

Title: Unintended consequences: the impact of burnout on self-regulated learning behaviors in medical students

Background: Burnout is associated with higher rates of depression, worse quality of life, greater test anxiety, and lower academic motivation in medical students [1]. Burnout may also have unintended consequences on learners. Self-regulated learners are defined as metacognitively, motivationally, and behaviorally active participants who can assess their academic progress, set learning goals, monitor for achievement, and re-assess iteratively. Here, we explore how burnout may impact self-regulated learning behaviors in medical students.

Objectives: To (1) quantify burnout and self-regulated learning in medical students, (2) track these over time, and (2) explore their associations.

Methods: Students at Wake Forest School of Medicine were invited to participate in an IRB-approved cross-sectional survey in February 2017 and 2018. The validated Oldenburg Burnout Inventory (OBI) quantified burnout across two domains: disengagement and exhaustion (four-point Likert, higher scores indicate greater burnout). The validated Self-Regulated Learning Perception Scale (SRLPS) assessed self-regulated learning across 4 domains: motivation and action to learn, planning and goal setting, strategies for learning and assessment, self-directedness (5-point Likert scale, higher scores indicate greater self-regulation). Student's t-test was used to explore associations for binary variables; ANOVA for categorical variables; Pearson's correlation coefficients to explore associations between scores.

Results: 326 responses were collected: 148 MS1s, 120 MS2s, 58 MS3s. OBI burnout scores increased with each medical school year from 2.18 to 2.31 to 2.42 ($p < 0.0001$). Overall SRLPS score was not different by year (152 vs 154 vs 147, $p = 0.10$); however, self-directedness subscores were significantly lower in MS3s (MS3=20.7 vs MS1=22.4, $p = 0.05$; vs MS2=22.8, $p = 0.02$). Higher OBI scores were associated with lower SRLPS scores ($r = -0.4337$, $p < 0.0001$). OBI scores correlated more strongly with self-directedness ($r = -0.4090$, $p < 0.001$) than the other self-regulated learning domains including motivation ($r = -0.3153$, $p < 0.001$), goal-setting ($r = -0.3504$, $p < 0.001$), and strategies ($r = -0.3033$, $p < 0.001$).

Conclusions: In this cohort, students with higher burnout reported less ability to self-regulate their learning. Burnout was most strongly associated with a student's overall ability to self-direct their learning which could substantially impact later years of training when these students are required to be stewards of their learning goals, objectives, and skill development. This hypothesis generating study supports longitudinal investigation in this area.

References:

1. Lyndon, M., Henning, M., Alyami, H., Krishna, S., Zeng, I., Yu, T., & Hill, A. (2017). Burnout, quality of life, motivation, and academic achievement among medical students: A person-oriented approach. *Perspectives On Medical Education*, 6(2), 108-114. doi: 10.1007/s40037-017-0340-6
2. Barry J. Zimmerman (1990) Self-Regulated Learning and Academic Achievement: An Overview, *Educational Psychologist*, 25:1, 3-17, DOI: 10.1207/s15326985ep2501_2