

Assessing Burnout and Associated Risk Factors in Medical Students

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Abstract: Purpose: Our study aims to build on existing literature by assessing factors that may be associated with an increased risk of burnout amongst medical students, particularly students of color.

Methods: Our cross-sectional survey included the Copenhagen Burnout Inventory (CBI) and additional de novo questions. Surveys were administered electronically in June 2017 using a convenience sampling method.

Results: A total of 162 survey results were recorded. Of those, 159 completed demographic information with 43% of respondents being non-White, 64% women, 50% reported not having a mentor in medicine, 30% having an immediate family member in medicine, and 71% being concerned about the financial burden associated with medical school. Black students were more likely to be the first in their family to attend college, not have a physician family member, and have financial concerns. The average CBI burnout scores ($n = 138$) indicated that overall students are not experiencing burnout. However, nearly 50% of students experience personal, 42% work, and 12% client related burnout based on their individual scores. Women were significantly more likely to experience work related burnout ($p = 0.028$) and had significantly higher personal burnout scores ($p = 0.017$). Additionally, Black students have significantly higher personal burnout scores ($p = 0.013$) compared to all other reported races.

Conclusion: Although factors assessed during this study showed no significant effect, the data trends suggest that both women and Black students experienced higher rates of burnout. Further discussion regarding solutions to burnout is required in order to intervene early on in training for those at highest risk.

Keywords: Burnout ■ Medical student burnout ■ Undergraduate medical education ■ Minority students ■ Women in medicine

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INTRODUCTION

Undergraduate medical education exposes students to demanding coursework that can be emotionally difficult.¹ Burnout commonly occurs when an individual experiences chronic stress without the necessary social support and resources to handle the resulting depersonalization and emotional exhaustion.^{2,3} Further, individuals may experience feelings of inadequacy and loss of motivation in response to high expectations.¹ Ultimately, burnout is a reactive response to a negative work environment.⁴ In students, burnout is largely due to

academic demands and results in cynicism and feelings of incompetence.^{5,6} The learning environment, in addition to specific character traits such as being self-driven, perfectionists and competitive, has led to higher rates of psychological stress in medical students compared to their peers in other professional programs.^{5,7,8}

Santen et al. (2010) found that low support and high stress were significantly associated with burnout.² Stressors identified amongst medical students include delayed income, lack of leisure time, and educational content volume.⁸ These are similar to those cited by medical students in Pakistan, with high parental expectations, high frequency of tests, and lack of acknowledgment also reported as significant stressors.¹ The impact of this stress is depression symptoms and anxiety in 14.3% of medical students compared to 6.7% in the general population.³ Furthermore, burnout has been associated with unprofessional behavior and a decreased willingness to help others, resulting in a detrimental impact on personal and professional life.^{1,9,10} With the potential impact on patient outcomes and decrease in efficiency, stress could be considered an occupational hazard.^{6,11,12}

The unique experiences of minorities in medicine makes understanding the implications of burnout and social stressors an important part of addressing attrition rates and the success of diverse students. AAMC data from 2010 illustrated that Black and Hispanic students accounted for 15% of all matriculants. American Indians and Native Hawaiians represented less than 1% of matriculants.¹³ As such, underrepresented minorities (URMs), defined as African Americans, Hispanics, and Native Americans, are more likely to report difficulty developing support networks and finding same race mentors as well as feeling their race affects their educational experience.¹⁴ With social support being a necessity to offset stress and prevent emotional exhaustion, previous findings indicate that URMs may have a higher risk of burnout.

Previous research has examined the levels of burnout experienced by residents, physicians, and other healthcare providers suggesting that burnout is a problem across the

field of medicine. Additional studies, mostly from single institutions, have evaluated medical students for burnout with the purpose of determining when burnout begins.² There has been limited research on the experiences of minority students in medical school. Our study aims to build on existing literature and assess medical student burnout in minority and non-minority students. In addition, the objective of this study was to move beyond quantifying levels of burnout amongst medical students and determine social factors that may be associated with an increased risk of burnout as a means to identify at risk students and develop interventions to decrease burnout.

MATERIALS AND METHODS

The study utilized a cross sectional survey method to administer surveys to medical students electronically during the beginning of the 2017 academic year. The survey consisted of the Copenhagen Burnout Inventory (CBI) and additional questions developed by the authors to identify demographic information and potential factors associated with an increased risk of burnout. The survey included a total of 35 questions, four of which were free response. The rest of the questions were multiple choice using a Likert Scale or simple binary responses.

CBI is a validated survey tool that utilizes three sub-dimensions: personal, work-related, and client-related burnout.¹⁵ The authors instructed second year students to replace “client” with “classmates” and third- and fourth-year students to replace “client” with “patients”, based on the exposure that is most common during the preclinical and clinical curriculum. CBI emphasizes fatigue and exhaustion as the core issues leading to burnout. This is in concordance with a definition of burnout as a form of exhaustion due to long term exposure to emotionally demanding work.^{6,15} Personal burnout is related to physical and psychological fatigue; work and client related burnout is the fatigue perceived to be associated specifically with work or clients, respectively.¹⁶ As such CBI seeks to quantify how much of the burnout experienced by an individual is perceived or attributed to specific domains in a person’s life.¹⁵ Each domain uses a Likert scale correlating to a score of 100,75, 50,25, or 0. The total score is based on the average of the score for each item. A total score of 50 or higher is indicative of burnout.¹

All medical students at any allopathic or osteopathic medical school in the United States were eligible. Recruitment for participation relied on convenience sampling. The surveys were created in REDCap and made available via public links sent out via email and social media pages for medical students. Surveys were available for completion starting June 19, 2017 for second, third,

and fourth year medical students. Reminder emails were sent ten days later, with surveys open for a total of four weeks. These students were asked to reflect on their previous academic year when completing the CBI questions. Prior to data collection, approval was obtained from the Institutional Review Board of University of Miami.

Study data was collected and managed using REDCap hosted at the University of Miami. REDCap (Research Electronic Data Capture) is a secure, web-based application. Analysis was completed using IBM SPSS Statistics (24.0) involving descriptive statistics to obtain the prevalence of burnout and stratify the data by demographic information. Additional analysis included chi square, T-tests, and logistic regression analysis to assess for potential associations between burnout and social factors.

RESULTS

A total of 162 survey results were recorded; of those, 160 completed demographic information with one student not responding to specific demographic questions, but answering all other survey questions. The majority of participants were from the University of Miami with other institutions including University of Central Florida and Florida International University. The results include 69 1st year students, 43 third year students, 46 fourth year students, and 1 MD/PhD student in their seventh year. The average age was 25; 64% of the respondents were women and 43% were non-White, with 66% of those being URMs based on the AAMC definition. Additionally, 50% reported not having a mentor in medicine, 30% having an immediate family member in medicine, and 71% being concerned about the financial burden associated with medical school. Black students were more likely to be the first in their family to attend college, not have a physician family member, and have financial concerns. Demographic data and survey responses are summarized in [Table 1](#).

The average CBI burnout scores (n = 138) indicated that overall students are not experiencing burnout. The average personal burnout score was 45.1, work related 44, and client related 26. However, nearly 50% of students met the criteria for personal, 42% work, and 12% client related burnout based on their survey results. The average personal burnout score for minority students was 47.9 compared to 43.1 in non-minority students. The average work-related burnout score for minority students was 46.2 and 42.4 for non-minority students. There was no statistically significant difference between the burnout scores for minority and non-minority students. However, 67% and 57% of Black students met the criteria for personal and work-related burnout, respectively. Additionally, Black students, specifically, had significantly higher personal

Table 1. Characteristics of survey respondents and key responses summarized. The majority of participants in the study identified as female, attended a Florida program, and were in their second year of medical school. Financial concerns were prominent. Only 138 students completed the burnout inventory completely. Nearly half of all participants experienced personal burnout as medical students.

Demographics (n = 159)	N	(%)
Gender Identity		
Female	101	63.5
Male	58	36.5
Race		
Asian	32	20.1
Black/African American	26	16.4
Multi race	7	4.4
Other	3	1.9
White	91	57.2
Hispanic/Latino	19	11.9
Underepresented in Medicine	45	28.3
Year in Medical School		
First	0	0.0
Second	69	43.4
Third	43	27.0
Fourth or higher	47	29.6
Location of Medical School (n = 158)		
Florida	144	91.1
Other States	14	8.9
Social factors (n=160)	N	(%)
First generation college student	13	8.1
Immediate family member is a physician	48	30.0
Has a mentor in medicine	80	50.0
Concerned about financial burden	113	70.6
Copenhagen Burnout Inventory (n=138)	N	(%)
Personal Burnout	65	47.1
Work Related Burnout	55	39.9
Client Related Burnout	16	11.6

burnout scores ($p = 0.01$) compared to all other reported races. Although not statistically significant, Black students also had higher work-related burnout scores ($p = 0.06$). Women were also significantly more likely to experience work related burnout ($p = 0.03$) and had significantly higher personal burnout scores ($p = 0.012$). Logistic regression models showed no effects of mentorship,

financial concerns, physician family members, or first-generation college status on burnout.

A total of 132 students completed a third section regarding the resources necessary to improve their academic performance and personal well-being. 26% of students reported feeling there is not enough resources or support from administration. Students indicated that lack of time, barriers to accessing mental health care, and difficulties finding mentorship contributed to their levels of burnout. Importantly, 83% of students reported being happy with their medical school choice.

DISCUSSION

In a cross-sectional survey of medical students, our results showed that the majority of medical students are concerned about their financial burden (71%) and reported not having a mentor in medicine (50%). Additionally, these barriers appear to be larger for Black medical students. Black students are less likely to come from a wealthy background, experience increased debt burden, and perceive more stress due to racial discrimination.^{17,18} In addition, as URM students enter medical training at rates less than expected based on US representation, the lack of a critical mass of minority students leads to social isolation.¹⁸

Amongst our population of medical students, nearly 50% of students met the criteria for personal, 42% work, and 12% client-related burnout. Black students had higher CBI scores and women were more likely to experience burnout than men. Overall, there was no significant difference between the rates of burnout or burnout scores between minority and non-minority students. This is in concordance with a survey of students in Minnesota where rates of burnout were similar between minority and non-minority students at 43% and 45% respectively.¹⁹ However, minority students had a lower sense of accomplishment, mental quality of life scores, and more perceived difficulties regarding support from medical administration.¹⁹

Student burnout begins during the first year of medical school, necessitating the development of programs to address mental health early on.² Causes of burnout are multifaceted with increased stress, debt, and academic pressure being factors to consider.²⁰ Additional stressors have been found to have significant associations with burnout including grades, uncertainty, lack of time off, gender, and physician parents.^{1,2} Our study did not find a significant effect of mentorship, financial concerns, physician family members, or first-generation college status on burnout. However, students reported that time constraints, lack of career advising, and barriers to mental health counseling contribute to their experience of

burnout. Prevention of burnout requires recognition of symptoms with the inclusion of burnout awareness in coursework being a potential solution.³ Strategies for addressing these identified stressors include pass-fail grading systems and interventions to improve stress management, enhance resiliency, and increase feelings of personal achievement.^{1,2}

Limitations of this study include the cross-sectional survey design with a self-administered, online survey design based on convenience sampling. Convenience sampling was chosen in order to increase the racial diversity in the study; however as a result our study population may not be representative of the medical student population. The participants in this study represent a small sample of the entire population of medical students. Associations may change with a larger sample size. The range in CBI scores suggests that a larger sample size may have identified more significant findings. Also, response rates tend to be low amongst medical students and minority students tend to be less likely to respond to surveys.¹⁹ This impacts the ability to obtain a large, diverse enough sample size to create generalizability. Cultural and regional differences may exist in regards to contributing factors to burnout. As such, pooling of all minority groups into a single category for analysis ignores cultural differences regarding dealing with burnout, acceptance of depression, and coping mechanisms. Selection bias could impact the reported prevalence of burnout, with students experiencing a large number of stressors being more likely to respond. Additionally, social desirability bias could lead to students altering their response to survey items. Of note, the majority of the study included validated survey tools allowing for adequate comparison of data.

To our knowledge, this is the first study to use CBI to compare rates of burnout amongst minority and non-minority medical students with a large proportion of minorities included in the study. Our results are similar to the high rates of burnout amongst medical students seen in the literature. Further, we identified that women and Black students in particular experience more personal burnout than their peers. More research is necessary to evaluate potential associations between social factors and burnout risk amongst medical students. Additionally, nationwide surveys and focus groups are necessary to identify existing stressors in the learning environment as well as assess the impact of current medical school curricula at modifying existing stressors.

CONCLUSION

Burnout is a significant problem amongst medical students and has widespread implications for future practice and patient outcomes. Specifically, our research shows that

minority students, particularly Black students and women may experience burnout at higher rates than their counterparts. Further discussion regarding solutions to burnout is required in order to intervene early on in medical training for those at highest risk. Additionally, as the diversity of medical schools increases it is important for institutions to evaluate the resources available to support minority students.

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OTHER DISCLOSURES

The authors have no competing interests or disclosures.

ETHICAL APPROVAL

This study was approved by the University of Miami Miller School of Medicine Institutional Review Board.

DISCLAIMERS

Not applicable.

PREVIOUS PRESENTATIONS

Results of the study were presented at the American Medical Women's Association 103rd meeting; March 24, 2018; Philadelphia, PA. It was also presented at the Association of American Medical Colleges Continuum Connections Joint Meeting; April 28, 2018; Orlando, FL.

CONFLICT OF INTEREST STATEMENT

The authors have no competing interests or disclosures.

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