BRIEF

Factors That Influence Students' Selection of Advanced Pharmacy Practice Experience

Vicky Shah, PharmD, Kristina Powers, PharmD, Kristin Veltri, PharmD, Erika Zarfoss, PharmD

Wilkes University Nesbitt School of Pharmacy, Wilkes-Barre, Pennsylvania

Submitted September 27, 2018; accepted August 16, 2019; published February 2020.

Objective. To determine factors influencing Doctor of Pharmacy (PharmD) students' selection of advanced pharmacy practice experiences (APPEs) in one school of pharmacy.

Methods. In their final year, PharmD students are required to complete a minimum of 1440 hours of experiential education, including ambulatory, community, inpatient general medicine, and hospital/health system APPEs, and elective APPEs. Third-year (P3) and fourth-year (P4) PharmD students were invited to complete an anonymous online survey to determine what factors impacted their decision process when selecting their required experiences. Students selected up to five factors that most influenced their selection of APPEs. Factors included areas of interest, size of institution, location, future employment, preceptor reputation, rotation hours, faculty rotation, non-faculty rotation, peer recommendation, cost/housing, level of difficulty, size of institution, and whether the site offered a residency program.

Results. Of the 143 students enrolled, 100% responded to the survey. Students in both classes (71 P3 and 72 P4 students) selected location as the number one factor that influenced their decision when selecting required APPEs. Cost/housing was the second most important factor overall for P3 students, while peer recommendation was the second most important factor overall for P4 students.

Conclusion. Location was the driving factor behind P3 and P4 pharmacy students' selection of APPE sites. Schools should consider establishing more APPE sites that offer housing to reduce cost. Further research into the factors that influence ranking on APPE electives is warranted.

Keywords: advanced pharmacy practice experience, experiential

INTRODUCTION

Advanced pharmacy practice experiences (APPEs) are an integral part of the Doctor of Pharmacy (PharmD) curriculum, allowing students to develop clinical skills while experiencing different areas of pharmacy practice. According to the Accreditation Council for Pharmacy Education (ACPE) 2016 Accreditation Standards and Key Elements for the Professional Program Leading to the Doctor of Pharmacy (PharmD) degree ("Standards 2016"), the primary goal of the APPE curriculum is to prepare practice-ready pharmacy graduates.

The PharmD program at the Wilkes University Nesbitt School of Pharmacy consists of four years of professional study. The school requires students to have completed two years of prerequisite courses prior to starting the program. However, transfer students are admitted directly into the four-year professional program.

The final academic year of the PharmD program (36 weeks or 1440 hours) consists entirely of full-time clinical experiences set in various practice environments. Students are required to complete seven APPE blocks, including four required by ACPE (community pharmacy, ambulatory patient care, health/hospital pharmacy, and inpatient general medicine patient care¹) and three elective experiences. The APPEs provide opportunities for students to gain experience in many aspects of pharmacy and gain critical insight into their future career interests. Therefore, the selection of APPEs is important as it may have a large impact on a student's professional career after graduation. With many diverse experiences available to fulfill each of the required APPEs, students must make their decision of which APPE site to choose based on the factors most important to them.

Nesbitt School of Pharmacy students rank their selection of APPEs using a list provided on E*Value (Medhub, Minneapolis, MN), an electronic database for experiential planning. The E*Value Optimization Scheduling (EVOS) system is then used to create the student's academic

Corresponding Author: Vicky Shah, Wilkes University Nesbitt School of Pharmacy, 84 W. South St., Wilkes-Barre, PA 18766. Tel: 847-826-0834. Email: vicky.shah@wilkes.edu

schedule. The method the system uses for assigning APPEs is not random, but rather mathematical and linear. The goal of the EVOS system is to create a schedule that will provide the highest possible level of student satisfaction given the number of students, time constraints, and APPEs available.²

While students have a large amount of input into the selection process, they are not always assigned their first choice for each of their APPEs. Thus, a better understanding of the factors behind students' selection of APPEs would help to determine whether intervention, eg, housing assistance, changes in faculty, is needed to make alternate APPE sites more desirable. Selection factors have been investigated in other health professions; however, published information regarding the impact of certain factors on selection of rotations is lacking. Love and colleagues investigated factors influencing medical students' selection of an emergency medicine residency. Top factors for students selecting the program included interview experience, personal experience working with residents, reputation of the program, and length of the program. Because the authors believed location would be an important factor to students, the factor was further broken down into aspects including geographic location, desire to be near a family member, and community support of lifestyle.³ Little is known regarding pharmacy students' perceptions about experiential education options and the process for selecting APPEs as few institutions have completed studies in this area. One of the few studies was conducted by the Union University School of Pharmacy and looked at factors surrounding choice of introductory pharmacy practice experience (IPPE) and APPE sites. In both IPPE and APPE selection, driving distance to the site was found to be the top factor in decision making.⁴

Learning outcomes for required APPE sites are standardized; however, other aspects of the experience, including institution, preceptor, location, and specific activities, vary. Students may also rely on their own experience during IPPEs, recommendations from peers or faculty members, and consider the perceived level of difficulty of the experience in making decisions related to APPE selection. Students may also communicate with and seek input from peers. Also available to Wilkes University pharmacy students is the opportunity to complete a matrix, ie, multiple APPE experiences at one site, which is only offered at certain institutions. The cost burden of completing specific APPEs may also play a role in selection as stipends and/or affordable housing are not universally available. Some of the APPE sites affiliated with Wilkes University have provided inexpensive or discounted housing, costing students only \$200-\$300 for the full rotation. However, other APPE sites provide no discounted housing and the distance to the site is too far

from the school to commute, resulting in some students paying up to \$800 for housing during the rotation.

Some schools of pharmacy offer "rotation fairs" for students to provide them an opportunity to converse with others who have previously completed APPEs. The poster fair at Wilkes University is an annual event coordinated by a collaboration of the director of experiential programs for pharmacy practice and members of the Rho Chi National Honor Society. Fourth-year students completing an APPE at the site or who have previously completed the experience, are invited to discuss the site at the poster fair. Fourth-year students present an informational poster to third-year students about the APPE and are able to answer any questions students may have. This informal session provides students the opportunity to ask questions and gain peer opinions prior to submitting their choices for APPEs.

The purpose of this research was to determine factors influencing students' APPE selections at one school of pharmacy. Gathering insight into the factors most important to pharmacy students in APPE selection will allow experiential coordinators to better understand preferences which will assist the experiential department in gauging future APPE opportunities.

METHODS

The research was approved by the Wilkes University Institutional Review Board (IRB). A survey was developed to assess the factors influencing pharmacy students' selection of the four ACPE required APPEs (ambulatory, community, inpatient general medicine, and hospital/health system). The survey was developed using a randomly selected focus group of 10 pharmacy alumni from the class of 2017. Alumni were asked to list any factors they could recall that influenced their decisions when ranking APPE sites. Responses were collated to be used as options for selection factors in the final survey instrument. The survey instrument (Appendix 1) was created using Survey Monkey (SVMK, San Mateo, CA), an online survey tool. The survey instrument allowed students to rank up to five factors in order of preference from an alphabetized list of 17 factors that most impacted their decision to select each of the four required APPEs. Additionally, the survey asked students about their interest in pursuing postgraduate training (a residency program) upon graduation, whether they preferred to complete APPEs at different sites or all at the same location (matrix), and whether the school's annual APPE poster fair was helpful to them in finalizing their selections.

The study population included all third-year (P3) and fourth-year (P4) pharmacy students enrolled in the Nesbitt School of Pharmacy during the 2017-2018 academic year. A cover letter and link to the survey were sent via email to 72 fourth-year students in October 2017, about halfway

through their APPEs, and to 71 third-year students in February 2018, one week after selecting their APPEs. The cover letter explained that the survey was voluntary and participation was anonymous, and that completion of the survey would serve as the student's informed consent to participate. In both administrations, a reminder email was sent on day five and the survey remained open for two weeks.

Survey data were analyzed by assigning weighted point values to responses in relation to where the given factor was ranked. The top ranked factor was assigned a value of 5; second-ranked, 4; third-ranked, 3; fourth-ranked, 2; and fifth-ranked, 1. The point value (1-5) was multiplied by the total number of times that factor was chosen by a student to yield a weighted value for the selection factor. The sum of values for the factor in each given ranking was used for comparison.

RESULTS

Of the 143 students invited to participate in this study, 100% completed the survey. The majority of the

students were female (43 [60%] P4 students and 48 [68%] P3 students). Twenty (28%) of the P4 students and eight (11%) of the P3 students were from states other than Pennsylvania.

The top five factors selected by the P4 and P3 students combined were location (24.79%), peer recommendation (10.63%), cost/housing (10.59%), preceptor reputation (8.35%), and future employment possibility (6.83%), respectively (Table 1). While many of the factors were selected by both P3 and P4 students, level of difficulty was selected by substantially more P4 students as a factor that influenced their selection of APPEs, while substantially more P3 students felt the possibility of future employment was more of an influential factor in their choice of APPEs. Another major difference between the two classes was the order of their top five rankings as P3 students ranked cost/housing higher and peer recommendation lower on their list compared to P4 students.

When P3 and P4 students' responses to the four ACPE required experiences were compared, many similarities

Table 1. Results of a Survey Conducted to Determine Which Factors Most Influence Pharmacy Students' Selection of Advanced Pharmacy Practice Experiences

Factor	P4 Class, No. (%), n=72	P3 Class, No. (%), n=71	Combined Classes, No. (%), N=143
Areas of interest in specialty	258 (6.7)	217 (6.5)	475 (6.6)
Cost/housing	339 (8.8) ^b	425 (12.7) ^c	764 (10.6) ^a
Faculty rotation site	183 (4.8)	210 (6.3)	393 (5.4)
Future employment possibility	247 (6.4)	246 (7.3) ^c	493 (6.8) ^a
Had an IPPE at the site	99 (2.6)	118 (3.5)	217 (3.0)
How many students the site takes at a time during a given rotation	30 (.8)	13 (0.37)	43 (0.6)
Level of difficulty	273 (7.1) ^b	200 (5.95)	473 (6.6)
Location	888 (23.0) ^b	900 (26.8) ^c	1788 (24.8) ^a
Non-faculty rotation site	45 (1.2)	38 (1.1)	83 (1.2)
Peer recommendation	456 (11.8) ^b	311 (9.3) ^c	767 (10.6) ^a
Preceptor reputation	366 (9.5) ^b	237 (7.1) ^c	603 (8.4) ^a
Residency is offered there	132 (3.4)	94 (2.8)	226 (3.1)
Rotation activities (journal club, MTM, rounding, etc)	95 (2.5)	88 (2.4)	183 (2.5)
Rotation hours (eg: 8:00 am-4:30 pm)	81 (2.1)	47 (1.4)	128 (1.8)
Size of institution	162 (4.2)	134 (4.0)	296 (4.1)
Teaching site (ie, medical students, PA students)	124 (3.2)	65 (1.9)	189 (2.6)
Wilkes alumni preceptor	76 (2.0)	17 (.5)	93 (1.3)

Abbreviations: P4=fourth year professional pharmacy student, P3=third year professional pharmacy student,

APPE=advanced pharmacy practice experience, IPPE=introductory pharmacy practice experience,

MTM=medication therapy management, PA=physician assistant

Scores were obtained by a point system where items ranked 1 were given 5 points, ranked 2 were given 4 points and so on. All points were tabulated per each rotation and as an overall score

^a Indicates factors in top five rankings overall

^b Indicates factors in top five rankings overall for P4 students

^c Indicates factors in top five rankings overall for P3 students

Total point value was 7214 when combining four required APPEs and all factors

were seen, with location being the top-ranked factor for students in both classes for every required experience. Students in both classes ranked the factors for selection of ambulatory care, community, and hospital/health system APPEs similarly. However, P4 students listed faculty rotation as one of their top five factors when selecting their inpatient general medicine APPE site while P3 students did not. The P3 class ranked cost/housing as the second most important factor for all required rotations except inpatient general medicine, for which having a faculty rotation site was the most influential factor.

When asked whether they were interested in completing a residency after graduation, 26 (36%) of the P4 students responded yes, 30 (42%) responded no, and 16 (22%) were unsure. The majority (56 or 78%) of the P4 students preferred completing APPEs at multiple sites as compared to four (6%) P4 students who preferred completing APPEs at the same location (matrixing); 12 (16%) students indicated that it made no difference.

When asked whether they were interested in completing a residency, 34 (48%) P3 students responded yes, 21 (30%) responded no, and 16 (22%) were unsure. The majority of the P4 students, 48 (68%), preferred having APPEs at multiple sites as compared to seven (10%) who preferred having them at the same location (matrixing); 16 (22%) students stated it made no difference.

The APPE poster fair received positive reviews from the students with 60 (84%) P4 students and 60 (85%) P3 students indicating that they agreed or strongly agreed the fair was helpful in finalizing their APPE selections. The usefulness of the APPE poster fair was not listed as a factor that students could consider when selecting APPEs; however, peer recommendation is closely connected to the poster fair and that was in the top five factors selected by the majority of students.

DISCUSSION

The purpose of this research was to determine factors influencing APPE selection at one school of pharmacy. Because we knew from anecdotal feedback and previous research that student selection of practice experiences is based on a variety of factors, we asked students to rank up to five factors in their selections process for each of the four required APPEs. The results showed that students had a clear preference for certain decision factors, with similar top factors affecting their choice of each of the four required APPEs. Overall, in the comparison of P3 and P4 classes, the top five factors were similar; however, the order in which the factors were ranked was different within the top five.

For each of the four required APPEs, site location was the most important factor in students' choices. While students clearly valued where the APPE was located, it

was unclear which location was the most desirable for students, ie, students' location preference may be influenced by a desire to live at home, with a relative, or on-campus. Knowing that location is a major factor for students in the selection of APPEs, institutions may consider administering a survey to better gauge the desired location of sites for their students. Nearly 75% of Wilkes University rotation sites are located within a 50-mile radius of the university. The factor of cost/housing may be influenced by whether a student lived out of state prior to starting pharmacy school. The P3 class had fewer students who lived out of state and, possibly as a result, the class ranked the factor of cost/housing higher overall than did P4 students. Future studies may attempt to determine the maximum distance students are willing to travel for APPEs.

Peer recommendation was the second highest-rated selection factor overall. In the P4 class, peer recommendation was the second overall selection factor, while P3s ranked this as third. This may be because P4s had already completed a portion of their APPE experiences at the time of the survey and were able to determine the usefulness of the recommendations their peers had made to them. Over 80% of P3 and P4 students either agreed or strongly agreed attending the APPE poster fair was helpful in their selection of APPEs. The ability of an institution to facilitate these peer recommendations in settings such as the poster fair can also help students to make these decisions.

While the results obtained from this study were very beneficial to the experiential team, the study had a few limitations. One limitation of the study was that students were encouraged to rank up to five factors influencing selection, but not required to rank five. Although this meant that some students may have ranked fewer than five factors, this method was acceptable because students may not have considered five factors when finalizing their decision. Additionally, the study focused solely on the four required APPEs and did not ask students for factors that influenced their selection of elective APPEs. The scope of a future study should be required to include elective APPEs. Timing of the surveys was also a limitation as P4 students completed the survey in October, about halfway through their APPEs, while P3 students completed the survey in February, immediately after submitting their preferences for APPEs, which they would start in the fall. Because the P4 students had already experienced four APPEs prior to taking the survey, their perceptions may have been different than those of P3s who had just ranked their APPEs. Any institution that wishes to complete a similar survey is encouraged to administer the survey prior to the start of APPEs but after P3 students have had sufficient time to submit their preferences for APPEs.

While this information will be useful for the Wilkes University Nesbitt School of Pharmacy Experiential Department to better adapt to the interest of our students, the external usefulness (generalizability) of our results may be limited. Smaller institutions may be better able to meet the requests of students and create or adjust APPEs to student preferences. However, this information may not be applicable to larger institutions where satisfying requests of more students becomes increasingly difficult. Even though all the data may not be extrapolated to larger institutions, knowledge gained from this survey could guide larger institutions in offering more sites, which may be preferred by students.

Though students have at least some latitude with regards to the selections they make, it is unclear if these selections meet expectations upon completion. Further research may include a survey sent to students upon completion of their APPEs to determine how the experiences compared to their expectations when ranking APPE sites, and whether there were other factors they would have used if it were possible to repeat the selection process.

CONCLUSION

Overall, this study provided data that can be used by PharmD programs to better plan APPEs in the future, especially at smaller institutions. This data may provide

experiential offices with important insight into how students select APPEs, helping them to better align with student preferences. The main finding of our study was that location appears to be the primary factor in students selecting APPEs. Further research into the proximity should be performed to identify the specific locations students desire as well as the student demographics that influence location preferences.

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Appendix 1. Survey Questions

Survey questions:

Are you interested in completing a residency upon graduation?

Yes

No

Unsure at this time

Which of the following are you interested in pursuing a career in?

Academia

Ambulatory Care

Community

Hospital

Industry

Long Term Care

Managed Care

Unsure at this time. Hope to determine this after completing APPEs

Other (please specify)

Do you prefer to have all of your APPEs at different sites or at the same location (matrix)?

Different Sites

Matrix

It doesn't matter

The rotation fair was helpful and allowed me to finalize my APPE selection

Strongly Agree

Agree

Disagree

Strongly Disagree

I was not able to attend the APPE rotation fair

N/A

Please rank the following on the factors that influenced your Ambulatory Care APPE selection

Factors:

Areas of interest in specialty

Cost/housing

Faculty rotation site

Future employment possibility

Had an IPPE at the site

How many students the site takes at a time during a given rotation

Level of difficulty

Location

Non-faculty rotation site

Peer recommendation

Preceptor reputation

Residency is offered there

Rotation activities (Journal Club, MTM, Rounding, etc.)

Rotation hours (ex: 8:00-4:30pm)

Size of institution

Teaching site (ie. medical students, PA students)

Wilkes alumni preceptor

Please rank the following on the factors that influenced your Community APPE selection

Factors: [see above question]

Please rank the following on the factors that influenced your Internal Medicine APPE selection

Factors: [see above question]

Please rank the following on the factors that influenced your Institutional APPE selection

Factors: [see above question]