Public Health and Community Medicine Instruction and Physician Practice Location

Imam M. Xierali, PhD, Rika Maeshiro, MD, MPH, Sherese Johnson, MPH, Taniecea Arceneaux, PhD, Malika A. Fair, MD, MPH

Background: Experts have historically recommended better integration of public health content into medical education. Whether this adoption is associated with physician practice location has not been studied.

Purpose: To examine the association between medical student perception of their public health and community medicine instruction and practice location in a Health Professional Shortage Area.

Methods: Descriptive analysis and a regression model assessed the significance and strength of the association between medical student perception of their public health and community medicine instruction and practice location using data from the Medical School Graduation Questionnaire 1997–2004, 2013 American Medical Association Physician Masterfile, and 2013 Health Professional Shortage Areas.

Results: A higher proportion of medical students with an intent to practice in underserved areas reported inadequate instruction in public health and community medicine than those without such intentions. Students reporting adequate public health and community medicine instruction are slightly more likely to practice in a Health Professional Shortage Area, controlling for their intent to practice in underserved areas.

Conclusions: Findings suggest an association between perceptions of public health and community medicine instruction and practice location. Improved public health and community medicine instruction may support medical students’ preparation and ability to integrate public health skills into practices in underserved settings. More research is needed to ascertain factors enabling better incorporation of public health and community medicine in medical education.

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Introduction

To better prepare physicians to address societal health needs, medical educators have recommended improving the integration of public health perspectives into medical curricula. The Association of American Medical Colleges’ (AAMC’s) interest in these issues dates back to at least 1939, when the Committee on the Teaching of Preventive Medicine and Public Health was established. More recently, experts have identified public health and prevention content areas for physician education and proposed competencies for medical students. These recommendations set the stage for the more efficient health system envisioned through the improved integration of public health and primary care.

Meanwhile, U.S. communities with inadequate physician services continue to challenge medical and public health system efforts to address health disparities. The 1998 Council on Graduate Medical Education report identified the geographic maldistribution of healthcare providers as “one of the most persistent characteristics of the American healthcare system.” According to a 2008 study, 27.6% of the U.S. population (82 million) lives in primary care Health Professional Shortage Areas (HPSAs), communities with critical shortages of primary care physicians compared to national standards set by the Health Resources and Services Administration.

Previous studies have assessed factors that appear to influence physician practice in underserved areas, including demographic characteristics and medical school and residency training. Although some studies have shown that curricular interventions are not strong predictors of physician
practice in such areas, medical schools have developed programs to better prepare physicians for practice in underserved areas, with some showing a positive impact.13–17 These programs include enhanced public health content, based on the assumption that students with a better understanding of public health, including determinants of health, community resources, health policy, and epidemiology, would feel better prepared to work with underserved communities.18,19 This study examines associations between medical student perceptions of their public health and community medicine instruction and their eventual practice in HPSAs.

**Methods**

Responses to the AAMC Medical School Graduation Questionnaire (GQ) from 1997 to 2004 (85% average annual response rate) and the 2013 American Medical Association (AMA) Physician Masterfile were analyzed. Between 1997 and 2004, “public health and community medicine” was presented as a single curricular topic in the GQ section that assesses graduating students’ perceptions regarding their medical education. GQ respondents are presented a list of curricular topics, asked Do you believe that your instruction in the following areas was inadequate, appropriate, or excessive? and instructed to select one of three options (inadequate, appropriate, or excessive). GQ respondents are also asked about their plans to practice in underserved areas.

GQ responses were linked to the 2013 AMA Physician Masterfile, which provided practice locations of physicians who provide “direct patient care.” Using a GIS (ArcGIS, version 10.1), 2013 physician practice locations were geo-referenced to primary care HPSAs. Using bivariate analysis and a regression model, associations between graduating student perceptions of their public health and community medicine instruction, their intent to practice in underserved areas, and their 2013 practice location were studied. Statistical analyses were conducted with SAS, version 9.3. AAMC’s Human Subjects Administrator determined that this study was exempt from IRB review under federal guidelines.

**Results**

Of the 108,408 graduating students who completed the GQ between 1997 and 2004, a total of 90,919 (84%) were identified as practicing physicians providing “direct
Among all respondents, 64.9% believed their instruction in public health and community medicine was appropriate, 30% believed it was inadequate, and 4% believed it was excessive. Only 21.8% of respondents planned to practice in underserved areas, whereas 36.5% planned not to do so, and 40.5% indicated they “don’t know.”

Bivariate analysis (Table 1) revealed a significant association between student perceptions of their instruction in public health and community medicine and plans to practice in underserved areas ($p < 0.0001$). Inadequate instruction was reported by 34.4% of respondents who planned to practice in underserved areas, 30.7% of those who did not know if they would practice in underserved areas, and 27.7% of those who did not plan to practice in such areas. Controlling for intention to practice in underserved areas, graduates who had perceived their public health and community medicine instruction as inadequate were less likely to be practicing in HPSAs in 2013, compared to those who had perceived their instruction as adequate or excessive ($p < 0.0001$, Figure 1).

Multiple logistic regression (Table 1) showed that a graduate’s intention to practice in a medically underserved area was a significant predictor of practicing in an HPSA in 2013 after adjusting for age, gender, and race/ethnicity ($p < 0.0001$). Also, compared to students reporting their public health and community medicine instruction as inadequate, those who felt their instruction was appropriate were slightly more likely to practice in an HPSA (OR=1.042, 95% CI=1.004, 1.082).

**Discussion**

This study examines the potential impacts of including in medical school curricula “public health and community medicine,” which comprises much of “population health,” a term that has gained popularity within the academic medical community, although not a consensus definition.20–22 Results show that students with a perception of adequate public health and community medicine instruction are slightly more likely to practice in an HPSA, while controlling for their intent to do so. However, students who originally planned to practice in underserved areas were more likely to report their public health and community medicine instruction was inadequate.

Students preparing for practice in underserved areas may have anticipated a greater need to understand how medical practice intersects with public health systems and community medicine. This finding suggests that institutions continue to incorporate population health perspectives into undergraduate medical education to potentially help improve physician distribution and better prepare physicians who are interested in practicing in underserved areas.
Medical student intent was a significant predictor of practicing in an HPSA. Given the smaller magnitude of association between perceptions of their instruction and HPSA practice, other factors could be responsible for this association. Future investigation is necessary to examine whether public health instruction during medical school, residency, or in a physician’s practice influences practice location. The continuum of medical education provides multiple opportunities to present relevant public health content that may influence the confidence and competence of physicians in underserved areas. Curricular components that can encourage or preserve intentions to practice in underserved areas also require additional research.

Future studies that explore the use of other measures for underserved areas in addition to HPSAs, examine impacts of other public health topics included in the GQ curriculum questions, and potentially include information from the Matriculating Student Questionnaire may provide additional insights into the relationships among medical student intentions, perceptions, curricula, and practice outcomes.

Conclusions
This is the first study of the relationship between perceptions of public health and community medicine instruction during medical school and the practice location of physicians from a national perspective. Students who intend to practice in underserved areas are more likely to report inadequate instruction in public health and community medicine than their counterparts who do not intend to practice in underserved areas. Students who perceive more adequate public health and community medicine instruction during medical school are slightly more likely to subsequently practice medicine in underserved areas. Improving public health and community medicine instruction may change student perceptions and increase physician practice in underserved areas in the future.

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References
15. Rabinowitz HK, Diamond JJ, Markham FW, Hazelwood CE. A program to increase the number of family physicians in rural and underserved areas: impact after 22 years. JAMA 1999;281(3):253–60.