

INSTRUCTIONAL DESIGN AND ASSESSMENT

A Public Health Discussion Series in an Advanced Pharmacy Practice Experience

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Objectives. To develop and integrate a student-centered, active-learning public health discussion series into an existing advanced pharmacy practice experience (APPE) to enhance knowledge and encourage integration of public health activities into students' future careers.

Design. Students participated in 3 hour-long discussions to define and identify the scope of public health and to examine public health initiatives outside of and within health care.

Assessment. Improvement in the ability to accurately define public health was observed after students participated in the discussion series compared to baseline. Post-discussion definitions were more broad and accurate. Unsolicited comments about the discussion series documented in post-APPE reflections described students' initial lack of knowledge, improved knowledge base, and improved interest in participating in public health initiatives.

Conclusions. Time devoted to public health discussions during an APPE can substantially impact student pharmacists' knowledge base and interest in public health. Additionally, this active-learning technique aids in meeting the Accreditation Council for Pharmacy Education (ACPE) public health standards.

Keywords: public health, student pharmacists, experiential education, advanced pharmacy practice experience, active learning

INTRODUCTION

Pharmacies are easily accessible to patients because they are centrally located within communities, have extended hours of operation, and lack the need for appointments for service.¹ Pharmacists not only dispense prescriptions but also provide recommendations about nonprescription preparations, disease states, drug interactions, and behavioral modifications, among other services. To prepare students for this type of career, colleges and schools of pharmacy educate about health screenings, immunizations, pain management, and general health, as well as pharmacotherapy. Because of their strong knowledge base and position within communities, pharmacists are ideal to develop and implement public health initiatives, but are often overlooked in this capacity. Unfortunately, only a handful of colleges and schools of pharmacy offer joint doctor of pharmacy (PharmD)/master of public

health (MPH) programs; other student pharmacists receive limited public health education.¹

Integrating pharmacists into areas of public health has become increasingly recognized among academic institutions. The most recent standards and guidelines from the Accreditation Council for Pharmacy Education (ACPE) has incorporated an additional guideline requiring colleges and schools of pharmacy to ensure that graduates are competent to "promote the availability of effective health and disease prevention services and health policy through the ability to apply population-specific data, quality improvement strategies, informatics, and research processes to identify and solve public health problems and to help develop health policy."² While student pharmacists are exposed to disease state prevention services, outside of a dual PharmD/MPH program or required course in public health, they likely receive minimal exposure to the concept of public health.¹ For this reason, many may not know what public health encompasses, defined as early as 1920 by CEA Winslow as "the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts. . ."³ Later in 1988, the Institute of Medicine of the National Academy of Sciences called public health

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“what we as a society do to assure the conditions in which people can be healthy.”⁴ In contrast to medicine, public health activities focus on preventing disease and promoting health for the entire community.⁵

The importance of public health, the need to increase pharmacists’ public health activities, and the overall lack of public health education among colleges and schools of pharmacy,¹ including the author’s home institution, stimulated the development of a discussion series for integration into an advanced pharmacy practice experience (APPE). These purposeful discussions for PharmD students were formatted using a student-centered, active-learning approach. The goal was to build baseline knowledge in public health and stimulate thoughts about integrating various aspects of public health into their future careers. This commentary outlines the discussion series activities occurring during a fourth-year student pharmacists’ ambulatory care APPE. To the author’s knowledge, this is the first manuscript describing such a design concept for teaching public health.

DESIGN

The public health discussions were integrated into a rural medicine ambulatory care APPE where students saw patients 5 half-days per week in a Black Belt County in a rural area of Alabama. The clinic in the study was a privately owned family medicine practice operated by a single physician, nurse practitioner, and 2 registered nurses, caring for approximately 50 patients daily. Clinic duties included providing disease-focused pharmaceutical care for diabetes, hypertension, dyslipidemia, and tobacco cessation, as well as maintaining a medication-assistance program for low-income individuals. The clinic was an experiential education site for pharmacy students and residents, medical students and residents, and nurse practitioner students.

On the first day of each 5-week education experience, the preceptor of the rural medicine ambulatory care APPE met with assigned student pharmacists for approximately 1½ hours. During this orientation session, various aspects of the APPE schedule were addressed, including the inclusion of 3 public health discussions. The students were assigned the task of investigating “public health” and identifying an accurate definition using any available resources over the following 2 to 3 days. After that time, the group reconvened for the first public health discussion.

The first discussion period, which lasted approximately 1 hour, began with the preceptor asking, based on your investigation, what is public health?” As the students described what they had learned, the preceptor transcribed students’ concepts about public health onto a large white board. During this hour, the preceptor helped the students identify several general core concepts about public health which were derived from a number of reputable public health resources (Table 1).⁶⁻⁸ These were addressed in no specific order, but rather mentioned as the conversation lent itself to each idea.

At the conclusion of this 1-hour session, students were assigned the task of identifying 2 peer-reviewed journal articles related to public health that interested them. One article was to discuss a non-medically related aspect of public health, while the second article was to cover a medically-related public health focus. Two additional hour-long appointments were scheduled for later in the APPE to discuss these articles. Students were required to e-mail their selected articles 3 days before the discussion dates so that sufficient time was provided for everyone to review the literature. Students and preceptors were expected to read all selected articles and participate in each discussion. Each student presented 1 article during each of the following 2 hour-long public health discussion sessions. During the second discussion period, articles not

Table 1. Core Concepts Covered in Initial Discussion About Public Health in an Advanced Pharmacy Practice Experience

General Core Concepts About Public Health	Frequency Addressed During Initial Discussion, %	Average Time (Minutes) Allocated to Each Concept
Addresses population-level rather than patient-level issues.	100	7
Primarily focuses on prevention rather than treatment.	100	6
The breadth and overlapping aspects of public health, which include: epidemiology, biostatistics, and health services. Subcategories may include: environmental, social, behavioral, and occupational health.	100	23
Functions of local, state, and national public health services including macro- versus micro-level activities.	83	12
Culture, as a component of social health, which must be considered to develop an effective public health initiative.	91	12

directly related to medical aspects of public health were presented; articles pertaining to medical aspects of public health were discussed during the third discussion period (Table 2).

After students described the selected articles, they were asked to explain how the articles related to public health. Students were encouraged to form their own opinions concerning the public health initiative, standard, or policy. They explained their thought process, identified positive and negative attributes to the public health concept at hand, and considered alterations that could provide new direction or improvements on the current status. Towards the conclusion of the third discussion session, students were asked to brainstorm on activities they could incorporate into their postgraduate lives to impact their local, state, or national communities' health. Students were encouraged to think beyond the walls of a pharmacy and consider both realistic initiatives as well as larger endeavors.

Upon completing the public health discussion series, the students were expected to complete accurately the following: explain the differences between public health and medical care; categorize various initiatives as population-based versus individual-focused; recognize the importance of non-medically related, as well as medically focused initiatives; describe how public health initiatives affect aspects of daily life; illustrate how culture can change the effectiveness of a public health initiative; cri-

tique current public health initiatives in terms of benefits and limitations; and propose a public health initiative in which to participate following graduation. Evaluation of this discussion series initiative received IRB approval through exempt procedures.

EVAUATION AND ASSESSMENT

During orientation on the first day of the APPE, students were provided a 3 by 5 index card and 5 minutes to handwrite 1 or 2 sentences defining in their own words the term "public health" without using any resources. Prior to the initiation of the APPE students received no indication that they would be expected to define or specifically investigate public health. Then each student was asked to read aloud their definition. By spontaneously defining "public health," students' baseline knowledge of the field was ascertained. Students also dated and wrote their names on the index cards for matching purposes on the final day of the APPE. The index cards were retained by the preceptor until that time. At the conclusion of the 5-week APPE, the index cards were returned to the students and they were asked to redefine "public health" in their own words on the back of the card.

Most students included the terms "wellbeing" and/or "health care" in their initial definition of public health. Others believed it impacted only rural residents, low-income individuals, or underprivileged patients. A few

Table 2. Public Health Discussion Topics Introduced in Advanced Pharmacy Practice Experiences (n = 20)

Discussion #2: Public Health Topics Not Directly Related to Medical Care	Discussion #3: Public Health Topics Directly Related to Medical Care
<ul style="list-style-type: none"> ● Adolescent pregnancy rate ● Cash for clunkers ● Catfish farm procedures ● Community gardens and property crimes ● Community planning ● Graduated driver licensing ● Fixing potholes ● Food recalls ● Health benefits of sidewalks ● Healthy school lunches ● Highway speed limit increases and long-term effects ● Hurricane disaster preparedness ● Monitoring water quality ● Motorcycle helmet laws ● Motor vehicle booster seat regulations and occupant injury ● Renewal of federal transportation bill ● Restaurant health codes ● Text-messaging while driving ● Transportation security administration regulations ● Violence caused by violent video gaming 	<ul style="list-style-type: none"> ● Acetaminophen public health warnings ● Adolescents overweight and forecasted coronary heart disease ● Alcohol and public health ● Benefits of taking home prescriptions when admitted to hospitals ● Employer as health coach ● Employer-forced mandatory H1N1 vaccination ● Free prescription drug samples' impact ● Home-brewed illegal drugs use ● Human papilloma virus vaccinations mandate ● Human papilloma virus versus cervical cancer screening ● Federal plan to lower health care costs ● Methadone and buprenorphine prescribing in the prison system ● New label changes for nonprescription pain medications ● Physical activity recommendations for adults ● Public's awareness of methacillin-resistant <i>Staphylococcus aureus</i> ● Randomized trials and beyond ● Smoking in public places legislative ban ● SPF sunscreen and ultraviolet radiation ● Tobacco industry consumer research on smokeless tobacco users and product development ● Vitamin D and cancer prevention

students simply wrote “I don’t know.” Overall, their initial definitions were limited in either size or scope of services. The post-discussion session definitions of public health were often more broad in scope, focused on prevention, and noted to impact a population, which could be a single community or the entire globe, rather than one individual. When encouraged to develop public health concepts for initiation following graduation, many students mentioned implementation of immunization services or initiating disease state classes held at their community retail pharmacy. Others considered running for public office or joining the state department of public health.

As part of the 5-week APPE included in the course syllabus and discussed during orientation, students were asked to draft a 2-page paper reflecting on the APPE experience as a whole. They were in no way directed to comment specifically on the public health discussion series, although many did. Within these pages, several common themes about public health recurred among the students’ reflections. Often they mentioned their initial lack of knowledge, improved knowledge base, and future intentions to incorporate some aspect of public health into their careers following graduation. One student wrote:

I have always heard the term ‘public health,’ but never really knew what it was. . . it is not looking at patients individually, but looking at the community as ‘the patient.’ By doing this, you find problems throughout the community and [can] attempt to find ways to alleviate the problems. . . After discussing the articles, she [the preceptor] challenged us to brainstorm ways to fix the presented problems. While some of my ideas were farfetched, some were things that really could be accomplished and that excited me.

Additionally, students often mentioned how they never considered the importance of culture when designing initiatives or considered non-medically related activities to relate also to public health. Students often noted amazement that public health impacts most aspects of daily living.

By comparing the pre- and post- definitions and reviewing students’ unsolicited comments in their APPE reflections, much was learned about their achievement of the expected learning outcome objectives. The improvement in definitions showed that most students gained knowledge about public health and better grasped the differences between medical care and public health, including differences between population-based and individually focused initiatives by completing the discussion series. By correctly identifying articles to discuss, the students demonstrated the ability to recognize the differences between non-medically and medically related initiatives. Their perceived importance of these initiatives, as

well as their application of how culture and public health impact many aspects of life, became evident through reading their unsolicited comments. When discussing the journal articles, students were able to critically evaluate the public health initiatives and frequently had considered recommendations for improvement. Last, after completing the discussion series, students demonstrated interest in participating in public health and provided methods to become involved following graduation. Based on this information, it appears that students effectively achieved the learning outcome objectives.

A checklist was developed to verify coverage of and document duration of time spent on each of the general core concepts about public health during the initial discussion. The checklist was completed retrospectively immediately after each initial student-centered discussion. During this hour-long meeting, all core concepts were addressed 83% of the time. At least 4 of the 5 concepts were addressed 100% of the time. The most commonly skipped topics related to the functions of local, state, and national public health services (83% completion rate) followed by the importance of culture (91% completion rate). Table 1 also summarizes the average amount of time spent discussing each core concept.

The initial and second discussion periods consistently utilized the allocated 60 minutes. However, the third discussion session usually did not have sufficient time. This was likely due to addressing the medically related journal articles in addition to students’ considerations for integrating public health into their careers following graduation. The discussion series could benefit from adding a fourth discussion session devoted solely to student/pharmacist engagement in public health. The students may further benefit from developing a list of possibilities between the third and fourth discussions outside of class. This would provide time for students to brainstorm individually before openly discussing in a group. Due to the minimal time allocated to the discussion series, and the self-reported increase in student interest, this appears to have been an effective and reasonable method of introducing pharmacy students to the concept of public health.

DISCUSSION

Establishing a PharmD/MPH dual degree, developing a required public health course, or APPE devoted solely to public health would likely be more effective options to enhance pharmacy students’ knowledge about public health. These methods, however, are not always feasible. Incorporating this student-centered active-learning approach within one APPE was an easier way to impact pharmacy student knowledge about and attitudes towards public health. Comparing the pre- and post-discussion

series definitions of public health with the voluntary comments made in student reflections demonstrated that minimal time devoted during an APPE can substantially impact a student pharmacist's knowledge base and interest in public health.

Furthermore, progression through this active-learning process helped achieve the ACPE competence measure concerning public health.² Specifically, each of the 5 general core concepts used to direct student learning during the first discussion session directly supported 1 or more of the Center for the Advancement of Pharmaceutical Education (CAPE) listed public health terminal educational outcomes.⁹ Finally, the articles selected and presented during the second and third discussion periods (Table 2) helped demonstrate specific examples of health policy and effective quality disease prevention services to students.

While participation in the discussion series did not offer direct hands-on public health activities, it provided a framework for identifying public health initiatives, understanding the importance of applying population-specific data when designing, implementing, and assessing such initiatives, and promoted the value to society of participating in public health activities. Students were therefore more likely to correlate various aspects of pharmaceutical care as public health initiatives and, as noted in several of the students' reflective comments, decided to participate in various public health initiatives in the future. If every student pharmacist participated in a similar discussion group during one APPE, not only would this help align pharmacy school curriculum with ACPE and CAPE measures, but the overall profession's interest and activity in public health initiatives might also increase.

An assessment comparing post-graduation public health activities of discussion series participants to non-participants would be an interesting element to evaluate further this active-learning technique. If implemented on a larger scale across several APPEs, this aspect of assessment may be expanded. Integration into all APPEs may not be feasible due to the inability to coordinate schedules; however, it is possible to add these discussion series into several APPEs. The Harrison School of Pharmacy houses APPE students in 6 different regions across Alabama. Point-to-point and multi-point meetings occur virtually via Polycom (Polycom Inc., Pleasanton, CA) video conferencing systems for teaching responsibilities and committee engagements. This technology could be used to connect sites across the state simultaneously to facilitate discussion among multiple student groups at one time. It would not be necessary to limit the discussion series only to rural or ambulatory care APPEs, as public

health initiatives occur on all levels of the health system. It would be important, however, to gain a commitment from each preceptor for their students to attend every session within the APPE block.

An additional area for future consideration may be broadening the discussion series to include students from other disciplines. As patients benefit from multidisciplinary practice sites, so may students benefit from an interdisciplinary discussion forum. Many of the APPE regions across Alabama are connected with schools of other health care disciplines, residency programs, and hospitals. Therefore, it would be reasonable to encourage students and residents from other health care arenas to participate, further enhancing the discussion series as a whole.

SUMMARY

Public health is significant to the maintenance of general health in America. Although identified as a required component in the education of pharmacy students, few colleges and schools currently incorporate extensive training in this area.¹ Addition of only 3 public health discussions during a single APPE positively impacted knowledge and attitudes of fourth-year student pharmacists. Following completion of the discussion series, students had a better idea of the breadth of public health and reported interest in pursuing public health activities following graduation.

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