

Evaluation of an Innovative Medical Student Course Integrating Medicine and Public Health

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ABSTRACT

Introduction: Educating medical students about the importance of integrating public health into their careers is challenging.

Methods: Medical student demographics, weekly written reflections, and course evaluations for a storytelling-based, public health-oriented elective were reviewed.

Results: Compared to students who did not enroll in the course, enrolled students were more likely to be female (71% vs 48%, $P = 0.001$). Student reflections revealed 2 major themes: (1) public health can be integrated into any specialty career; (2) career paths are often nonlinear. Students were highly satisfied with the course (mean 6.5, scale 1–7).

Discussion: Courses aiming to inspire medical students to integrate public health into their career should consider a similar storytelling approach.

dated with other curricular requirements and may not see how adding public health education relates to their future clinical careers.⁴

The University of Wisconsin (UW) Medical School's transformation into a combined "School of Medicine and Public Health" in 2005 included expanding the public health curriculum for medical students.⁵ An elective preclinical course entitled Integrating Medicine and Public Health was developed in 2012 to offer students interested in public health opportunities to learn how they can combine their interest with clinical medicine. The

INTRODUCTION

Public health was once commonly a part of medical practice; John Snow famously developed epidemiological methods while treating a cholera outbreak in 19th century London.¹ The 2 disciplines parted ways during the 20th century, however, due to the growing separation of prevention (public health) and treatment (clinical care).² The aging and increasingly diverse US population has revealed emerging health and social inequities – problems that must be addressed by once again combining public health and clinical approaches.³ Clinicians have the unique ability to bridge the gap between medicine and public health if they are trained in both paradigms.^{2,3} However, many medical students feel inun-

purpose of this report is to describe the course, the characteristics of students enrolled in the course, assess student perceptions of the main themes presented by the lecturers, and evaluate student satisfaction.

The Course: Integrating Medicine and Public Health

Integrating Medicine and Public Health is a 1-credit elective course that meets weekly in the fall semester for a total of 13 sessions, each lasting 75 minutes. In brief, course objectives are:

- Explore the scope of public health activities practiced by physicians.
- Identify common themes in the career paths of physicians who blend medicine and public health.
- Identify opportunities for public health work with physicians of diverse backgrounds and create your own plan for a path in public health.

The course is offered to first-year (M1) and second-year (M2) students who are otherwise primarily engaged in preclinical work. Most students are M1s interested in later applying for public health-oriented programs that require the course. The course uses

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storytelling by physicians of diverse personal and clinical specialty backgrounds to demonstrate different paths to combine clinical medicine and public health. Guest speakers are identified by the course director's knowledge of their public health work. The course structure has remained stable over time, but speakers have varied.

The 12 primary speakers for the fall 2022 course represented 10 different specialties, including primary care, infectious disease, and emergency medicine. Seven out of 12 speakers had a Master of Public Health (MPH) degree. Speakers' clinical time varied from zero to full-time, and public health involvement included roles such as hospital administrator, public health nonprofit founder, and health department official.

Most sessions center on a physician talking about their career path and their involvement in public health. Speakers are encouraged to discuss aspects of their story, such as why they entered medicine, the role of mentors in their journey, and how their core values influenced their career choices. The remainder of class time is reserved for student questions.

Two class sessions are used for discussion of research; one focuses on summer research opportunities and the other has senior students presenting their public health-related projects. At the end of the semester, students submit a final paper outlining their plans for integrating public health into their education and careers. Students are graded pass/fail for the course based on completion of weekly reflections after each physician talk and the final paper.

METHODS

The present evaluation includes medical students enrolled in the course from 2018 through 2022 ($n=372$), with a focus on fall 2022 students for demographic and qualitative data. Qualitative data (student reflections, collected from submission to the online learning portal) were not analyzed for earlier cohorts due to volume of material (>600 for only 1 cohort). The demographics data, obtained in aggregate from the school's academic affairs office, was restricted to the same cohort for which we analyzed qualitative data. Student satisfaction was assessed more broadly through compiling anonymous course evaluations for 2018–2022.

Descriptive statistics were used to assess student characteristics, which were limited to the M1s in fall 2022 as M2 data ($n=2$) could not be obtained without risk of disclosure. Characteristics included were gender and race/ethnicity. The definition of “underrepresented minorities in medicine” used includes the following racial/ethnic groups as delineated by the school: African American, Hispanic/Latino, Southeast Asian (Cambodian, Laotian, Hmong, Vietnamese, Filipino), Native American/Alaskan Native, and Native Hawaiian/Pacific Islander.⁶ Differences in student characteristics between those enrolled versus those not enrolled in the course were tested for significance (P value <0.05) using the chi-square test.

Table 1. Demographics of First-Year Medical Students (M1s) Enrolled in Integrating Medicine and Public Health Compared With M1s Not Enrolled in the Course, Fall Semester, 2022

	Enrolled M1s ($n=65$)	Not Enrolled M1s ($n=112$)	Total M1s ($n=177$)
Gender ($P<0.001$)			
Female	46/65 (71%)	54/112 (48%)	100/177 (56%)
Male	17/65 (26%)	58/112 (52%)	75/177 (42%)
All other genders ^a	2/65 (3%)	0 (0%)	2/177 (1%)
Race/ethnicity ($P=0.311$)			
Underrepresented minorities	27/65 (42%)	38/112 (34%)	65/177 (37%)
All other racial/ethnic groups	38/65 (58%)	74/112 (66%)	112/177 (63%)

^aChi-square statistic could not be calculated due to small sample size.

Note: Percentages may not add up to 100% due to rounding.

During fall 2022, one of the authors (IJ) conducted a modified thematic analysis by reading all of the reflections each week and noting common themes and quotes. Fall 2022 students were asked to respond to 1 or more of the following prompts after each physician talk:

- What were the take home messages you heard?
- Did any part of the session resonate with you and, if so, why?
- How might this information affect your plans for your time in medical school and beyond?

At the end of the semester, these notes were reviewed by 1 author (IJ) to determine overarching themes in the student reflections; themes were categorized as “major” if they aligned with course objectives and “minor” if they were secondary. The course evaluation reports from each year included the mean of all student responses on a Likert scale (1–7, 7 is highest) for each of 15 questions in the school's standard course evaluation. The mean of the annual means was used to determine how the course was received over the 5-year study period. The 2 free-response questions in the course evaluations were not included in the analysis.

Per an institutional self-certification tool, Institutional Review Board approval was not required for this study as it constitutes educational quality improvement and program evaluation rather than research.

RESULTS

The 2022 course cohort had 67 students, 65 of whom (97%) were M1s. These 65 M1s represented 37% (65/177) of the M1 class. Compared to M1 students who did not enroll in the course, enrolled students were statistically more likely to be female (71% vs 48%, $P=0.001$), but no statistical difference was seen for underrepresented minorities (42% vs 34%, $P=0.311$). All results are noted in Table 1.

Thematic analysis of the fall 2022 student reflections revealed 2 major themes and 3 minor themes. The major themes include (1) any specialty can integrate public health into their career, and (2) taking a nonlinear career path is okay. See Table 2 for

quotes that exemplify these themes. Minor themes included the importance of mentorship, feeling inspired by the speakers, and acknowledgement that family plays a critical role in career planning.

From 2018 through 2022, 208 out of 372 total enrolled students (56%) completed course evaluations. Students rated the course highly across all 15 questions, with all mean of means >6.3 on a scale from 1 to 7 (see Table 3). The course emphasis on allowing ample time for student questions (6.9) and selection of diverse speakers (6.8) was noted by students, as these were among the highest rated domains.

DISCUSSION

Integrating Medicine and Public Health is a promising introduction for preclinical medical students to how physician careers can intertwine public health into their clinical practices. The course was popular – taken by 37% of the M1 class in 2022. The primarily female gender makeup of the course reflects the US public health workforce, which is 79% women.⁷ Major themes in student reflections aligned with course goals; they noted the vast opportunities for physicians in public health and identified commonalities in career paths among the speakers. Students connected with personal details, such as speakers discussing difficult decisions at career crossroads and the uncertainty they faced when changing careers, going back to school, or shifting to less clinical work.

This study includes both course evaluations and student reflections – tools identified in evaluation framework based on the Kirkpatrick model as effective methods to measure acceptability of public health curricula and impact on students' attitudes toward the subject.⁸ Limitations of the study include low evaluation response rates, thematic analysis by a single individual rather than a more formal qualitative research approach, and data analysis restricted to the lower levels of training evaluation (reflection, learning). The elective nature of the course affects the potential utility of future studies looking at higher-level longitudinal outcomes for enrolled students due to selection bias.

Table 2. Major Themes From Students' Weekly Reflections on the Lectures From Faculty, During the Elective Course, Integrating Medicine and Public Health, Fall 2022

Major Themes	Quotes
Any specialty can integrate public health into their career	<p>"Dr [A] said not to let your interest in a particular specialty deter you from pursuing public health as a physician. Even if there isn't an established area for public health in your desired specialty [...] You can create a space for public health."</p> <p>"It was inspiring to hear how just being there consistently and showing up makes a difference and that you can practice public health in any specialty."</p> <p>"Hearing about Dr [B]'s work and career path helped solidify the idea that we can integrate public health into any specialty we choose. For a long time, I thought that if I wanted to stay rooted in public health, I would have to steer clear of any surgical specialties."</p>
Taking a nonlinear career path is okay	<p>"Dr [C]'s journey [...] gives me hope about my own future in medicine. I know that as long as I follow my passions, I'll end up right where I'm supposed to be."</p> <p>"[Dr D's] unconventional pathway throughout his medical journey [...] gave me confidence that I have the ability to forge my own path in medicine and achieve my goals, even if they are not neatly laid out before me."</p> <p>"I also found it inspiring and reassuring that her career path was not linear in that she was not sure of what specialty she wanted to pursue until her final year of medical school and that her career is still evolving [...] now I feel more at ease and excited about exploring."</p>

Note: All "Dr [letter]" examples above represent different speakers from the course and the letters chosen do not relate to the speakers' name.

Table 3. Integrating Medicine and Public Health Course Evaluations, 2018-2022

Question	Mean of Means ^a (range)
1. This course excited me about the subject matter.	6.3 (6.1–6.6)
2. This course was well organized.	6.3 (5.9–6.6)
3. Objectives of the course were identified for students.	6.5 (6.1–6.7)
4. From course materials (including lectures), I knew what was expected of me to succeed in this course.	6.7 (6.6–6.8)
5. Difficult concepts were explained in helpful ways.	6.4 (6.0–6.5)
6. Time was used effectively in scheduled course activities.	6.4 (6.0–6.6)
7. Student questions were welcomed by instructors.	6.9 (6.9–7.0)
8. Help was available if I had difficulty with course material.	6.7 (6.6–6.8)
9. The relevance of the course material was made clear.	6.8 (6.5–6.8)
10. The course environment was respectful of individual differences (eg, gender, ethnicity).	6.8 (6.6–6.9)
11. The objectives of the course were met.	6.7 (6.6–6.8)
12. I would recommend this course to other students in the field.	6.7 (6.4–6.9)
13. I learned a lot in this course.	6.3 (5.9–6.6)
14. Overall satisfaction with the course (ie, organization, learning material).	6.5 (6.3–6.7)
15. Overall satisfaction with the teaching activities of the instructor.	6.9 (6.8–6.9)

^aThe mean of all student responses for each question or each year was averaged across years to get the mean of means. The range represents the range of the means for the same time period.

CONCLUSIONS

The course *Integrating Medicine and Public Health* supports the UW School of Medicine and Public Health's commitment to eradicate institutional barriers between medicine and public health. In sharp contrast to the basic sciences the preclinical students are learning, the course gives them a taste of how they can apply that knowledge to the betterment of communities. In addition, the course challenges preconceived notions about linear career tra-

jectories and which specialties can engage in public health activities—entirely through storytelling from physicians practicing public health. Opportunities to revisit key themes from this course across the medical student curriculum should be explored—at the UW School of Medicine and Public Health and beyond.

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