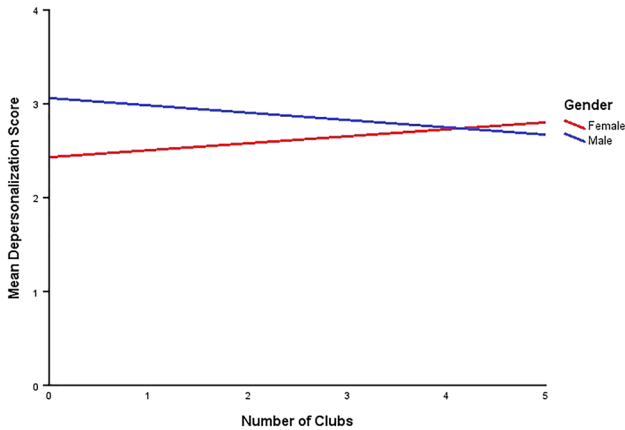
burnout. School administrators could use this knowledge to consider implementing more active interventions for burnout rather than spend time and resources on more lectures.

Perhaps more importantly, our results also showed gender differences in the MBI-HSS subscales. While our respondents reported high levels of burnout on the emotional exhaustion and depersonalization subscales overall, women had higher emotional exhaustion scores and men had higher depersonalization scores. Previous research has shown club involvement can be a burnout modifier in that osteopathic medical students with no club involvement may experience more depersonalization than those involved in clubs [16]. However, in our study, depersonalization scores actually increased for women as they participated in more clubs, but the same was not true for men. We can speculate that because women tended to engage in a higher quantity of clubs, the quality of their participation decreased to manage the competing demands of the various clubs they engaged in, therefore causing an

**Table 4:** Linear regression analysis for club participation predicting burnout subscales.<sup>a</sup>

	Emotional exhaustion				Personal achievement				Depersonalization			
	R <sup>2</sup>	b	SE (b)	β	R <sup>2</sup>	b	SE (b)	β	R <sup>2</sup>	b	SE (b)	β
Gender	0.14	0.12	0.21	0.05	0.02	0.14	0.20	0.06	0.11	–0.60	0.20	–0.24**
Clubs	0.14	–0.19	0.15	–0.19	0.04	0.13	0.14	0.13	0.11	0.18	0.09	–0.27
Clubs × gender	0.14	0.12	0.09	0.21	0.07	–0.12	0.09	–0.20	0.11	–0.28	0.15	0.34*

R<sup>2</sup>, proportion of variance in the dependent variable explained by the model; b, unstandardized regression coefficient; SE, standard error of b; β, beta (standardized) regression coefficient. \*p<0.05, \*\*p<0.01.<sup>a</sup>This table examines whether the number of clubs reported by medical students predicted burnout. Linear regression analyses including gender and club participation as predictors of each of the burnout subscales indicated a significant interaction between gender and number of clubs (β=0.34).



**Figure 1:** Mean depersonalization scores on the Maslach Burnout Inventory – Human Services Survey [1] by number of clubs by respondent gender.

increased sense of depersonalization. Men who reported participating in fewer clubs demonstrated less depersonalization, which likely is because they were more selective about where they applied their time and other resources.

Overall, our results highlight the importance of understanding what drives burnout on the individual level and adapting our interventions to suit the needs of the individual, rather than the student body as a whole. While intuitively it is easy to understand that active interventions (meditation, mindfulness, and volunteerism) can do more to reduce burnout than passive measures (such as attending lectures), we need to appreciate how active intervention involvement varies between individuals.

## Limitations

Our study was limited by the number of students and the location. It was conducted at one school and may not be entirely representative of all osteopathic medical students throughout the country. Additionally, as this was a cross sectional survey, we could not track results across time to assess whether burnout scores changed according to proximity to major events, such as board exams and residency match. Furthermore, due to the nature of the study, we had to rely on self reporting for some of the data obtained in the survey. Other limitations on the survey itself included not specifying what kinds of activities the participants engaged in within their respective clubs as part of their club involvement and allowing participants to identify the degree of their participation in clubs subjectively vs. formally defining the parameters of the activities that constituted “club participation.”

## Conclusions

Our study results support the idea that burnout lectures alone did not provide any type of burnout mitigation or protection in our respondent group of medical students from Rowan SOM. Osteopathic medical schools must continue to, and in some cases begin to, implement active mitigation strategies to help reduce burnout as opposed to simply raising awareness via didactic sessions. Further research into the reasons students join clubs (or participate in any type of burnout modifying activity) will be beneficial to the medical community, as burnout is a challenge that persists throughout the career spectrum.

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**Competing interests:** None reported.

**Informed consent:** All participants provided informed consent.

**Ethical approval:** This study was approved by the Institutional Review Board at Rowan School of Osteopathic Medicine (No. Pro2018000254).

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**Supplementary Material:** The online version of this article offers supplementary material (<https://doi.org/10.1515/jom-2020-0311>).