

Introduction

Pharmacists in the United States work in over 28 different practice settings.¹ In many of these settings, pharmacists work as a part of interprofessional health care teams and carry out a variety of roles. Negative perceptions or lack of understanding about health care team member roles can impact the functionality of the team and stunt innovations in interprofessional practice and education, as well as practice change initiatives.^{2,3}

The VCU Summer Academic Enrichment Program (SAEP) is a 6-week interprofessional program for students actively pursuing admission into Pharmacy, Medicine, Dentistry, and Physical Therapy professional programs. Throughout SAEP, students are immersed in professional level coursework and engage in a variety of Interprofessional Education (IPE) experiences (Fig 1).

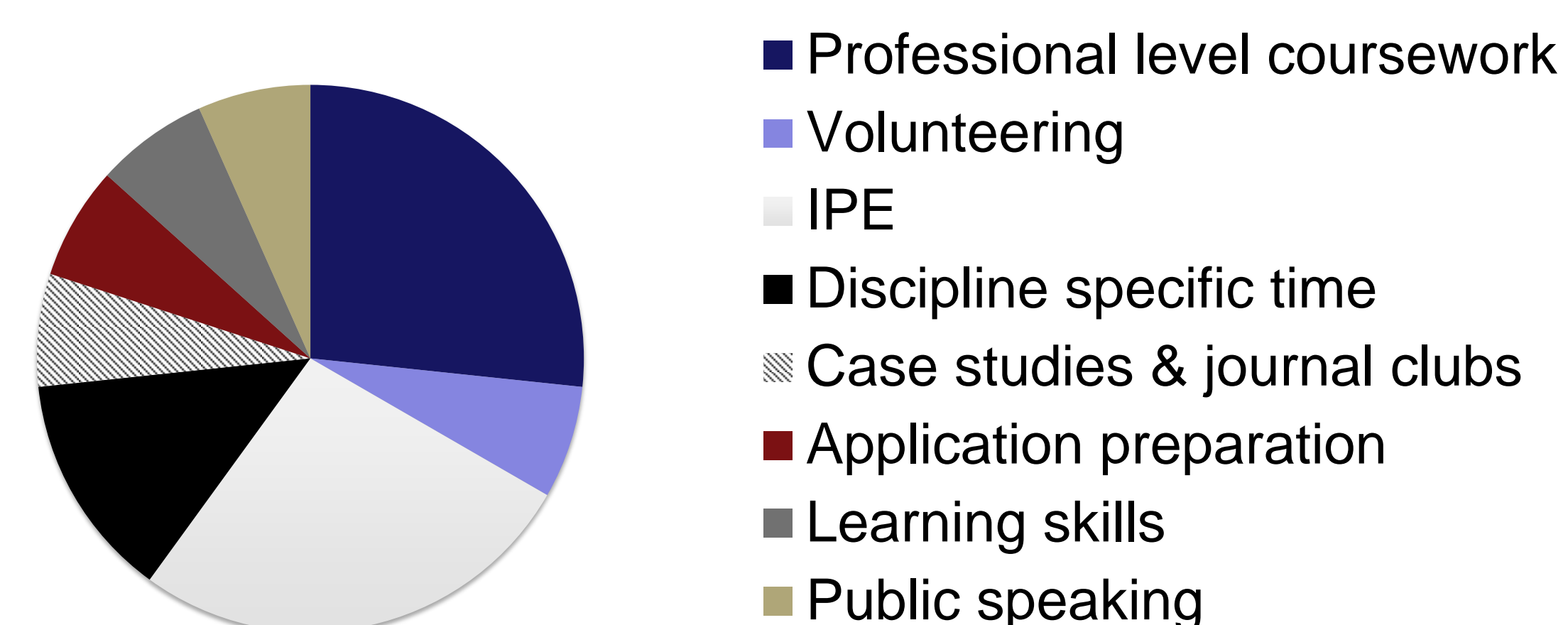


Figure 1. Estimated breakdown of VCU SAEP experiences

By studying pre-health students, perception of pharmacists' roles on the health care team can be characterized in a population that will have a direct impact on future functionality of the interprofessional health care team. The study aimed to answer the following questions:

- How do pre-health students perceive the role of pharmacists on the health care team?
- How do pre-health students' perceptions of pharmacists on the health care team evolve after participating in the Summer Academic Enrichment Program at VCU?

Methods

The study utilized a concurrent embedded mixed-methods design to explore the perceptions of pharmacists by pre-health students participating in the VCU SAEP. An optional survey, including open-ended and Likert Scale questions, was emailed to students before the program began and at the conclusion of the program (Table 1). A total of 34 pre-health students completed the pre- program survey and 12 students responded to the post- program survey. Quantitative data from Likert Scale questions were analyzed using SPSS, and analysis of variance (ANOVA) was conducted to investigate student perceptions of the role of pharmacists with health profession of interest, health care experience, and pharmacy experience as independent variables. Pre- and post- program survey responses were compared using a paired *t*-test.

Table 1. Open-Ended Questions within the Pre- and Post- Program Survey

Open-Ended Questions
What does a pharmacist do?
Where do pharmacists work?
What is the role of the pharmacist on the health care team?
What is the difference between a pharmacist and a pharmacy technician?

Qualitative data from open-ended survey questions were analyzed through a coding structure developed using an in-vivo coding process, devised and agreed upon by all researchers through a line-by-line analysis. Using Atlas.ti Qualitative Data Analysis & Research Software, code frequencies were generated and compared before and after the program, and with health profession concentration.

Results

The in-vivo coding process of the open-ended questions allowed for exploration of emerging themes regarding perception of pharmacists' roles and responsibilities (Table 2, Table 3) and how these perceptions changed after participation in the VCU SAEP (Table 4).

Table 2. Emerging Theme 1: Pre-Health Students' Perception of the Role of Pharmacists on the Health Care Team

Theme	Findings	Quotes
Limited understanding of the roles of pharmacists on the health care team	<ul style="list-style-type: none"> • Thin code frequencies • Few references to other members of the team • Vague responses 	<p>"...depending on their specialization in the field of pharmacy, they work alongside the doctor to help the patient."</p> <p>"They make sure that the patients are well."</p>

Table 3. Emerging Theme 2: Pre-Health Students' Perception of the Responsibilities of Pharmacists

Theme	Findings	Quotes
Focus on dispensing as the pharmacist's responsibility	<ul style="list-style-type: none"> • Dispensing was the most frequent code in pre- program survey. • "Retail" v. "community" wording 	<p>"Pharmacists fill prescriptions for patients".</p> <p>"...manages the organizing and dispensing of various medications prescribed by physicians."</p>

Table 4. Emerging Theme 3: Impact of VCU SAEP on Pre-Health Students' Perception of Pharmacists of the Health Care Team

Theme	Findings	Quotes
Recognition of pharmacists' cognitive services	<ul style="list-style-type: none"> • Responsibility: Patient counseling • Role: Provide drug information and knowledge 	<p>"Provides patient education concerning medications and pharmacotherapy, assists doctors in assessing patient medication therapy."</p>

Quantitative survey items indicated that pre-health students initially agreed or strongly agreed with the statement "pharmacists are an important part of the health care team" ($M = 6.76$, $SD = 0.5$). There was a significant difference in mean response before and after the program to the statement that pharmacists are the primary resource for comprehensive medication reviews ($t(12) = -2.55$, $p < .05$), that pharmacists provide point-of-care testing ($t(12) = -3.05$, $p < .05$), and that there are situations in which pharmacists can change a patient's medication regimen [$t(12) = -3.39$, $p < 0.05$] (Figure 2). Mean responses to additional Likert Scale question were more positive after the program, but the difference in mean responses were not statistically significant. There was no significant difference between the pre-pharmacy students and students in other concentrations before the program.

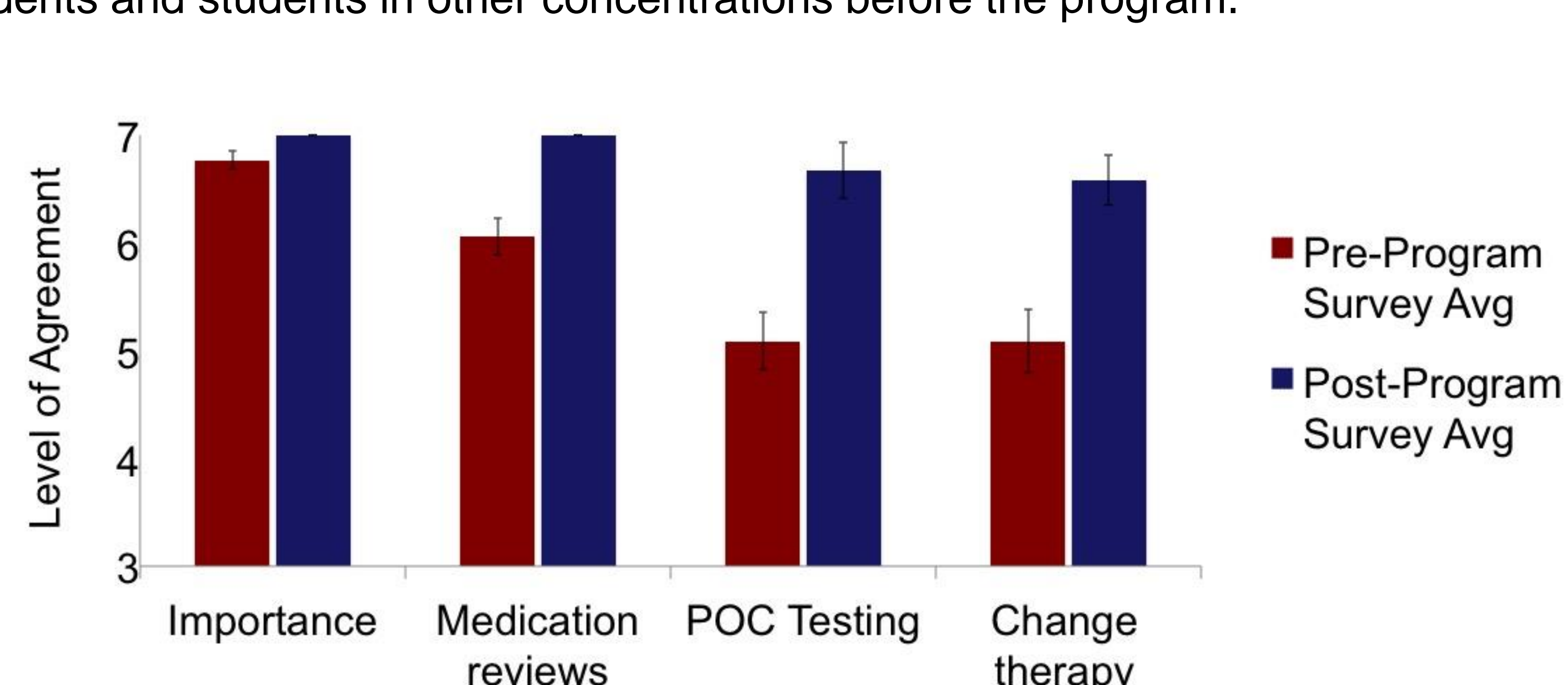


Figure 2. Mean response to selected Likert Scale survey questions before and after SAEP. [1=Strongly disagree, 2=Disagree, 3=Somewhat disagree, 4=No opinion/not sure, 5=Somewhat agree, 6=Agree, 7=Strongly agree.]

Conclusion

Before the VCU Summer Academic Enrichment Program, quantitative and qualitative results indicate that students had an underdeveloped understanding of the pharmacist's roles and responsibilities, considered their role to be less collaborative, and their professional responsibility to mainly involve dispensing. However, their value of pharmacists on the health care team endured.

Though attrition rate was high in the post- program survey response, post- program responses to the open-ended questions positioned pharmacists in more cognitive roles, such as providing drug information to the health care team and education to patients.

"Pharmacist play a very important role in a health care team because the majority of the time the patient will be on some kind of medication."

The finding that pre-health students in VCU SAEP had an initial underdeveloped understanding of pharmacists on the health care team has implications for both interprofessional education and practice.

Implications for interprofessional education:

- Because pre-pharmacy students perceptions did not statistically differ from other concentrations, this suggests a need for deeper career exploration before selection of a profession or application to a professional program.
- Interprofessional education, or at least career exploration, may be beneficial before students enroll in health professional school or select a career path.

Implications for interprofessional practice:

- Understanding one's own roles, responsibilities, and expertise, and those of other types of health professionals is a key domain in achieving improved patient outcomes through interprofessional practice.⁴

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