The Prevalence of and Factors Associated with Burnout in First Year Health Professional Students

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Purpose: Health professional students are at high risk for burnout compared to the general population [1]. Little is known about burnout in students when they first matriculate to health professional school. Few studies have included physician assistant (PA) and advance practice registered nurse (APRN) students in their analyses. Using mixed methods, we aimed to identify the prevalence of, factors associated with, and change in burnout through the first year of study.

Methods: First year MD, PA, and APRN students participating in a year-long clinical immersion course were surveyed: a pre-test survey was in October 2017 (two months after matriculation) and a post-test survey was in April 2018. The survey included the Oldenburg Burnout Inventory (OLBI) [2] and Jefferson Scale of Empathy (JSE). Unadjusted differences in pre-test burnout, exhaustion, and disengagement were calculated with the following demographic variables: gender, training program, empathy, and if a student matriculated directly after college. Multivariable linear regression was used to examine adjusted associations of burnout with the same variables. Paired T-test was used to compare pre-test and post-test mean burnout ANOVA was used to compare the change in total burnout for each demographic variable. Linear regression with ANCOVA, using the pre-test score as a predictor with adjustment for the demographic variables, was used to examine associations with a change in total burnout and each subscale. We are now conducting in-depth interviews with first year students to interpret our quantitative data.

Results: In October 2017, 246 (97%) students responded. APRN students had the highest average total burnout score. Compared to male students, female students had higher average total burnout (p<0.01) and exhaustion (p < 0.01) scores. APRN and PA students had higher average total burnout (p<0.001) and exhaustion (p<0.001) scores compared to MD students. In the adjusted analysis, being an APRN was the only significant predictor of high burnout (p<0.001) and exhaustion (p<0.001) scores. For the sample, there was a decrease in post-test mean total burnout (p<0.0001) and exhaustion (p<0.0001) compared to pre-test. Compared to MD students, there was a significant decrease in burnout for PA (p<0.01) and APRN (p<0.001) students over first year. Students who came directly from college had a significant increase in disengagement (p<0.03). In the adjusted analysis, predictors of increased total burnout included high empathy (p<0.05) and coming directly from college (p<0.05).
Discussion: Some students had high total burnout and emotional exhaustion scores at the beginning of their health professional training. APRN students may have been more likely to have high total burnout due to differing educational approaches and clinical exposure. APRN students participate in an accelerated curriculum with a multi-tiered grading system with no remediation of failed grades. Students with grades were found to have a higher odds of experiencing burnout than those with pass/fail systems [3]. APRN students have more clinical responsibilities than other students: dissatisfaction with the clinical environment and mistreatment by preceptors and patients have both been associated with burnout [3,4].

Burnout appeared to decrease over the first year of training. Although the literature suggests that empathy is protective against burnout, students with high empathy were more likely to have an increase in burnout during first year [5].

Significance: Those overseeing training programs should consider monitoring for burnout from the beginning of training in order to identify and assist at-risk students. The factors associated with burnout may differ at different points in training. Through a better understanding of burnout among students, it may be possible for educators to identify factors associated with distress and approaches to decrease burnout.
Behind the Burnout: The Differential Role of Gender and Personality in Medical Students

Research Highlights
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Purpose: Burnout is prevalent amongst medical students and physicians (1), and literature suggests that there are differences in the development of burnout by gender (2). Burnout has various etiological factors (3), and a better understanding of them may lead to improved management strategies for mitigating this rising issue. Although personality has been related to physician resilience (4) and medical student preclinical and clinical success (5), there is scarce research on the relationship between personality and burnout among medical students. The purpose of this study was to investigate the relationship between personality and burnout in medical students during their clinical clerkships, as well as further analyze the differences in burnout amongst male versus female students.

Methods: The NEO Five-Factor Personality Inventory and Maslach Burnout Inventory were anonymously administered to 174 third-year medical students during their clinical year. Multiple regression analyses were conducted by gender, with personality traits as independent predictor variables and burnout subscales as dependent variables. Independent sample t-tests were used to examine gender differences in personality and burnout. Correlations were used to examine relationships between the three burnout subscales by gender.

Results: Females scored significantly higher than males on agreeableness (Mfemales=36.61 and Mmales=31.27; p<.001), extraversion (Mfemales=30.94 and Mmales=27.69; p=.01) and openness (Mfemales=30.56 and Mmales=26.71; p=.002). For emotional exhaustion (EE), 71% of males and 77% of females scored in the moderate to high burnout levels. For personal accomplishment (PA), 46% of males and 41% of females scored in the moderate to high burnout levels. No significant gender differences were found for these two subscales. For depersonalization, 58% of males scored in the moderate to high burnout levels, a significantly higher proportion than the 35% of females in that range (²(2)=7.21, p=.027).

For males, a significant correlation was found for EE and depersonalization (r=.57). For females, a significant correlation was found for EE and depersonalization (r=.42), and PA had a significantly negative relationship with EE (r= -.36). All of the multiple regression models were statistically significant. For males and females, personality explained a significant portion of variance in EE (R²=.59 and .52 respectively), and neuroticism was the only significant predictor (bmales=.77 and bmales=.61). For depersonalization, personality explained 30% of variance for males and 19% of variance for females; neuroticism was the only significant predictor (bmales=.40 and bmales=.35). For PA, personality explained 42% of variance for males and 25% of variance for females. For males, extraversion and conscientiousness predicted PA (b=.47 and b=.42, respectively) while no personality dimension significantly predicted PA for women.

Discussion: Given the difficulty of transitioning to a clinical curriculum, medical students in their clinical years are a unique population in which to explore burnout. Within our sample, neuroticism was identified as a potential predictor of burnout in both genders. Additionally, a greater proportion of males experienced depersonalization as a component of their burnout. Highlighting personality as a contributor to burnout may foster the use of personality inventories as measures of medical student wellness. Furthermore, gender differences suggest that males and females may experience burnout differently, which may impact their professional development and personal health (1).

Significance: This study has helped advance the literature on personality and burnout, specifically
among medical students in their clinical years. These findings have implications for students future wellness as residents and physicians, as this is their first experience with the clinical aspects of medicine. Moreover, being aware of personality and gender profiles that may be at greater risk for increased burnout could be informative for students. Strategies for managing burnout at this stage could include personality-specific coping mechanisms to foster resilience (2). More research in larger populations is required to investigate the utility of personality assessments in mitigating burnout.
Does student well-being affect Step 1 scores?

Research Highlights
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Purpose: Nationally, educators seek a better understanding of the potential associations between student well-being and scores from Step 1 of the United State Medical Licensing Examination (USMLE). However, this relationship has been incompletely explored 1-2. Previous reports have shown that students self-perceptions of morale are negatively associated with Step 1 performance, while students levels of physical fitness are positively correlated with Step 1 performance.3 The purpose of this study was to add to this body of literature by examining whether there is an association between student wellbeing and Step 1 performance.

Methods: Three sequential cohorts of medical students at the University of Michigan Medical School completed the Medical Student Well-Being Index (MSWBI)4 at the end of their 2nd year coursework, shortly before taking Step 1 during the years of 2014, 2015, and 2016. Associations between well-being and Step 1 scores were investigated using simple linear regression. Non-linear relationships were explored using polynomial regression and spline modeling. Associations were adjusted for MCAT scores (BIOS, PHYS and VERB) and cumulative second-year grade-point average using multiple linear regression. Analysis was performed using SPSS software.

Results: 360 students completed the MSWBI (68% of potential responders). On univariate analysis, student wellbeing was significantly positively associated with Step 1 examination scores (F(1,364)=17.4, p-value < 0.0001), although wellbeing accounted for just 5% of the overall Step 1 score variability. On multivariate analysis that included MCAT scores and cumulative grade-point average, the relationship between wellbeing and Step 1 score was no longer significant (slope = -0.70, SD = 0.37, p-value = 0.0610). The biological and physical MCAT scores, as well as the cumulative grade-point average, were significantly positively related to Step 1 scores. The multivariate model accounted for 51% of the variation in Step 1 scores (F(5,348)=75.1, p-value < 0.0001).

Discussion: The univariate analysis demonstrated a weak relationship between self-reported wellbeing and subsequent Step 1 performance. However, as shown through the multivariate analysis, MCAT scores and cumulative grade-point average are more important predictors of Step 1 score. There is no evidence that student wellbeing has a differential impact on Step 1 performance. For schools that allow petition to delay taking step 1, this data suggests that student report of wellbeing may not be a compelling reason for delay. School-wide strategies to improve well-being at this time in the curriculum may not have the desired effect on subsequent scores.

Significance: Despite the increased distress students experience around Step 1, student well-being prior to taking Step 1 does not appear to impact how well students perform on Step 1.
The Relationship between Racial Bias and Burnout Among Resident Physicians

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Purpose: Physician bias leads to differences in medical care provided to Black Americans relative to White Americans and contributes to racial disparities in morbidity and mortality.1 Previous studies suggest that negative emotional states - like those that characterize burnout and depression - can increase prejudice expression.2-4 Given the importance of understanding physician bias and reducing racial disparities in care, we conducted a study to assess the relationship between burnout and explicit and implicit racial attitudes in a national sample of residents.

Methods: The CHANGES prospective cohort study followed enrollees at 49 US medical schools through medical school and residency. Of the 4732 who originally consented, 3994 completed the fourth year of medical school survey, 3588 completed the second year of residency (R2) survey, and 3058 completed the third year of residency (R3) survey. Burnout symptoms were measured by 2 single-item measures adapted from the Maslach Burnout Inventory.5 Respondents were classified as never having burnout (no burnout symptoms at either time-point), recovered from burnout (burnout symptoms at R2 but not R3 time-point), chronic burnout (burnout symptoms at both time-points), and new burnout (burnout symptoms only at R3 time-point). Explicit attitudes toward White and Black people were measured by feeling thermometer (FT, both time-points) with a positive score indicating more favorable attitudes toward black people. The R2 survey also included an Implicit Association Test to measure implicit bias against Black relative to White people (a positive score indicates greater pro-White bias) and the Patient-Reported Outcome Measurement Information System depression form to measure depressive symptoms. We used multivariable models to assess the association between burnout and racial attitudes, adjusting for depression, age, sex, race, ethnicity, relationship status, parental status, and specialty. We also adjusted the both Black FT models for R2 reported White FT score, resulting in a measure of explicit bias.

Results: In multivariate analyses, R2 reported burnout symptoms were associated with greater R2 reported explicit bias against Blacks (Coeff -2.34, 95%CI -3.40, -1.28, p<.001) and implicit bias against Blacks (Coeff .05, 95%CI .02, .08, p=.002). In the longitudinal cohort, explicit attitudes toward Blacks became more favorable overall between R2 and R3 (78.6 [20.8] vs 81.3 [19.9], p<.001). In multivariable analysis, there was a relationship between change in burnout symptoms and explicit bias against Blacks between R2 and R3. Of the 1481 residents who met criteria for burnout symptoms in 2016, 155 (10.5%) recovered. Recovery from burnout was associated with less explicit bias against Blacks (referent never had burnout, delta Coeff 2.13, 95% CI -1.02, 5.28) whereas new burnout (delta Coeff -2.66, 95%CI -4.50, -0.82) and chronic burnout (delta Coeff -1.20, 95%CI -2.92, 0.52; overall p=.004) were associated with greater explicit bias against Blacks in the following year.
Discussion: In a cross-sectional analysis of US resident physicians, symptoms of burnout were associated with greater explicit and implicit racial bias. In general, explicit attitudes toward Black people became more positive over the course of one year. Specifically, recovery from symptoms of burnout was associated with the greatest reduction in explicit bias against Black people. As the race IAT was not on the R3 survey, we were unable to explore associations between changes in symptoms of burnout over time and changes in implicit bias.

Significance: Given the high prevalence of burnout among physicians and the negative impact bias has on medical care, symptoms of burnout may contribute to disparities in care. The implications for quality of care for Black people as well as other disadvantaged groups could be substantial.