A Pilot Study to Measure the Impact of Blended Learning on Intern Wellness and Burnout

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Introduction: The incidence of intern burnout approaches 75% [1]. Recognition of the serious issue of intern burnout has catalyzed the development of wellness programs that have shown increases in self-reported well-being [2].

ImPRINT, a yearlong blended curriculum for interns matriculating into anesthesiology residency includes monthly courses based on the "flipped classroom." Assigned didactics are viewed from home, and classroom time is reserved for interactive discussions, part task training, and high-fidelity case simulations. We hypothesized that such a course would promote intern wellness.

Methods: After IRB approval, all anesthesiology interns were invited to participate. A learning management system (Moodle, Perth, Australia) organized the online curriculum. All interns completed a modified MBI in their first and last months of internship. Additionally, for each module, responses to the following statement were recorded: "We define wellbeing as a sense of wholeness and balance (of mind, body, and spirit) that creates an inner resilience to meet the challenges of living without being overwhelmed. On a scale of 1 to 100, please score your wellbeing at this particular moment: 100 being the most and 1 being the least."

Our primary outcome and hypothesis is that higher rates of burnout would be present at the end of intern year and that participation in ImPRINT would be a protective factor. For the primary outcome, we case matched students by gender and age. Our secondary outcome and hypothesis is that participation in the monthly modules would promote an improvement in reported well-being through facilitating a sense of community.

Normality of distribution was determined using the Kolmogorov-Smirnov test. Primary outcome data were normally distributed and were compared using Student's t test. Secondary outcome data, pre- and post- scores for each module, were compared using repeated measures ANOVA with post-hoc Tukey-Kramer multiple comparisons testing. A two-side $p<0.05$ was considered statistically- significant for all analyses.

Results: All 22 anesthesia interns consented and were enrolled in our study. For the primary outcome, a control group of 5 interns did not participate in ImPRINT (group 1) and were case-matched to the interns that did participate in ImPRINT (group 2).

Primary outcome: Mean[SD] score on modified MBI of 2.2[2.9] vs. 2.8[2.8] for groups 1 and 2, respectively (p=0.749).

Secondary outcome: Within module pre- vs. post- scores were not statistically-significant.

Post-hoc power calculation revealed that the sample size of 5 subjects per group had 6% power to detect the 0.6 difference between means at a 0.05 significance level, and a sample size of 34 per group would have been required to achieve 80% power.

Conclusion: Based on this pilot study, a blended learning curriculum did not show a significant impact on intern wellness or burnout. Scores greater than 4 on the MBI suggest a high risk of burnout and the rationale for our post-hoc power calculation. In theory, utilizing classroom time for interactive learning activities promotes socializing and peer-to-peer support. Future research should focus on disseminating a similar curriculum to other institutions and promote multi-center prospective study to further elucidate of the impact of blended learning on physician wellness.

References:

1. Ripp. Acad Med, 2011.
2. Shapiro. Acad Med, 2000.