

Background

- The evolution of the pharmacy profession has prompted the American College of Clinical Pharmacy (ACCP) and the American Society of Health-System Pharmacists (ASHP) to recommend that pharmacists providing direct patient care be residency trained.^{1,2}
- ACPE Standards 2016 state that preparation for this postgraduate training (PGT) should begin in colleges of pharmacy.³
- A likely result of this advocacy for student exposure to PGT has been the development of curricular and co-curricular programs focused on PGT within colleges of pharmacy.
- Due to the recent enhanced promotion of PGT opportunities to pharmacy students, there is a growing interest in the effect this promotion is having on student decisions to pursue such PGT.
- While residents, fellows, and faculty members have been surveyed to determine the factors they believed were affecting pharmacy students to pursue residency and fellowship training, at this point current pharmacy students have not been surveyed.^{4,5}

Purpose

The purpose of this study was to determine the perceived motivating factors and barriers to the pursuit of PGT experiences by pharmacy students.

Objectives

Primary Outcome: Student Likert scale response on selected factors and barriers to considering PGT in 5 domains divided into groups based on intention to pursue PGT (planning to, undecided, or not planning to.)

Methods

- Investigational review board-approved, multicenter, survey of pharmacy students in their final semesters of the didactic curriculum at 13 accredited colleges or schools of pharmacy throughout the United States in the spring semester of 2015.
- Survey questions were modified from previously published surveys of residents, fellows, and faculty members. The survey tool included questions regarding student demographics, plans for pursuing PGT, and potential motivating factors and barriers to pursuing PGT, which were evaluated using a 5-point Likert scale.^{4,5}
- Eleven colleges provided paper surveys while 2 colleges provided online survey forms (Qualtrics).
- Survey responses were transferred into an Excel spreadsheet (Microsoft Corporation, Redmond, WA) and submitted to a central institution (University of Arkansas Medical Center) for analysis.
- Frequency and descriptive statistics were used to characterize student demographics and perceived motivating factors and barriers to pursuing PGT.
- Kruskal-Wallis equality-of-proportions rank tests were performed to determine if differences in perceived motivating factors and barriers existed between students who indicated “yes,” “no,” or “undecided” to complete PGT in 5 domains.

Disclosure

There has been no identified financial conflict of interest for management based on the overall scope of this project and its potential benefit to the selected patient population. No monetary value or benefit was provided to student participants in this study.

Results

Baseline and Clinical Characteristics

	Overall (n=1218)	Yes (n=443)	No (n=411)	Undecided (n=364)	p value
Age, years, mean (STD)	25.2 (3.7)	25.0 (3.3)	25.6 (3.7)	25.1 (4.0)	0.153*
Male gender, n (%)	457 (37.5)	152 (34.3)	180 (43.8)	125 (34.3)	0.005 ⁺
Pharmacy as first career, n (%)	1053 (86.5)	383 (86.5)	350 (85.2)	320 (87.9)	0.535 ⁺
Prior Degrees					
Bachelors Degree	767 (63.0)	287 (64.8)	258 (62.8)	222 (61.0)	0.536 ⁺
Masters Degree	32 (2.6)	16 (3.6)	6 (1.5)	10 (2.7)	0.131 [‡]
Doctoral Degree	10 (0.8)	5 (1.1)	3 (0.7)	2 (0.5)	0.727 [‡]
Dual degree program enrollment, n (%)	79 (6.5)	30 (6.8)	24 (5.8)	25 (6.9)	0.132 ⁺
Prior Work Experience					
None	25 (2.1)	9 (2.0)	10 (2.4)	6 (1.6)	0.743 [‡]
Community	965 (79.2)	321 (72.5)	348 (84.7)	296 (81.3)	0.001 ⁺
Hospital	383 (31.4)	214 (48.3)	65 (15.8)	104 (28.6)	0.001 ⁺
Industry	36 (3.0)	23 (5.2)	8 (1.9)	5 (1.4)	0.003 [‡]
Nuclear	6 (0.5)	1 (0.2)	3 (0.7)	2 (0.6)	0.601 [‡]
Home Infusion	17 (1.4)	6 (1.4)	6 (1.5)	5 (1.4)	0.999 [‡]
Non-Pharmacy	258 (21.2)	105 (23.7)	72 (17.5)	81 (22.3)	0.073 ⁺

*One-way t-test; ⁺Chi-square test; [‡]Fisher exact test

Agreement with Domain Factors/Barriers

Domain	Agreement with Domain*		
	Yes	No	Undecided
Self-Actualization ^{*,‡,#}	0.864	0.391	0.681
Future Employment Potential & Growth ^{*,‡,#}	0.604	0.351	0.487
Awareness of Postgraduate Training Opportunities ^{*,‡}	0.648	0.471	0.495
Internal Barriers/Factors Influencing Application for Residency Training ^{*,‡}	0.553	0.359	0.374
External Barriers/Factors Influencing Application for Residency Training ^{*,‡}	0.440	0.350	0.352

*0-1 scale: 0, strongly disagree; 1, strongly agree | ⁺p value for yes/no comparison <0.001 | [‡]p value for yes/undecided comparison <0.001 | [#]p value for no/undecided comparison <0.001

Factor/Barrier Domain Assignment

Factors	Domain
I desire to gain more knowledge and experience.	SA
I desire specialized training in an area of pharmacy.	SA
I believe further training is required for obtaining the position I desire in the future.	SA
I believe further training is needed due to new and challenging roles pharmacists may have in the future.	FEP
I desire a position similar to that of a pharmacist whom I consider a role model.	FEP
I desire to be employed at an institution that requires postgraduate training experience.	FEP
I am undecided about my future plans and feel that additional education and training will better prepare me for many areas of pharmacy.	FEP
Faculty members stressed the importance of postgraduate training.	FEP
I have had positive interactions with residents and/or fellows while in pharmacy school.	AO
My college of pharmacy stressed the importance of postgraduate training.	AO
A mentor or advisor stressed the importance of postgraduate training.	AO
My peers are considering completing postgraduate training.	EBF
My employer or coworkers stressed the importance of postgraduate training.	AO
The job opportunities in my local area (or the area I desire to live and work) all require postgraduate training.	FEP
I desire to complete further training for personal satisfaction.	SA
Barriers	Domain
I believe my student loans or other financial obligations after graduation will be too significant.	EBF
I believe the salaries offered during postgraduate training are too low.	EBF
There will be a job available for me after graduation.	FEP
I believe my family obligations after graduation will be too significant.	IBF
The long-term benefits of completing postgraduate training have not been stressed to me.	AO
I believe my geographical limitations will be too significant.	IBF
My employer or coworkers stressed that postgraduate training is not important.	AO
A mentor or advisor stressed that postgraduate training is not important.	AO
Faculty members in my college of pharmacy stressed the importance of career paths that do not require postgraduate training.	FEP
I have been too busy during pharmacy school to consider pursuing postgraduate training.	IBF
I believe I would be beginning the process of pursuing postgraduate training too late.	IBF
I believe my grades are prohibitive to me pursuing postgraduate training.	IBF
The competition for postgraduate training positions is too high.	EBF
I do not know enough about postgraduate training opportunities.	AO
I believe my extracurricular activities are not competitive enough for me to pursue postgraduate training.	IBF
I believe I can get a job without postgraduate training that other people believe requires postgraduate training.	FEP
My peers are not considering completing postgraduate training.	EBF
I do not desire a position that requires postgraduate training.	SA
I do not feel prepared to complete postgraduate training.	IBF

SA, self-actualization; FEP, future employment/growth potential; AO, awareness of postgraduate training opportunities; IBF, internal barriers/factors influencing application for residency training; EBF, external barriers/factors influencing application for residency training

Discussion

- The survey was sent to 1752 students at 13 Colleges of Pharmacy with 1218 complete surveys included in the data analysis. (Overall response rate: 69.5%)
- Overall 37.1% do plan to pursue PGT vs. 32.9% that do not and 30.0% that are undecided.
- Scores on all motivating factors were lowest in the group that does not plan to complete PGT.
- In the SA domain, students who plan to complete PGT were more likely to agree/strongly agree with statements than those who are undecided, and students who are undecided were more likely to agree/strongly agree than those who do not plan to pursue PGT (p<0.001).
- In the FEP domain, students who plan to pursue PGT were more likely to strongly agree with statements in this domain (p<0.001). Among each barrier within this domain, students who do not plan to pursue PGT were more likely to agree/strongly agree with all statements than students who do plan to pursue PGT or are undecided (p<0.001).
- In the AO domains, students who plan to pursue PGT were more likely to strongly agree with statements in this domain (p<0.001).
- Students who plan to pursue PGT were more likely to disagree/strongly disagree with all barrier statements in this domain when compared to students who do not or are undecided (p<0.001).

Conclusion

- Most Common Responses for Subgroups:
- Most common factor towards pursuing PGT among all three groups of students (yes, no, and undecided):
 - “I desire to gain more knowledge and experience”
 - Most common factor towards pursuing PGT among students that plan to complete PGT and those undecided:
 - “I believe further training is required for obtaining the position I desire in the future”
 - Most common barrier among students planning to complete PGT or undecided:
 - “The competition for postgraduate positions is too high.” Among all students, the perceived low salary associated with postgraduate positions was the second most commonly cited barrier.
 - Most common barrier among students not planning to complete PGT:
 - “I do not desire a position that requires postgraduate training.”

References

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