

Title: Predicting Systems-Based Practice Performance - Correlations Between Medical School Social Mission Scores and Competency Assessments in Residency

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Since 2013, the Accreditation Council for Graduate Medical Education (ACGME) has used Systems-Based Practice (SBP) Milestones across medical specialties to measure resident physicians' competence in working within health systems, including understanding and addressing health disparities and upstream factors that impact health. Ensuring resident competency in SBP is integral to HRSA's goal of fostering a health care workforce to address current and emerging needs. Many medical schools are increasing their uptake of social mission, which includes preparing their graduates to address health equity and incorporating health systems science curricula and programs. However, little is known about how these factors impact graduates applied skills in systems-based practice once they graduate. This exploratory study aims to assess whether the social mission-orientation of a medical school predicts its graduates' performance on systems-based practice milestones in residency by answering the following research question: Does the social mission-orientation of a medical school predict performance of its graduates on residency system-based practice milestones?

METHODS

This exploratory study examines whether the social mission-orientation of a medical school predicts its graduates' performance on systems-based practice milestones for Family Medicine. Family Medicine was selected for the specialty's alignment with the SMMI's health equity focus outcome of primary care access, earlier implementation of Milestones 2.0 (effective July 1, 2020) compared with other specialties, and program variation in location and size.

Our study was a secondary analysis with an observational study design, with its focus on residents who participated in the ACGME accredited Family Medicine residency-programs who graduated from medical schools that participated in previously published 2019 Social Mission Metrics Initiative (SMMI) national Self-Assessment. Survey responses were used to generate numeric scores for 79 indicators (with indicators defined as responses to specific scored questions that indicated the state or level of social mission commitment) across 18 activity areas (curriculum, extracurricular activities, targeted education, global health, curriculum and community needs, community collaboration, school mission, student diversity, faculty diversity, academic leadership diversity, pathway and pipeline programs, student training, faculty training, student-run clinics, student activism, faculty activism, primary and community-based care, and social mission-focused research). Indicator scores were standardized, weighted, and summed to develop scores for each area and an overall social mission score. In a secondary analysis, we used the U.S. News and World Report rankings of medical schools on the following four measures as key independent variables: 1) graduates practicing primary care, 2) graduates working in rural areas, 3) graduates who were underrepresented minorities, and 4) graduates working in HPSA. This data set had the benefit of including all medical schools in the country, but it was based on a more limited number of measures than the social mission metrics survey. Our dependent variable was residents' performance on four SBP milestones (SBP1 – Patient Safety and Quality Improvement, SBP2 – System Navigation for Patient-Centered Care, SBP3 – Physician Role in Health Care Systems, SBP4 – Advocacy) as evaluated by their residency program and submitted to the ACGME annually.

We utilized the residents' performances reported to ACGME in academic year 2020 to 2021 (including a mid-year and year-end evaluation). Residents were rated on a 10-point scale for each of these milestones. We controlled for residents' and residency-program characteristics including age, gender, race/ethnicity, size of the residency program, number of core faculty, type of sponsoring institution, and accreditation status. We also controlled for the characteristics of medical schools from which the residents graduated, including whether the school conferred the Doctor of Medicine (MD) degree or the Doctor of Osteopathic Medicine degree, and whether the school was publicly or privately owned.

Our main analysis utilized a Generalized Estimating Equation model. GEE answered the following research question: How does the SBP score of a resident within a residency program change if he/she graduated from a medical school with high SMM versus low SMM score? We also conducted a robustness check by using U.S. News Report Rankings as independent variables instead of SMM Scores in the same models described above, in order to extend our analysis to a wider range of medical schools that hadn't participated in the SMM survey.

FINDINGS

Our final analytic sample included observations from 4,216 residents representing graduates of 74 U.S. medical schools and training in 607 Family Medicine residency programs across the 50 states and Puerto Rico. Early exploratory analyses using binary analyses on each of the SBP scores and the overall social mission score showed no statistically significant relationship at the 5 percent significance level. We also found no difference in SBP performance amongst residents who graduated from a medical school that participated in the 2019 SMMI Self-Assessment compared to those who graduated from a medical school that did not participate. In a naïve multivariate regression of each SBP score on six standardized area scores from the SMMI Self-Assessment, we found that the area 16 (Faculty Activism) score was consistently associated with SBP1 and SBP2 scores and that the area 1 (Curriculum) score was consistently associated with the SBP4 score, both at the 5 percent significance level. Further data analysis is currently in progress.

DISCUSSION

While data analysis is still in progress, early findings demonstrate that there may be an association between medical school social mission scores in specific areas and how that school's graduates perform in Systems-Based Practice while in residency. The SBP milestones have been challenging to both teach and assess, and there is no current consensus on best practices to prepare medical students for this type of practice during residency and in independent practice. If specific medical school practices and characteristics can be identified as promoting better systems-based competency, these could inform tools and guidance for school leaders, policy makers, and accreditors.

Key Words: Medical School, Graduate Medical Education, Systems-Based Practice, Social Mission