Undergraduate Student Perceptions of Pharmacy Entrustable Professional Activities

Kristyn Williamson, PharmD, BCACP[1]; Anna Milone, PharmD, BCPS[1]; Stuart T. Haines, PharmD, FCCP, FASHP, FAPhA[2]; Amy Pittenger, PharmD, MS, PhD[1]
[1] University of Minnesota College of Pharmacy
[2] University of Mississippi School of Pharmacy

Abstract
Introduction: With declining applicant numbers, pharmacy education seeks to effectively communicate the value of the pharmacist on the health care team to attract learners to pharmacy. The American Association of Colleges of Pharmacy (AACP) published entrustable professional activities (EPAs) to outline the expected roles and responsibilities of new pharmacy graduates. However, it is unknown whether these statements resonate with the general public and could potentially attract learners to pharmacy.
Description of Innovation: Students in PHAR1001: Orientation to Pharmacy, and online undergraduate course were surveyed using EPA statements. The survey was administered to all students before and after the completion of an undergraduate overview of pharmacy course. Participants were to respond "yes" or "no" to statements assessing the relevance of each EPA to pharmacy practice and the expectation of the activity to occur in all pharmacy practice settings.
Findings: A total of 283 students participated in the pre-course survey, with 258 students completing the post-course survey. Pre-course, 11 of the 15 EPA statements had a high level of agreement (>80%) for relevance to practice. The high level of agreement continued in the post-course survey with five EPA statements exhibiting a significant increase in both the relevance and expectation of the role in pharmacy practice.
Conclusions: Most students, regardless of prior knowledge of pharmacy, found the EPAs illustrative of pharmacist activities even prior to completing the pharmacy course. Entrustable professional activity statements may be a reasonable means to communicate the value of the pharmacist to the general public.

Keywords: pharmacy education, online education, entrustable professional activities, pharmacy recruitment

INTRODUCTION

Colleges and Schools of Pharmacy are working to find methods to communicate the critical importance of a pharmacist on the health care team and to attract learners to the profession. This has been a significant focus of most pharmacy programs in recent years due to declining applicant and enrollment numbers across the country. One way the pharmacy education community has addressed this goal is by clearly articulating the professional activities pharmacists are entrusted to perform. In 2017, the American Association of Colleges of Pharmacy (AACP) published a list of entrustable professional activities (EPAs) that describe the essential responsibilities and tasks all pharmacy graduates should be able to perform at the time of graduation.[1]

Recent investigations regarding the perceptions of the EPA statements among current pharmacy students[2] and pharmacy preceptors[3] suggest they accurately depict professional expectations in practice. However, it is unknown if patients or the general lay public believe these statements reflect their expectations or understanding about what pharmacists do. Furthermore, the literature has not yet examined the perceptions of undergraduate students and their expectations or knowledge of the role of the pharmacist on the healthcare team.

To test the effectiveness of the AACP EPA statements in communicating the role of pharmacy to non-pharmacists, this project enrolled undergraduate students taking an elective course about pharmacy to explore if the EPA statements resonated with their current understanding and expectations of a pharmacist. Additionally, this project sought to understand whether the perceptions of undergraduates regarding the role of the pharmacist differed between those who are interested in pursuing a career in healthcare or have had previous exposure to pharmacy and those who have not.

Corresponding Author:
Kristyn Williamson, PharmD, BCACP
University of Minnesota College of Pharmacy
308 Harvard Street SE, Minneapolis, MN 55455
leex3232@umn.edu

METHODS

Study Setting

Participants in this study included students enrolled in PHAR 1001: Orientation to Pharmacy, a two-credit elective asynchronous online course offered to undergraduate students at the University of Minnesota. The goal of the course is to provide students with an overview of the profession of pharmacy, including the pharmaceutical care practice model, various pharmacy practice settings, pharmacy education, and current opportunities and challenges within the profession. Course objectives include discussing the role of the pharmacist, describing pharmacy career opportunities and settings where pharmacists practice, listing issues in the healthcare system

DOI: https://doi.org/10.24926/iip.v14i4.5076

important to pharmacists, describing pharmacy education, and discussing the pharmacist's impact on patient care. Details about the course structure and instructional methods have been previously reported.[4] This study was approved by the Institutional Review Board (IRB) of the University of Minnesota.

Participants

The study was conducted in the Fall 2018 and Spring 2019 semesters. Participants were surveyed prior to and immediately following the completion of the course. Students less than 18 years old were not eligible to participate.

Materials

A survey was created based on the fifteen Core Entrustable Professional Activities for New Pharmacy Graduates statements, as well as four EPA statements from other health professional disciplines to serve as control statements.[1] For each statement, each participant was asked to respond "yes" or "no" to two prompts: 1) "A pharmacist should be entrusted to ____" and 2) "Should pharmacists be expected to perform this activity in most practice settings? (e.g. community, hospital, student health clinic, etc.)?". The four EPA statements from other health professions, included statements for medical school graduates (2)[5], pediatric medical residents (1)[6], and psychiatric medical residents (1).[7] Students were also asked their age, the reason for enrolling in the course, and level of knowledge of pharmacy. The full survey is available upon request.

Procedure

The survey was administered using Qualtrics®[XM] (Qualtrics, LLC, Provo, UT) via an electronic link embedded in the list of required course materials and in reminder announcements, both within the course's online learning management system. Participants were required to complete the survey prior to and immediately following the conclusion of the course. Survey responses were collected anonymously.

Primary data analysis compared pre and post student responses by performing a Chi-square test for each EPA statement prompt. A p-value of <0.05 was considered a significant difference between the pre and post responses.

Secondary analysis reviewed student reasons for enrolling in the course. For the purposes of this analysis, reasons for enrolling were classified as either "interested in a health professional career" or "not interested in a health professional career". Students in the first classification answered either "interested in potentially applying to the College of Pharmacy" or "interested in a health professional career" as their reason for enrolling in the course. Students classified as "not interested in a health professional career" answered either "needed a 2 credit flexible elective" or "other" as their reason for enrollment. Secondary analysis also compared student responses based on their current knowledge of or experiences related to pharmacy. Students who answered "currently or have worked as a pharmacy technician", "have a close friend or family who are pharmacist(s)" or "interacted with the pharmacist as part of my care team" were categorized as having previous pharmacy knowledge. Chi-square analysis was utilized to compare the pre and post responses for these two subsets of students.

FINDINGS

A total of 229 students who participated in course offerings during the 2018-2019 academic year completed the pre-course survey and 233 students completed the post-course survey, with a response rate of 95% and 97% respectively. The majority (91%) of the students completing the pre-course survey were between 18 and 23 years old. When asked the reason for enrolling in the course, most had an interest in seeking a career as a health professional (69%), while the remaining simply needed a 2-credit flexible online elective. Prior to taking the course, most stated they had little to no knowledge of pharmacy (57%). The remaining had a close family member or friend as a pharmacist (22%), had interacted with a pharmacist as part of their health care team (18%), or had previous experience working as a pharmacy technician (3%).

Pharmacy EPA Statements

Survey responses were compared to assess changes student perspectives regarding relevance and expectations for each of the pharmacy EPA statements (Table 1). After taking the course, students were significantly more likely to agree that EPA statements 1, 3, 4, and 5 (Patient Care Provider Domain) and 15 (Practice Manager Domain) were relevant to pharmacy practice and that pharmacists should be expected to perform these activities in most practice settings. Moreover, the relevance to pharmacy practice of EPA statements 7, 10 (Population Health Promoter Domain), 12 (Information Master Domain), and 13 (Practice Manager Domain) increased significantly after completion of the course. Finally, significantly more participants believed EPA statement 11 ("Information Master" domain) was an expectation in most pharmacy practice settings after the course.

In the secondary analysis, there were no significant differences in either relevance or expectations among students based on prior knowledge or exposure to pharmacy. However, there were a few notable differences among students interested in pursuing a career in healthcare compared to those who were not. Students with an interest in a healthcare career were significantly more likely to respond favorably toward EPAs 2 (Patient Care Provider Domain), 8, and 10 (Population Health Promoter Domain) with regard to their relevance to pharmacy practice. Students interested in a career in the health professions were more likely to indicate that EPA 4 (Patient Care Provider Domain) was relevant to pharmacy practice and an expectation in multiple practice settings.

DOI: https://doi.org/10.24926/iip.v14i4.5076

Control EPA Statements

All four control statements exhibited significant increases in positive responses in regards to relevancy to pharmacy practice. However, only EPA control statements 17 (Medical School Graduates) and 19 (Psychiatric Medical Residents) noted a significant increase in the percentage who indicated it was an expectation for pharmacists in multiple practice settings. No significant differences were noted in any of the control statements for either relevancy or expectations.

DISCUSSION

The majority of the pharmacy EPA statements, as well as all four control EPA statements from other health professions, displayed significance for being relevant to pharmacy practice. Approximately half of all the EPA statements displayed significance as a role pharmacists are expected to hold. This suggests that participants accept and even expect the roles and responsibilities of the pharmacist as described in the AACP EPA statements. No significant difference was noted in response between those who have previous/current experience in pharmacy and those who have little to none. This suggests even those who have little or no knowledge of pharmacy are favorably inclined toward accepting the EPA statements as reasonable expectations for pharmacists. Those who had an interest pursuing a career in healthcare were more likely to respond favorably to whether or not some EPA statements, particularly in the Patient Care Provider and Population Health Promoter domains, were relevant in different pharmacy practice settings.

Interestingly, the findings suggest that the EPA statements from other health professions may be interpreted as tasks that pharmacists could reasonably be expected to perform. This suggests that undergraduate students, and possibly the general public, expects the pharmacist to perform beyond the AACP EPA statements. Using the example of EPA statements selected from medicine, pharmacists certainly must be able to recognize when a patient requires urgent or emergent care and also must have rudimentary diagnostic skills to differentiate between illnesses that can be managed with self-care and those requiring more evaluation.

Additionally, the majority of significant findings between the pre- and post-course responses were in the "Patient Care Provider" domain. Together, this suggests pharmacists should continue to advocate for the progression of the profession and an expansion in the scope of practice, particularly in regards to pharmacists providing direct patient care.

Furthermore, the agreement noted in the results may encourage the profession to use these EPA statements as a communication tool. Pharmacists could use EPAs to better convey the role of the pharmacist as an integral member of the healthcare team when discussing the role of the pharmacist to non-pharmacists.

Limitations

While analysis revealed some significant differences, the results of this project may not be generalizable to the broader population given the lack of variety in age and level of education of the study participants. The course also serves as an unofficial recruitment tool for the college of pharmacy, so it is possible students who elected to take this course were more favorably inclined toward pharmacists performing the EPAs than the general public might be.

There is also evolution to the EPA statements within the pharmacy education community. In 2021, the AACP Academic Affairs committee reviewed and revised the current EPA statements, provided guidance on how they should be used by pharmacy stakeholders, and made recommendations on how both should be incorporated into the proposed Accreditation Council for Pharmacy Education (ACPE) standards and guidelines. The primary changes include reducing the levels of entrustability to three - Level 1 Observation only allowed, Level 2 Constant Supervision Required and Level 3 Intermittent Guidance Provided. In addition, the CAPE outcomes were merged with the EPA statements, resulting in fewer CAPE domains and a reduction in core EPAs from 15 to 10. *The 2022-2023 AACP Academic Affairs committee* reviewed and revised the CAPE Educational Outcomes and EPAs to ensure that they are relevant and consistent with emerging scientific and clinical developments and practitioner roles. The primary changes included reducing the domains from 4 to 3, subdomains from 15 to 12, the number of core EPAs from 15 to 13, and replacing the numerical levels the levels of entrustability with description that focuses on supervision versus a numeric level.[8] While these are important changes, they do not necessarily change the interpretation of this study, which explored statements that resonated with non-pharmacist participants' current understanding and expectations of a pharmacist.[8]

CONCLUSIONS

This study revealed most students, even those who had little or no knowledge of pharmacy practice, believed the AACP Core Entrustable Professional Activities for New Pharmacy Graduates statements are representative of pharmacist practice activities, even at baseline. Moreover, their willingness to agree that these activities are relevant and expectations increased after completing this course. The study responses support the use of EPAs as a means of communicating to and educating non-pharmacists about the valuable important role pharmacists play on the healthcare team.

Conflicts of Interest: None

Funding/support: None

Disclaimer: The statements, opinions, and data contained in all publications are those of the authors.

DOI: https://doi.org/10.24926/iip.v14i4.5076

REFERENCES

1. Haines ST, Pittenger AL, Stolte SK, et al. Core entrustable professional activities for new pharmacy graduates. *Am J Pharm Educ*. 2017;81(1):S2-S2. doi:10.5688/ajpe811S2
2. Haines ST, Pittenger AL, Gleason BL, Medina MS, Neely S. Validation of the entrustable professional activities for new pharmacy graduates. *Am J Health Syst Pharm*. 2018;75(23):1922-1929. doi:10.2146/ajhp170815
3. Pittenger AL, Gleason BL, Haines ST, Neely S, Medina MS. Pharmacy student perceptions of the entrustable professional activities. *Am J Pharm Educ*. 2019;83(9):1974-1982. doi:10.5688/ajpe7274
4. Pittenger AL, Lounsbery JL. Student-generated questions to assess learning in an online orientation to pharmacy course. *Am J Pharm Educ*. 2011;75(5):94-94. doi:10.5688/ajpe75594
5. Association of American Medical Colleges. Core entrustable professional activities for entering residency. (2014) https://www.aamc.org/what-we-do/mission-areas/medical-education/cbme/core-epas. Accessed April 17, 2023.
6. American Board of Pediatrics. Entrustable professional activities for general pediatrics. (2013) https://www.abp.org/entrustable-professional-activities-epas. Accessed October 19, 2023.
7. Young JQ, Hasser C, Hung EK, et al. Developing End-of-Training Entrustable Professional Activities for Psychiatry: Results and Methodological Lessons. *Acad Med*. 2018;93(7):1048-1054. doi:10.1097/ACM.0000000000002058
8. Medina M, Farland M, Malcom D, et al.. Report of the 2022-2023 Academic Affairs Standing Committee: Revising the Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes and Entrustable Professional Activities. https://www.aacp.org/sites/default/files/2023-09/coepa-document-final.pdf. Accessed October 19, 2023.

DOI: https://doi.org/10.24926/iip.v14i4.5076

Table 1. Comparison of affirmative responses in Pre-Course and Post-Course surveys to each EPA statement

Pharmacy EPA Statements	Relevance			Expectation		
	Pre (%)	Post (%)	P-Value	Pre (%)	Post (%)	P-Value
Patient Care Provider Domain						
1. Collect information to identify a patient's medication-related problems and health-related needs.	88.6	94	0.02*	79.6	89.3	0.00*
2. Analyze information to determine the effects of medication therapy, identify medication-related problems, and prioritize health-related needs.	96.4	96.1	0.86	91.5	91.8	0.91
3. Establish patient-centered goals and create a care plan for a patient in collaboration with the patient, caregiver(s), and other health professionals that is evidence-based and cost-effective.	84.3	96.6	0.00*	81.7	93.6	0.00*
4. Implement a care plan in collaboration with the patient, caregivers, and other health professionals.	87.6	95.3	0.00*	82.3	93.1	0.00*
5. Follow-up and monitor a care plan.	73.4	92.8	0.00*	66.4	88.9	0.00*
Interprofessional Team Member Domain						
6. Collaborate as a member of an interprofessional team.	95.6	97	0.41	95.6	95.7	0.93
Population Health Promoter Domain						
7. Identify patients at risk for prevalent diseases in a population.	67.7	77.5	0.02*	59.3	67.8	0.06
8. Minimize adverse drug events and medication errors.	98.3	97.4	0.54	97.8	97.4	0.78
9. Maximize the appropriate use of medications in a population.	93.9	94.1	0.94	92.2	90.3	0.47
10. Ensure that patients have been immunized against vaccine preventable diseases.	79	86.3	0.04*	71.4	78.5	0.08
Information Master Domain						
11. Educate patients and professional colleagues regarding the appropriate use of medications.	98.7	98.3	0.73	93.9	97.9	0.03*
12. Use evidence-based information to advance patient care	93	98.3	0.01*	89	96.2	0.00*

DOI: https://doi.org/10.24926/iip.v14i4.5076

Practice Manager Domain						
13. Oversee the pharmacy operations for an assigned work shift.	91.6	96.6	0.02*	87.7	88.8	0.70
14. Fulfill a medication order.	94.3	94.1	0.91	93.4	95.3	0.38
15. Create a written plan for continuous professional development.	76.2	87.1	0.00*	70	81.1	0.01*
Control EPA Statements						
16. Recognize a patient requiring urgent or emergent care and initiate evaluation and management. (Medical School Graduates)	67.4	85.5	0.00*	65.6	73.5	0.07
17. Prioritize a differential diagnosis following a clinical encounter. (Medical School Graduates)	62.8	78	0.00*	54.5	71.6	0.00*
18. Provide consultation to other health care providers caring for children. (Pediatric Medical Residents)	73.9	83	0.02*	67.8	75.7	0.06
19. Provide cognitive behavioral therapy. (Psychiatric Medical Residents)	34.9	48.5	0.00*	28.8	43	0.00*

*Denotes statistical significance at <0.05

DOI: https://doi.org/10.24926/iip.v14i4.5076