Health Professions Education

Volume 6 | Issue 2 Article 17

2020-06-01

Factors Associated With Intention to Pursue Pharmacy Residency: The Undecided Student Issue

Parna Haghparast
Department of Pharmacy Practice, West Coast University, Los Angeles, CA, USA

Damien Fisher
Department of Pharmacy Practice and Translational Research, University of Houston, Houston, TX, USA

Benjamin Lewing
Department of Pharmaceutical Health Outcomes and Policy, University of Houston, Houston, TX, USA

Sujit S. Sansgiry
Department of Pharmaceutical Health Outcomes and Policy, University of Houston, Houston, TX, USA

Recommended Citation

Haghparast, Parna; Fisher, Damien; Lewing, Benjamin; and Sansgiry, Sujit S. (2020) "Factors Associated With Intention to Pursue Pharmacy Residency: The Undecided Student Issue," *Health Professions Education*: Vol. 6: Iss. 2, Article 17.
DOI: 10.1016/j.hpe.2020.02.003
Available at: https://hpe.researchcommons.org/journal/vol6/iss2/17

Available online at www.sciencedirect.com

ScienceDirect

Health Professions Education 6 (2020) 170–175

www.elsevier.com/locate/hpe

Factors Associated With Intention to Pursue Pharmacy Residency: The Undecided Student Issue

Parna Haghparast [a], Damien Fisher [b], Benjamin Lewing [c], Sujit S. Sansgiry [c,*]

[a] *Department of Pharmacy Practice, West Coast University, Los Angeles, CA, United States*
[b] *Department of Pharmacy Practice and Translational Research, University of Houston, Houston, TX, United States*
[c] *Department of Pharmaceutical Health Outcomes and Policy, University of Houston, Houston, TX, United States*

Received 28 January 2020; accepted 12 February 2020
Available online 24 February 2020

Abstract

Purpose: With over 14,000 pharmacy graduates in 2019 in the United States, the pharmacy job market may be steadily becoming saturated. As part of the quality indicators, many Doctor of Pharmacy (PharmD) programs report and encourage their graduates to pursue residencies. However, there is a portion of the pharmacy students that are undecided about residencies. The purpose of this study was to learn about contributing factors that leads students to being undecided regarding considering residency programs.
Method: This was a survey-based study of year two and three pharmacy students from five Colleges of Pharmacy in the United States, conducted retrospectively. This study compared students' past behaviors, attitudes, subjective norms and perceived behavioral control between students who were undecided and those with an Intent to Pursue (ITP) residency.
Results: A total of 287 students responded to the survey (response rate = 24.78%). Students that had not attended Midyear/residency showcase were more likely to be undecided about residencies than those that did (91.67% vs 62.50%). In addition, undecided students were less likely to agree that the people who were important to them believed that they should pursue residency compared to ITP group (4.36 vs. 5.72, on a 7-point Likert score). Lastly, those who perceived large student loans or family obligations as barriers were more likely to be undecided (OR 1.761 and 1.560, respectively).
Discussion: Focusing on undecided students and addressing these major contributing factors as part of the career advising/preparation may result in shifting these students' intention to pursue residency.

Keywords: Barriers; Motivating factors; Pharmacy residency; Post-graduate training; Undecided

1. Introduction

The current pharmacy job market in the United States looks much different than it did two decades ago. During the period from 1990 to 2000, the demand for pharmacists surpassed the supply.[1] In 2001, the Pharmacy Workforce Center envisioned a significant

Abbreviations: ACCP, American Association of Colleges of Pharmacy; ACPE, Accreditation Council for Pharmacy Education; ASHP, American Society of Health-System Pharmacists; ITP, Intent to Pursue; PGY, Post Graduate Year; PharmD, Doctor of Pharmacy; TPB, Theory of Planned Behavior.

* Corresponding author. University of Houston, Houston, Texas, Health Building 2. University of Houston College of Pharmacy, 4849 Calhoun Road, Room 4055 Houston, TX, 77204-5047, United States.
E-mail address: ssansgiry@uh.edu (S.S. Sansgiry).

Peer review under responsibility of AMEEMR: the Association for Medical Education in the Eastern Mediterranean Region

https://doi.org/10.1016/j.hpe.2020.02.003

expansion of the pharmacist workforce with a shift from order filling to direct patient care responsibilities and estimated a shortage of about 157,000 pharmacists by 2020, assuming only three new Doctor of Pharmacy (PharmD) Programs were initiated every 10 years.[2] As a result, new pharmacy programs were established, but at a much higher rate than anticipated. The number of colleges of pharmacy in the US jumped from 80 in 2000 to 143 colleges in 2019 - an increase of 78.8%.[2,3] Recent trend in pharmacy workforce does not look very optimistic as the demand to supply ratio for pharmacist has been steadily declining and in 2017 was measured to be the lowest in the past decade.[4] The Pharmacy Workforce Center reported the demand for specialized pharmacist was however higher than generalists and staff pharmacists in quarter 4 of 2018.[5]

Residencies are one way for new pharmacy graduates to be specialized, competitive and differentiate themselves.[6] Residency training plays a critical role in preparing pharmacists for evaluating the intricacies of a patient medication regimen and help cultivate pharmacists toward becoming a better clinician, manager, and member of the health care team. However, in 2017–18 academic year, only about a quarter of the 14,905 pharmacy graduate pursued PGY (post graduate year)-1 residency.[7] Hence strategies to increase the number of students that consider pursuing a residency is important.

Many pharmacy programs report their student's residency statistics as part of their program quality indicators. Some schools have as high as 50% of each of their pharmacy cohort placed into residency programs.[8] However, the percentage of students pursuing residencies from each college of pharmacy substantially varies. Schools with high percentage of their class pursuing post-graduate trainings such as residencies can make their graduates more competitive for job placements. Additionally, American Society of Health-System Pharmacists (ASHP) and American Association of Colleges of Pharmacy (ACCP) declared by 2020 direct patient care will be provided by pharmacists in all settings, and are moving towards requiring residencies for all new pharmacists entering pharmacy practice.[9,10] Furthermore, the Accreditation Council for Pharmacy Education (ACPE) recommends that schools provide students with information regarding post graduate education training in the 2016 standards.[11] Understanding how to motivate students to pursue residencies is thus critical.

Despite few research studies evaluating the motivating factors for students that had an intention to pursue residency and barriers for students that did not have an intention to pursue residency, there is very limited data regarding the *undecided* students.[12,13] Given the limited data and knowledge gap in this area, we sought to find out contributing factors that lead pharmacy students to be undecided about residency. This was done by comparing the students' past behavior, attitude, subjective norm and perceived behavioral control for undecided students and those that had an intention to pursue residency.

The objective was to determine which motivating factors would have the highest impact in shifting student intention from undecided to having intention to pursue a residency and which barriers have the most negative impact on the undecided students. Identifying these factors will allow pharmacy schools to focus their effort on elements that can have more value in shifting students' intention.

2. Method

2.1. Overview

This study was conducted retrospectively and was an extension of a previously survey-based cross-sectional study. Surveys were sent out to five pharmacy schools in Texas, United States and the data collection was conducted from March to April 2015. All participating colleges of pharmacy were four-year pharmacy programs. The survey was designed based on Theory of Planned Behavior (TPB) framework and was sent electronically to students using Qualtrics. A detailed description of the data collection methods can be viewed in the previously published study.[14]

In the current study, responses to the survey questions were further analyzed with a focus on students that were undecided regarding their intention to pursue residency. Association between intention to apply for residency and attitude about residency training, subjective norm, and perceived behavioral control toward residency was evaluated. Attitude was defined as the individual's overall perception of the potential consequences or benefits to completing a residency. The subjective norm was defined as how the individual perceived social pressure from attending or not attending a residency. Perceived behavioral control was defined as how much control the student believed they had over pursuing residency. The original survey questions were evaluated on a 7-point-Likert scale, where 1 = strongly disagree; 7 = strongly agree; 4 = neutral.

2.2. Survey

The survey questions included demographic information, whether they had attended ASHP midyear meeting (past behavior), attitudes regarding residency such as perception of how a residency can help them, the subjective norm for pursuing residency and what their family/friends and faculty think about their decision and lastly perceived behavioral control such as their confidence in competing for a residency spot and other perceived barriers.

Intention to apply for a residency was defined as score of 5−7 on the Likert scale. Neutral (undecided) was defined as a score of 4 and no intention to apply for residency was defined as score of 1−3. Undecided students (i.e., those that reported neutral for intention) were the focus for the present study. They were compared to those students that had an intention to pursue residency. Students with no intention to pursue residency were excluded from this study as these students had already committed to their decision. Students from University of Houston, University of Incarnate Word, University of Texas−Austin, Texas A&M University and Texas Tech University were included in the study. All students were in their second or third year of PharmD program.

2.3. Analysis

All data obtained was deidentified and analyses were performed using SAS® version 9.4 (SAS Institute Inc., Cary, NC). Means were calculated for each of the continuous variables and frequencies were calculated for the categorical variables for each group. The groups were then compared using t tests for continuous variables and chi-square for categorical variables. Additionally, logistic regression was used to calculate odds ratios (OR) for each factor. A P-value of <.05 indicated statistical significance.

3. Results

From the 1158 students, that the survey was sent out to, 287 students responded (24.78% response rate). Amongst the 287 survey participants from five colleges of pharmacies, 103 participants reported that they did not have an intention to pursue residency, while 136 participants reported that they intended to pursue residency (ITP). The 48 remaining participants reported that they were undecided. After excluding students with no intention to pursue a residency, 184 participants remained. The characteristics of these groups (undecided vs. ITP) are compared in Table 1.

The students were compared based on TPB factors by their grouping undecided vs. ITP (Table 2). Overall, students that were undecided had a less positive attitude towards residency compared to students with residency group across all the 6 domains. Students who were undecided regarding residency were less likely to agree that the people who were important to them believed that they should pursue residency compared to ITP group with mean ± standard deviation Likert scores of 4.36 ± 1.14 vs. 5.72 ± 1.13, $p < 0.0001$. Students who did not attended ASHP Midyear meeting or residency showcase were more likely to be undecided about residency than those that did (91.67% vs 62.50%, $p < 0.0001$).

Both groups indicated that they cared about what their families thought about pursuing residency with mean ± standard deviation Likert scores of 5.00 ± 1.52 for undecided and 5.38 ± 1.50 for ITP, $p = 0.1319$. Students that were undecided perceived to be less confident in their abilities to apply for a pharmacy residency compared to students with an intention to pursue (Mean ± standard deviation 3.88 ± 1.48 vs 5.23 ± 1.32, $p = 0.0001$). Students that were undecided were more likely to report financial, family obligation and student loans as a barrier to pursuing residency (Table 2). Undecided students were more likely to agree that if there is a job offer available upon graduation, it would make it more difficult for them to pursue residency (Mean ± standard deviation 5.56 ± 1.56 vs 5.04 ± 1.54, $p = 0.047$).

Unadjusted odd's ratios are also presented in Table 2, comparing predictors of intent to pursue a residency. The results modeled for intent to pursue residency indicated students with large student loans or those with family obligations were more likely to be undecided regarding residency (OR (95% Confidence Intervals (CI)) 1.761 (1.36−2.27) and 1.560 (1.23−1.98), respectively).

4. Discussion

In this study, several factors that contributed to pharmacy students being undecided about residency were identified. Some of these factors included not being as confident in their abilities to apply for a residency, lower perceived benefit of residency, family obligations and large perceived student loans. Students that were undecided were less likely to have attended

Table 1
Sample characteristics and differences between variables by their intention to pursue residency category.

Variable	Group		*p* value*
	Undecided (N = 48) Mean (SD)	ITP (N = 136) Mean (SD)	
Age-Year	25.90 (4.42)	25.30 (4.67)	.443
	Frequency (%)	**Frequency (%)**	
Gender			.811
Male	15 (31.25)	40 (29.41)	
Female	33 (68.75)	96 (70.59)	
Marital Status			.2964
Married	13 (27.08)	27 (19.85)	
Single	35 (72.92)	109 (80.15)	
Race			.2278
African American/Black	0 (0)	6 (4.62)	
Caucasian/White (Non-Hispanics)	15 (45.45)	60 (78.95)	
Asian/Pacific Islander	10 (26.32)	16 (13.33)	
Hispanic	3 (6.67)	4 (3.03)	
Middle Eastern	1 (2.13)	2 (1.49)	
College			.5686
University of Houston	17 (54.84)	33 (32.04)	
University of the Incarnate Word	6 (14.29)	14 (11.48)	
University of Texas–Austin	13 (37.14)	47 (52.81)	
Texas A&M Irma Lerma Rangel	5 (11.63)	15 (12.40)	
Texas Tech University	7 (17.07)	27 (24.77)	
Pharmacy Year			.804
Second year	25 (52.08)	68 (50.00)	
Third Year	23 (47.92)	68 (50.00)	

Abbreviations: ITP=Intention to Pursue.
*P value represent the significance between undecided and ITP.

Midyear than those in the ITP group. If students are exposed to the idea of residency (by attending ASHP conferences and/or residency panels) there may be a higher chance that students have an intent to pursue residency. This finding is consistent with the finding from the Hammond DA and colleagues study, were they concluded that if students learn about the post-graduate training earlier in their pharmacy path, they are more likely to pursue it.[15] Exposing undecided students to conferences that focuses on residencies could potentially change their perception and perspective, especially if the opportunity is provided earlier within student's college programs. From these findings we recommend pharmacy institutions to encourage students that are undecided to attend ASHP's Midyear meeting or other residency showcases in order to foster an interest in residency programs.

Other significant factors that contributed to students being undecided were the students' families. Despite both groups agreeing that families and/or other important people in their lives had an influence over their decision, students in the ITP group were more likely to have family/friends that believed in and/or supported residency than those in the undecided group. This gap between the ITP and undecided students may be addressed by inviting families and/or significant others to residency informational sessions. This may aid in the family's understanding of the importance of residencies.

Some of the significant challenges/barriers to pursuing residency were students' lack of confidence in their ability to apply for residency, financial obligations, family obligation, large student debts, feeling burnt out, having a job offer post-graduation. Students with large debts, financial obligations and family obligations were among the highest predictors of indecisiveness. We believe that it would help if pharmacy schools can address these most significant predictors of indecisiveness as they may have the biggest impact on students' decision. Future research is needed to assess different interventions that addresses the above-mentioned significant predictors of indecisiveness. More research is needed on innovative ways to expose students and their families to the benefits of residencies early in the curriculum.

Table 2
Comparison of TPB Factors by Those Undecided vs. Those That Had an Intention to Pursue Residency.

TPB factor	Group				
	Undecided (N = 184) Mean (SD)	ITP (N = 48) Mean (SD)	*p* value*	OR**	95% CI
Attitude					
1 Pharmacy residency	5.73 (1.48)	6.38 (1.17)	.0025	.705	.55–.902
Worthless/valuable					
2 A pharmacy residency would give me a competitive advantage in the job market	5.63 (1.2 8)	6.52 (.64)	<.0001	.342	.225–.520
3 . A pharmacy residency would provide professional networking opportunities	6.17 (1.10)	6.54 (.61)	.0037	.560	.417–.768
4 A pharmacy residency would fulfill my desire for specialized training	5.71 (1.09)	6.47 (.79)	<.0001	.429	.295–.625
5 A pharmacy residency would help me achieve my career goals	5.10 (1.15)	6.41 (.79)	<.0001	.290	.197–.428
6 A pharmacy residency would increase my confidence in practicing pharmacy	5.96 (1.22)	6.71 (.73)	<.0001	.460	.319–.661
Subjective Norm	–	–	–	–	–
1 Most people who are important to me think I should apply for a pharmacy residency	4.35 (1.14)	5.72 (1.13)	<.0001	.337	.268–.532
2 The following individuals or groups that I know would think that I should apply for a pharmacy residency	–	–	–	–	–
Classmates	4.58 (1.09)	5.27 (1.15)	.0004	.597	.441–.808
Faculty members	4.88 (1.18)	5.72 (1.03)	<.0001	.494	.357–.684
Pharmacy residents	4.73 (1.14)	5.54 (1.05)	.0001	.499	.357–.698
Pharmacists	4.60 (.92)	5.40 (1.08)	<.0001	.478	.336–.682
Family	4.19 (1.25)	5.01 (1.37)	.0004	.638	.492–.828
Friends	4.44 (1.09)	5.01 (1.23)	.0051	.668	.500–.894
3 Generally speaking, I care what the following individuals or groups think about whether or not I should apply for a pharmacy residency	–	–	–	–	–
Classmates	3.90 (1.57)	4.07 (1.79)	.5426	.943	.779–1.14
Faculty members	4.67 (1.59)	5.54 (1.34)	.0002	.658	.521–.832
Pharmacy residents	4.35 (1.56)	5.08 (1.60)	.0072	.762	.621–.934
Pharmacists	4.67 (1.53)	5.48 (1.37)	.0008	.688	.547–.865
Family	5.00 (1.52)	5.38 (1.50)	.1319	.850	.686–1.05
Friends	4.27 (1.40)	4.81 (1.57)	.0373	.799	.646–.989
Perceived Behavioral Control	–	–	–	–	–
1 I am confident in my ability to apply for a pharmacy residency	3.88 (1.48)	5.23 (1.32)	.0001	.524	.407–.677
2 The decision to apply for a pharmacy residency is not entirely up to me	2.94 (1.93)	2.74 (1.73)	.5167	1.063	.886–1.28
3 For me, the following factors would make it more difficult to apply for pharmacy residency	–	–	–	–	–
Financial Obligations	6.02 (1.28)	5.00 (1.68)	.0002	1.642	1.25–2.17
Family Obligations	5.96 (1.32)	4.73 (1.95)	<.0001	1.560	1.23–1.98
Large Student Debt	6.21 (1.25)	4.64 (2.03)	<.0001	1.761	1.36–2.27
Feeling "Burnt Out"	6.19 (1.33)	5.44 (1.71)	.0066	1.425	1.09–1.83
Feeling Afraid of the competition/not matching	5.42 (2.02)	5.52 (1.71)	.7272	.968	.808–1.16
Job offer is available upon graduation	5.56 (1.56)	5.04 (1.54)	.0437	1.271	1.00–1.61
Needing to relocate	5.44 (1.70)	4.27 (2.07)	.1179	1.347	1.14–1.66
Not required for desired job	4.96 (1.66)	4.00 (1.99)	.1634	1.316	1.09–1.59
Lengthy application/interview process	5.19 (1.71)	4.70 (1.74)	.0944	1.189	.970–1.46

Abbreviations: ITP=Intention to Pursue TPB = Planned Behavior Framework OR=Odds ratio.
**P* value represent the significance between undecided and ITP.
***Represents the unadjusted logistic regression modeled for the likelihood of being undecided versus ITP.

5. Limitations

This study has some limitations including relatively small sample size in the undecided group and exclusion of students with no intention to pursue residency. Inclusion of Pharmacy Schools in Texas only also may pose a geographical limitation. Factors that affect students' intention to pursue or not pursue residency may differ based on the geographical location of the school and the job market in the area.

6. Conclusion

Students that were undecided were more likely to have not been exposed to residency showcases such as Midyear and perceive residency less beneficial compared to those in the ITP group. The most significant challenges to pursuing residency were large debts, financial and as well as family obligations.

Ethical approval

Ethical approval was granted by the University of Houston institutional review board (11 March 2015, protocol number: 15261-EX).

Funding

None.

Declaration of Competing Interest

None.

References

1. Kelley K, Sweet V, Janke K, Plake K. Employment trends for doctor of pharmacy graduates of research-intensive institutions, 2013-2017. *Am J Pharmaceut Educ*. 2019;83(2), 6864.
2. Brown DL. A looming joblessness crisis for new pharmacy graduates and the implications it holds for the academy. *Am J Pharmaceut Educ*. 2013;77(5):90. https://doi.org/10.5688/ajpe77590.
3. American Association of Colleges of Pharmacy. Academic pharmacy's vital statistics. https://www.aacp.org/article/academic-pharmacys-vital-statistics. Accessed August 29, 2019.
4. Pharmacy Workforce Center. Pharmacy demand indicator, time based trends. https://pharmacymanpower.com/trends.php. Accessed August 29, 2019.
5. Pharmacy Workforce Center. Pharmacy demand indicator. https://pharmacymanpower.com/. Accessed August 29, 2019.
6. American Society Health System Pharmacists. Pursuing residency. https://www.ashp.org/Professional-Development/Residency-Information/Student-Residency-Guide/Pursuing-Residency. Accessed August 29, 2019.
7. National Matching Services Inc. ASHP resident matching program. https://natmatch.com/ashprmp/stats/2018applstats.pdf. Accessed August 28, 2019.
8. Drake College of Pharmacy & Health Sciences. Pharmacy statistics. https://www.drake.edu/pharmacy/. Accessed 28, 2019.
9. Murphy JE, Nappi JM, Bosso JA, Saseen JJ, Hemstreet BA, Hallaron MA, et al. American College of Clinical Pharmacy's vision of the future postgraduate pharmacy residency training as a prerequisite for direct patient care practice. *Pharmacotherapy*. 2006;26(5):722–733.
10. ASHP Policy positions 2009-2014 (With Rationales): Education and Training. American society of health-systems pharmacists website. http://www.ashp.org/DocLibrary/BestPractices/EducationPositions.aspx. Accessed June 1, 2019.
11. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the Doctor of Pharmacy degree. https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf. Accessed August 1, 2019.
12. McCarthy BC, Weber LM. Update on factors motivating pharmacy students to pursue residency and fellowship training. *Am J Health Syst Pharm*. 2013;70(16):1397–1403.
13. Bernhardt B, Stearns A, Sansgiry S. Motivators of pharmacy residency training *Texas. Soc Health Syst Pharm*. 2012;13(2):17–23.
14. Hickerson S, Fleming M, Sawant R, Ordonez N. Predicting pharmacy students' intention to apply for a residency: a systematic theory of planned behavior approach. *Curr Pharm Teach and Learn*. 2017;(9):12–19.
15. Hammond DA, Oyler DR, Devlin JW, Painter JT, Bolesta S, Swanson JM, et al. Perceived motivating factors and barriers for the completion of postgraduate training among American pharmacy students prior to beginning advanced pharmacy practice experiences. *Am J Pharmaceut Educ*. 2017;81(5).

Parna Haghparast is assistant professor at the Department of Pharmacy Practice, West Coast University, Los Angeles, California, United States

Damien Fisher is clinical assistant professor at Department of Pharmacy Practice and Translational Research, University of Houston, Houston, Texas, United States

Benjamin Lewing is a PhD Candidate at Department of Pharmaceutical Health Outcomes and Policy, University of Houston, Houston, Texas, United States

Sujit S. Sansgiry is Professor Department of Pharmaceutical Health Outcomes and Policy, University of Houston, Houston, Texas, United States