Building a Stronger Healthcare Workforce for the Future: Could Public Health Education Be the Key?

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Public health (PH) courses have been increasingly incorporated into degree requirements for many health-related professions; several studies have indicated that some students have negative attitudes toward these courses. Understanding how students' perceptions of PH education are shaped is important to ensure effective integration of PH curriculum. This descriptive research project analyzed the perceptions of PH held by health professions students at a Midwestern university. The PH educational experience of this sample suggests that non-PH students view PH education as a positive addition to their educational curriculum. Future studies should examine specifically what aspects of the PH courses affect students' perception.

INTRODUCTION

At its most fundamental level, public health is "the science of protecting and improving the health of people and their communities" ("What is Public Health?", n.d., para.1). Recent bioterrorism attacks, natural disasters, increasing health disparities, and the emergence of drug-resistant bacteria have underscored the need for a stronger public health system in the United States (Maeshiro et al., 2010). Unfortunately, assessments have indicated that health professionals are not adequately prepared to address modern public health challenges (Frenk et al., 2010). Research has revealed that a "territorial division of work" seen among various health professions is contributing to "hyperspecialization"—a trend working in direct opposition to teamwork (Frenk et al., 2010, p. 1925).

A specific example of this territorial division of work can be seen through an examination of the relationship between public health and medicine. Many medical students view public health as being unimportant to their career paths. This may be due in part to public health not being clearly defined professionally (Institute of Medicine, 2003). This perception can also be understood by considering the nature of public health educational objectives— unlike medicine, public health traditionally focuses on populations rather than individuals (Stone, 1999; Mann, 1997). Moreover, the separatist mentality is strengthened by the structural design of training programs for clinical and public health practitioners; there are two distinct tracks that tend to shy away from opportunities to "[cross] disciplinary boundaries" (Stone, 1999, p. 9).

An acute understanding of the limitations of modern medicine as well as the importance of the social determinants of health point toward a modified view of health that requires collaboration from the fields of medicine and public health (Mann, 1997). The realization that contemporary health challenges can benefit from—and arguably require—the integration of public health and clinical skills has prompted calls for continued reform of medical school curricula. Stone (1999) argues that at its most basic level, the mission of medicine requires a population perspective "whether it is appreciated or not" (p.13). Other scholars suggest that physicians need "the quantitative skills and contextual knowledge" garnered from basic public health education to effectively address modern health concerns (Maeshiro et al., 2010, p.211). Changes are being made to medical curricula to reflect the importance placed on public health skills.

Notwithstanding the growing recognition of the importance of public health as its own field and as a field complementary to other health professions, there are many challenges with the teaching of undergraduate public health (Gillam & Bagade, 2006). These tensions naturally pose questions about what health professions students think of public health and how those perceptions may influence the way they benefit from PH education.

The idea of fostering interprofessional connections extends beyond the fields of public health and medicine. With the fragmented nature of the United States' healthcare system, it has become increasingly apparent that purposeful collaboration between all health care professionals is necessary to ensure high-quality patient care (Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013). Learning how to work interprofessionally is necessary to rebuild our fractured health system (Gilbert, Yan, & Hoffman, 2010).

Hence, interprofessional education (IPE) has become an important topic of discussion among educators in health professions fields. Interprofessional education takes place when students from diverse professions form a symbiotic relationship, learning from one another to achieve the best patient outcomes (Gilbert, Yan, & Hoffman, 2010). In 2001, the Institute of Medicine stated the importance of interprofessional engagement, declaring that interprofessional teams of health care workers are best-positioned to address the complex problems in the health care system (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011).

Traditionally, students in health professions have not interacted much with students in other health professions fields throughout the course of their education (Curran, Sharpe, Flynn & Button, 2010). However, the current state of our country's health demands that this "silo approach" to health care education must be replaced with stronger interprofessional connections (Markenson, 2005, p. 523; Reeves et al., 2013). Recognizing the inadequacy of the traditional unieducational model for professional education, interprofessional learning is becoming an increasingly popular component of health professional education (Thistlethwaite & Moran, 2010; Reeves et al., 2013). The body of literature on IPE indicates that there is disagreement when it comes to defining interprofessional learning outcomes and determining how such outcomes might be attained (Thistlethwaite & Moran, 2010). For example, some scholars argue that IPE should be implemented early on in undergraduate education, but the lack of evaluations of IPE at that level does not provide adequate evidence to support this claim yet (Parsell & Bligh, 1999; Tunstall-Pedoe, Rink & Hilton, 2003; Curran et al., 2010).

The attitudes and perceptions of students regarding interprofessional education are important to the value they place on this type of learning (Bridges et al., 2011; Curran et al., 2010). One of the goals of interprofessional learning, therefore, is to reduce the misconceptions that exist between students of different professions and educate students on the roles of other professions (Parsell & Bligh, 1999). The literature suggests that the method of delivery plays a significant role in the achievement of that goal. For example, the results of a study conducted by Tunstall-Pedoe et al (2003) revealed that a particular approach to IPE actually made students adverse to IPE. Recognizing that students from different professional backgrounds begin college with stereotyped views of one another, this study found that these views seemed to become more exaggerated in a shared learning environment. Students in the study reported that they felt like the learning occurring in the interprofessional setting was irrelevant (Tunstall-Pedoe et al., 2003). By contrast, Lapkin, Levett-Jones and Gilligan (2011) and Meffe, Moravac and Espin (2012) assert that students' attitudes and perceptions towards interprofessional collaboration can benefit

from IPE experiences. Rather than focusing on professional differences, emphasis on patient centered care may also foster effective collaboration (Meffe et al., 2012).

The potential for IPE to transform the modern health care system by fostering collaborative relationships is highlighted throughout the existing body of literature; however, there is uncertainty about how IPE can be best implemented to bring together students from different professional fields. Paired with the aforementioned discussion of the intrinsic value of public health, current IPE literature prompts numerous research questions about the integration of public health education as a subset of IPE.

Perceptions of Public Health Education

Currently, there is a limited body of literature documenting perceptions of public health education integration among students in the United States. However, international studies do provide some insight regarding public health education among students from a variety of disciplines. A Canadian study focusing on the perceptions and attitudes of medical students toward their undergraduate medical public health curriculum points to the systemic breakdown of public health education in that country (Tyler et al., 2009). This study noted that undergraduate medical education courses included public health courses; however, such courses were not adequately integrated into the medical science curriculum, highlighting the greater value that medical professionals placed on acute care versus population-based health care (Tyler et al., 2009). This separation of disciplines often left students "confused about the role of public health in medicine" which then lead to the development of negative feelings toward public health coursework (Tyler et al., 2009, p.1311).

In 2003, a cross-sectional survey of educators in public health in medical schools was conducted in the United Kingdom to evaluate the effectiveness of public health curriculum in a medical school setting from the educator's perspective (Gillam & Bagade, 2006). Seventy-six percent of responding medical schools claimed to have integrated public health and clinical teaching to some extent while only 19% claimed to be fully integrated (Gillam & Bagade, 2006). Self-directed learning was reported in 70% of schools as the proportion of course instruction in lecture format continues to decrease (Gillam & Bagade, 2006). Open-ended responses revealed one professor's attitude toward the integration of public health into medical school curriculum: "The big question is how much public health teaching do students actually need? Most students do not remember any of their public health teaching and only come to use the concepts much later" (Gillam & Bagade, 2006, p. 433).

Although this UK study surveyed the attitudes of public health educators rather than the students', it adds to the discussion by pointing out several structural flaws that limit the effectiveness of public health education, including the lack of standardization in "curricular content, teaching methods and resources used" (Gillam & Bagade, 2006, p.431). Another limiting aspect is that teachers are inadequately incentivized to prioritize long-term teaching over research. Lastly, this demonstrates a documented need for continued evaluation of "problem-based public health learning" with the intention of successfully integrating such learning with clinical teaching in the future (Gillam & Bagade, 2006, p.431).

While the goal of integrating public health education into non-PH health professions education has both merit and promise, achieving such an objective is challenging for a variety of reasons. Previously stated research seems to suggest that the attitudes of non-PH students may be the biggest detriment when trying to advance PH education among students. Studying the diffusion of public health knowledge from the perspective of students' attitudes toward public health coursework and the ineffectiveness of current curricula gives valuable insight into improving public health education. Because public health as an academic field is fairly new and still relatively malleable, this descriptive study was undertaken to examine the perceptions of public health education among health professions students, the results of which may be helpful in working to ensure a more competent and sufficient health workforce in the future.

METHODS

Subjects

A convenience sample was derived from a population of undergraduate students at a small, liberal arts university in the Midwest. Participants were required to be 18 years or older to partake in the survey. Of the 194 students who received and responded to the survey, only 38 students had taken a PH course and were able to complete the entire survey.

Materials

The survey tool consisted of 16 descriptive questions that were administered via the Survey Monkey web site. The questions varied in format and included Likert scales, multiple choice, rank-order, and open-ended responses.

Procedures

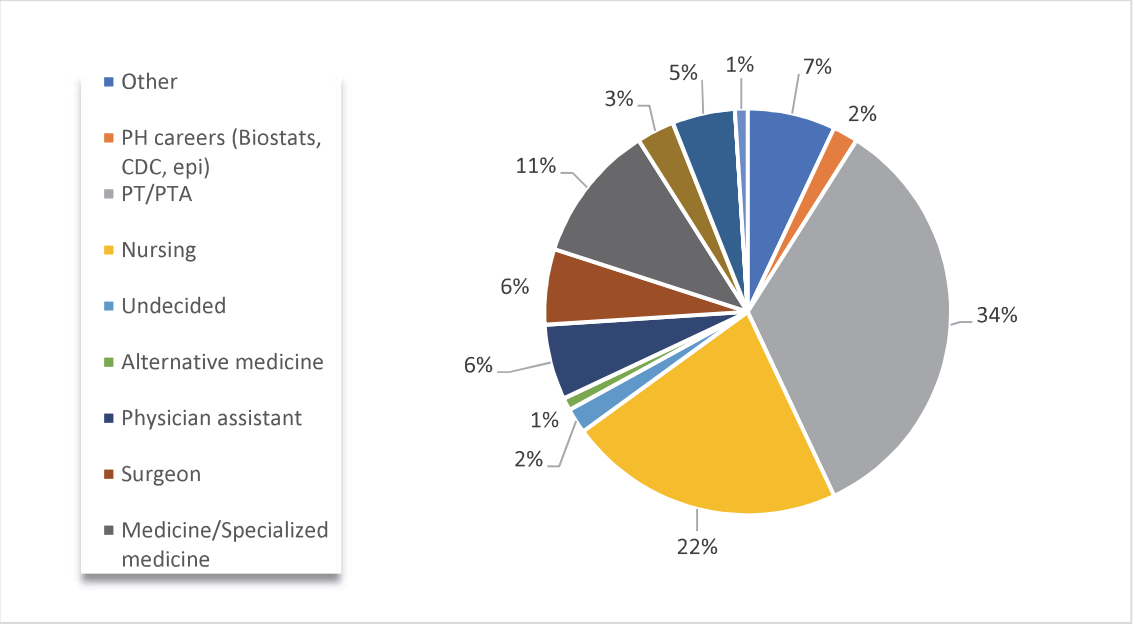
The survey was created using Survey Monkey technology. The invitation to respond to these surveys was sent out via email to any undergraduate students who had been identified via the university's registrar's office as having declared the following majors/pre-professional tracks: Nursing, Athletic Training, Exercise Science, Clinical Laboratory Science, Public Health, pre-Medicine, and pre-Dentistry. After the initial invitation email was sent, these potential participants were also sent two follow-up reminder emails to encourage participation if they had not already done so. This study was approved by the Institutional Review Board (IRB) at the study site.

To respond to the survey, participants clicked on the link provided to them in the emails, which led them directly to the SurveyMonkey website. Participants were first introduced to an informed consent page, where if they agreed to participate then they were able to access the rest of the survey. The survey was designed to last approximately 15 to 25 minutes, depending on the participant. Using the SurveyMonkey software, the responses were collected, organized, and analyzed by the research team only. For open-ended responses, both research team members reviewed the text and came to a consensus on the categorization of the open-ended response. All responses were kept anonymous and confidential, and access to survey responses required a log-in and password only available to the research team.

RESULTS

Two hundred fifty-six students were sent the survey based on information received from the registrar's office. Of the 194 students who gave consent and began the survey, 72 were freshman (37.1%), 42 were sophomores (21.6%), 49 (25.3%) were juniors, and 31 (16.0%) were seniors. One hundred fifty-nine participants (82.0%) were female and 35 (18%) were male. Majority of the initial participants (174, 89.7%) were white, 2 (1.0%) were African American, 5 (2.6%) were Hispanic, 5 (2.6%) were Asian or Pacific Islander, 4 (2.1%) were multiple and 4 (2.1%) did not submit an answer. Fourteen participants (7.2%) were Public Health majors, 44 (22.7%) were Nursing, 18 (9.3%) were Athletic Training, 60 (30.9%) were Exercise Science, 38 (19.6%) were Pre-Med, and 20 (10.3%) responded with "other." "Other" responses included students who paired their undergraduate degree with their professional degree (i.e. Exercise Science with Physical Therapy Assistant), psychology, neuroscience, business, and pre-Physician's Assistant track. As shown in Figure 1, 34% of the initial participants indicated a career goal as a physical therapist or physical therapist assistant (PTA), while 22% indicated their career goal was being a nurse. Eleven percent reported that they wanted to work in medicine and 6% wanted to be a physician's assistant.

FIGURE 1
CAREER GOALS OF STUDY PARTICIPANTS



Only 38 participants (19.6%) out of the initial 194 respondents indicated that they had taken a public health course and were able to continue on and complete the rest of the survey. When asked which of the offered public health courses they had completed, 22 students (57.9%) indicated that they had taken Intro to Public Health, 28 (73.7%) took Global Health, 3 took Public Health Nutrition, 1 took Food Science, 6 (15.8%) took Epidemiology, 1 took Environmental Health, 1 took Health Behavior, 2 took Biostatistics, 2 took Statistics Appraisal and Evaluation, 2 took Masters-level Epidemiology, 3 took Masters-level Environmental Health, 2 took Masters-level Health Behavior, 2 Masters-level Biostatistics, 2 took Masters-level Health Economics, 2 took Masters-level Public Health Law and Ethics, 3 took Masters-level Population-Based Health, 1 took Masters-level Survey Research Methods, and 1 took Masters-level Programs, Policies and Problems.

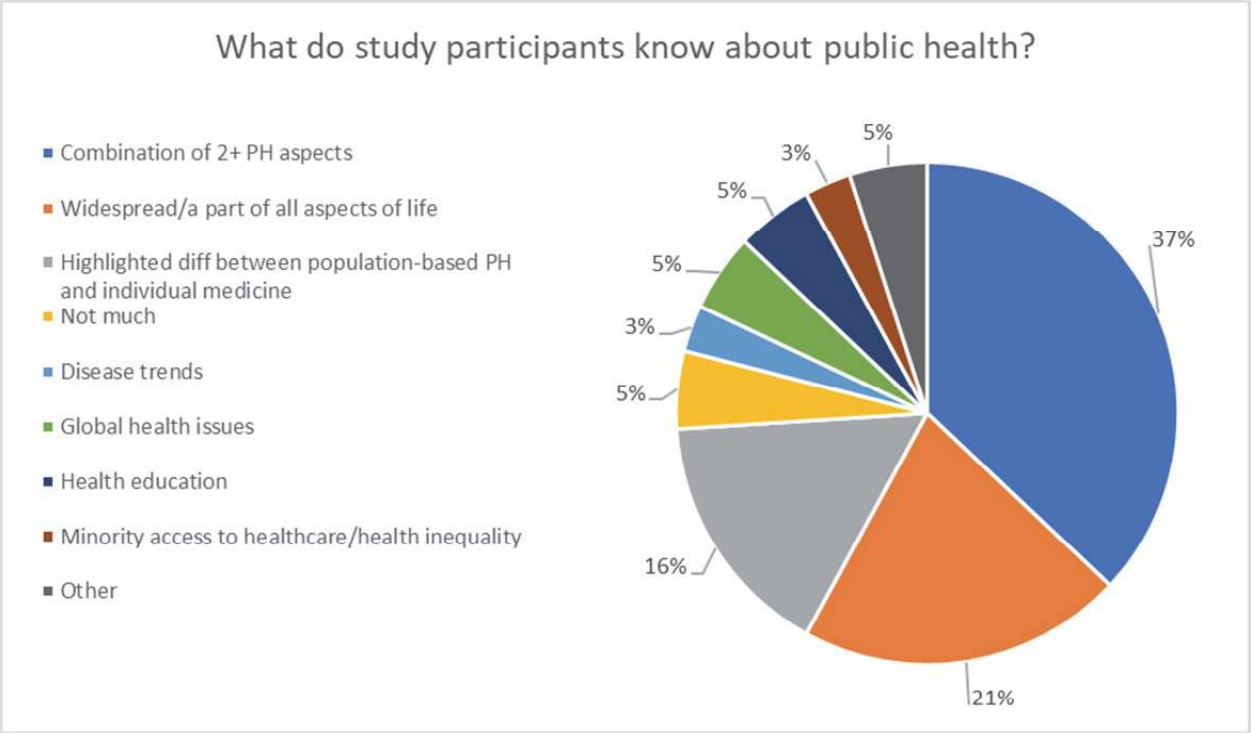
Participants were asked to rank the usefulness of 12 public health topics in ascending order (1 being the most useful and 12 being the least useful). Table 1 shows the average response for each category (lower numbers indicate higher perceived importance among participants), with chronic and communicable diseases being considered the most useful.

TABLE 1
RANKING OF PUBLIC HEALTH TOPICS

Area of Public Health	Average score
Chronic disease	4.45
Communicable disease	4.50
Global health	4.47
Public policy/health reform	6.76
Healthy community design	7.50
Environmental health	6.26
Mental health	5.00
Disaster preparedness	7.87
Public health accreditation	9.55
Reproductive and sexual health	6.86
Social determinants of health	6.97
Epidemiology	7.79

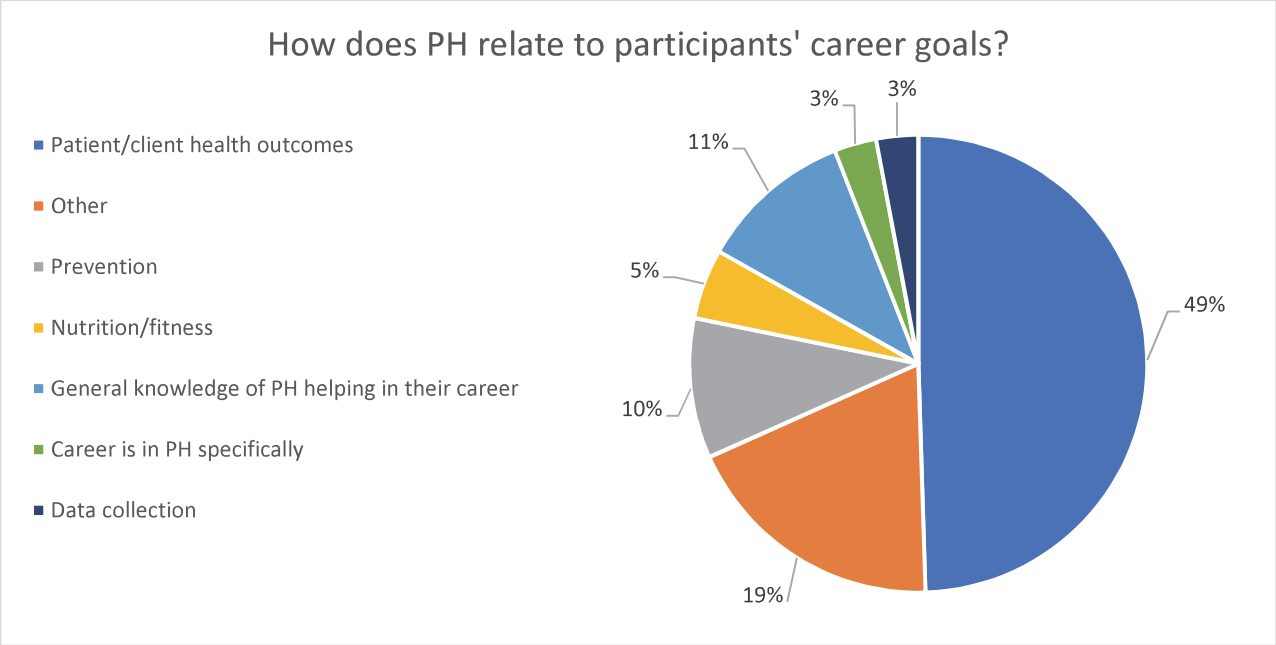
When asked to describe what they knew about Public Health, 37% of the participants demonstrated knowledge in two or more areas of public health while 21% demonstrated that they knew it was a part of everyday life. Most importantly, 16% of respondents highlighted the difference between the population-level focus of public health and the individualized nature of medicine. Figure 2 displays a breakdown of the open-ended responses from the participants.

FIGURE 2
PARTICIPANTS' KNOWLEDGE OF PUBLIC HEALTH



Survey participants were asked to indicate the ways in which public health relates to their personal career goals. As shown in Figure 3, 50% of the participants believe the connection between their career goals and public health is patient health outcomes, while 10% found prevention to be the link.

FIGURE 3
HOW PUBLIC HEALTH RELATES TO PARTICIPANTS' CAREER GOALS



Participants were also asked what they like about public health courses. As shown in Figure 4, 23.7% said that they liked the informative nature of the courses, while another 23.7% indicated that they enjoyed the professors who taught the courses. Figure 5 displays what participants dislike about public health courses. Interestingly, 36.8% indicated that they would not change anything about the public health courses they had previously taken.

FIGURE 4
RATE YOUR FAMILIARITY WITH PH CONCEPTS

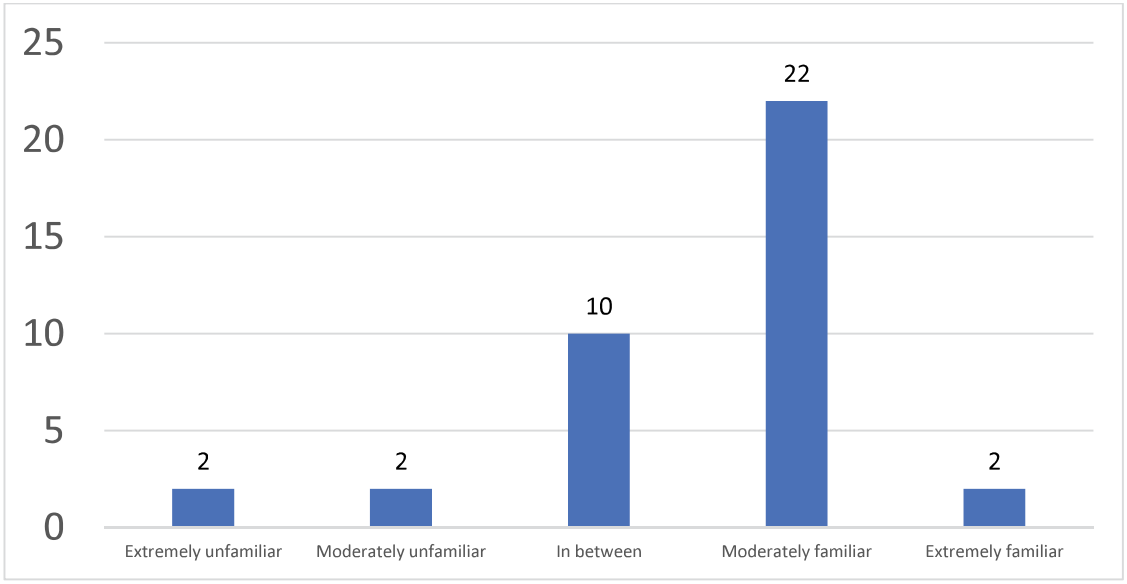
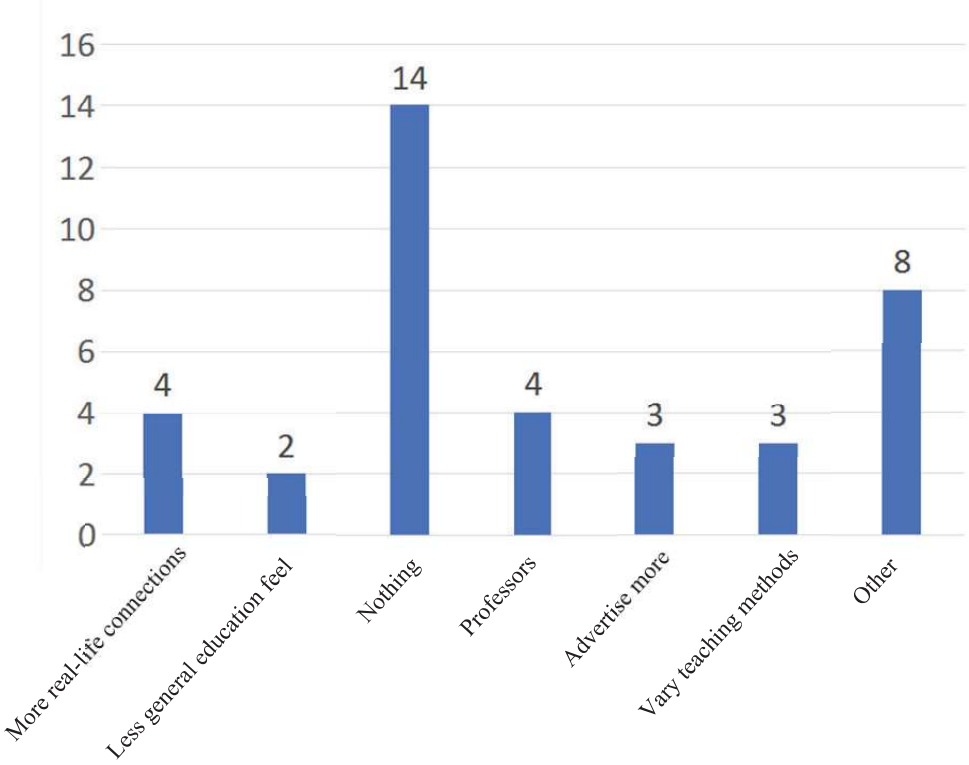


FIGURE 5
WHAT ABOUT YOU CHANGE ABOUT PH COURSES



When asked to rate their familiarity with public health concepts, 57.9% of respondents indicated that they were moderately familiar while only 5.3% said they were extremely familiar as shown in Figure 6. When asked how valuable the study of public health is to health professions students, 92.1% of respondents reported that it was very or extremely valuable as shown in Figure 7.

FIGURE 6
RATE YOUR FAMILIARITY WITH PH CONCEPTS

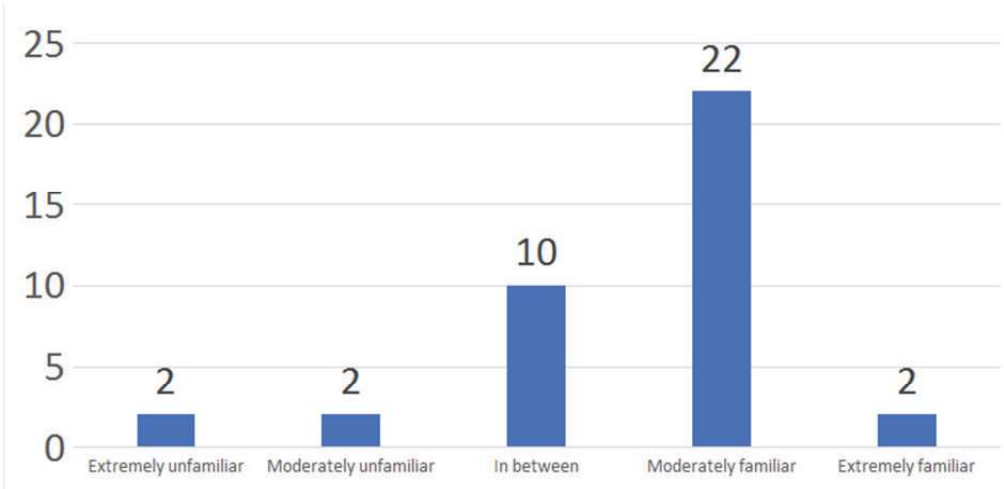
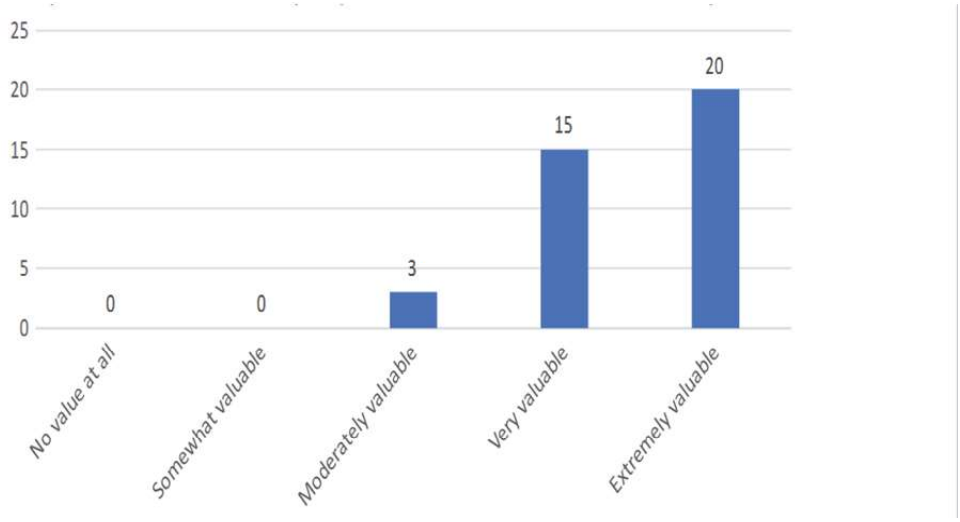
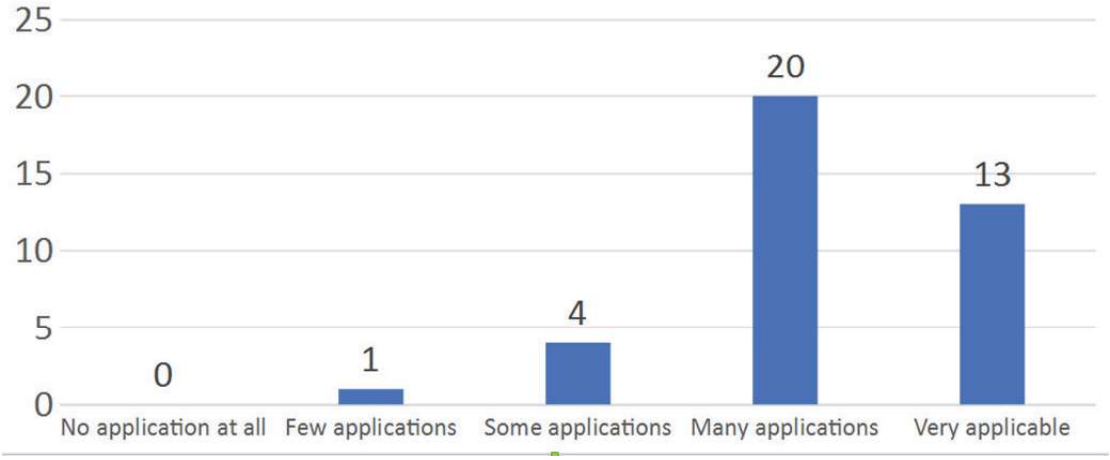


FIGURE 7
TO WHAT EXTENT DO YOU THINK THAT THE STUDY OF PUBLIC HEALTH IS VALUABLE TO HEALTH PROFESSIONAL STUDENTS



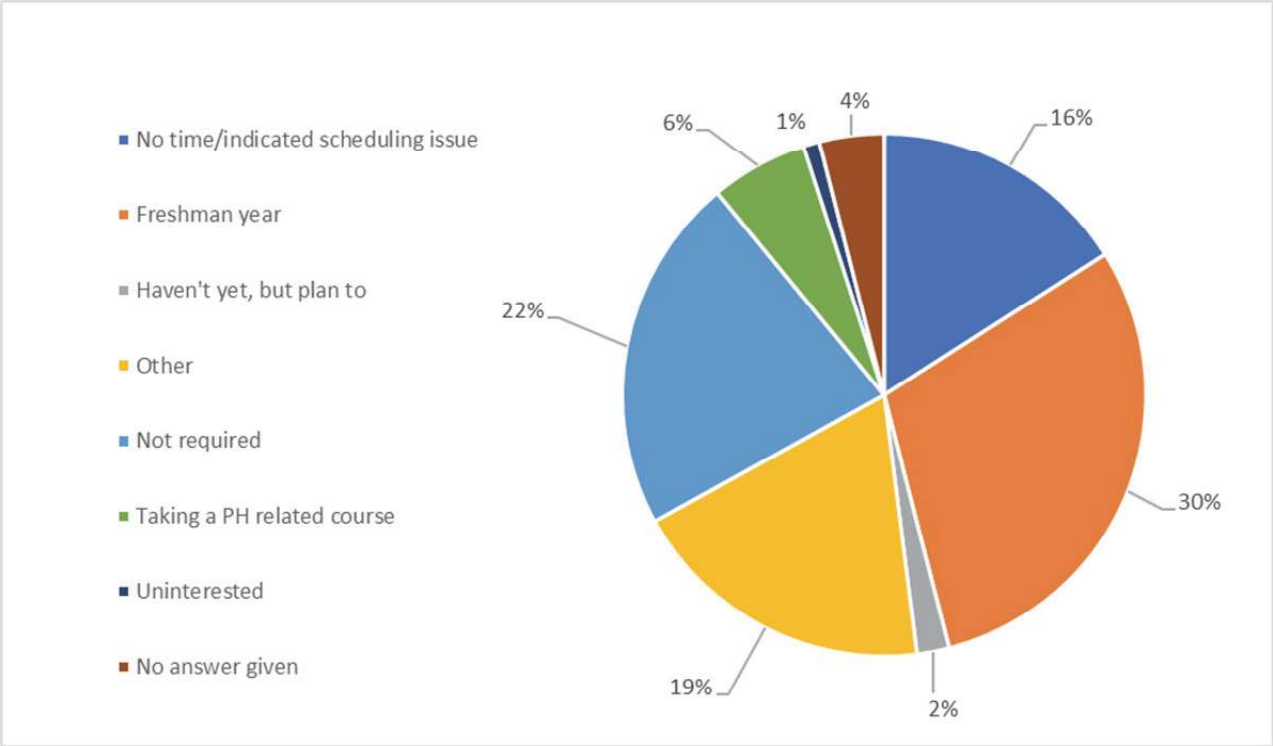
When asked how applicable participants felt that public health concepts were to their personal major/career goals, 52.6% felt that there were many applications. Another 34.2% felt that public health concepts were very applicable to their major and career goals. As shown in Figure 8, zero participants reported feeling that there is no applicability of public health concepts to their major or career.

FIGURE 8
RATE THE APPLICABILITY OF PUBLIC HEALTH CONCEPTS TO YOUR MAJOR/CAREER



Participants who had not yet taken a public health courses were ineligible to take the full survey; however, before being dismissed from the survey, they were redirected to one final question which asked them why they had not yet taken a public health course. Thirty percent reported that they had not taken one yet because they were freshmen while 22% indicated that public health courses were not required for their program. As shown in Figure 9, 16% reported that they did not have enough time to take a public health course or there was some sort of scheduling issue.

FIGURE 9
WHY HAVE YOU NEVER TAKEN A PH COURSE?



DISCUSSION

Our study shows that among students who had taken public health courses at this university, more than half had positive attitudes towards their public health coursework. These results are promising in the face of existing literature that indicates negative attitudes toward public health are prevalent among non-public health students. The public health educational experience of this sample seems to suggest that students majoring in non-public health professional fields feel that public health education is a positive addition to their educational curriculum. This finding suggests that public health courses can be shaped to meet both the needs and expectations of all health professions students. Knowing the value of training the next generation of the health care workforce to be proficient in key areas of public health, this has important implications for the future of public health curriculum. While this study revealed some interesting trends, more research needs to be conducted regarding perceptions of public health.

Because this study was descriptive in nature, it can help shed light on areas in need of more in-depth research. Specifically, future studies should examine what individual aspects of the public health courses affect students' perceptions regarding public health. Moreover, it would be helpful to study the perceptions toward public health held by health professions students at non-liberal arts schools to determine how the educational environment shapes students' perceptions. In addition, the analysis of survey responses in this study, while descriptive, will contribute meaningfully to the evaluation of public health courses at the university included in this study. By understanding the way students preparing to enter health professions perceive public health and public health courses, different approaches to disseminating knowledge can be implemented.

Indeed, in the United States, several steps have already been taken to address the need of public health integration into non-PH curricula; the Association of American Colleges and Universities launched a ten-year campaign for undergraduate liberal education called Liberal Education and America's Promise (LEAP). LEAP's outcomes "support the integration of public health education into general and liberal education" and seek to produce an "educated citizenry" (Albertine, 2008, p. 255). A related project—The

Educated Citizen and Public Health (ECPH) project—was generated in 2003 in response to a call from the Institute of Medicine asking for "higher education to address human health and the great questions of human sustainability" (Albertine, 2008, p. 255). The ECPH project seeks to go beyond merely training more health professionals in public health; it is designed to "educate future citizens" (Albertine, 2008, p. 255). Interdisciplinary programs for students provide unique opportunities for collaboration that could result in innovative approaches to research and practice (Albertine 2008). At full fruition, these changes are predicted to influence undergraduate education for all fields of healthcare (Albertine 2008).

In November of 2006, public health, arts and sciences, and clinical health professions educators collaborated at the Consensus Conference on Undergraduate Public Health Education where three courses were recommended as fundamental components of the public health curriculum: Public Health 101, Epidemiology 101, and Global Health 101 (Riegelman, 2005, p. 259). Additionally, the Association of American Medical Colleges is reevaluating methods for educating medical students (Riegelman, 2005, p. 260). Instead focusing on only traditional medical course work, there is increasing value being placed on competencies such as analytical skills, policy development skills, cultural competency, financial planning and management, leadership, systems thinking and the inclusion of population health for medical students (Riegelman, 2005, p. 261). This trend could potentially catalyze the growth of undergraduate public health curriculum because such courses provide students preparing for health professions with multidisciplinary knowledge and skill sets (Riegelman, 2005, p. 261).

LIMITATIONS

The results of this study may not be applicable to all undergraduate students in Nursing, Athletic Training, Exercise Science, Clinical Laboratory Science, Public Health, pre-Medicine, and pre-Dentistry across all higher education institutions. As for the study itself, some limitations may include the inability to generalize outside of the university included in the study and self-report bias since the study utilized a self-reporting survey tool. Additionally, this was a pilot survey designed to collect descriptive data about the perceptions of public health held by students in health professions fields. As such, some areas of the survey may need to be modified if utilized again.

CONCLUSION

The practical, real-world value of public health is widely documented. Public health is responsible for many health-related milestones such as the eradication of smallpox, decline in tobacco use, early detection of cancer, fluoridation of drinking water, and increases in life expectancy among others. Beyond these advances, the financial advantage of public health approaches to various health issues has also been established. Investing in preventative measures to protect the populations' health is economically strategic as it can save more lives for less money. Despite the benefits reaped from the field of public health, existing literature suggests that health professions students largely view public health as being unnecessary to their education. Because of the scarcity of literature on these perceptions held by students in the United States, this study was designed to fill part of that gap. By collecting information on perceptions held by health professions' students at a small, liberal arts university, this study highlighted areas for future research regarding attitudes toward public health education. Such research is necessary to ensure that public health courses are maximizing their potential to prepare the health care workforce for modern health-related challenges facing the population and health care system infrastructure.

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