

RESEARCH

Curricular Exposure to Postgraduate Residency Training Through an Introductory Pharmacy Practice Experience

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Objective. To evaluate the impact of a residency-focused introductory pharmacy practice experience (IPPE) on student perceived knowledge of and attitudes toward postgraduate residency training.

Methods. Second- and third-year student pharmacists completed a required four-hour experience at a residency training site. Students completed a five-item survey before and after the experience, indicating their perceived knowledge of residency training components as well as their own postgraduate plans. Students also submitted a written reflection following the experience. Paired *t* tests were used to compare pre- and post-survey responses. Qualitative analysis was completed to identify common themes in student reflections and code for positive, neutral, or negative student experience.

Results. A total of 276 students completed the Introduction to Postgraduate Residency Training IPPE in summer 2016. Post-experience survey responses indicated a significant increase in students' perceived knowledge of residency programs; however, plans to pursue residency training did not significantly change after completing the experience. Twenty-five independent themes were identified in reading student reflections, with the most common theme (included in 55% of reflections) being that the experience "clarified resident day-to-day responsibilities." The majority (95%) of students perceived the experience as valuable.

Conclusion. A residency-focused IPPE increased student pharmacists' perceptions of knowledge about postgraduate residency training and was viewed by students as a beneficial experience.

Keywords: residency, introductory pharmacy practice experience, pharmacy curriculum, experiential education

INTRODUCTION

Postgraduate residency training has been instrumental in the progression and advancement of pharmacy practice toward a patient care-centered profession.^{1,2} Professional organizations have emphasized the importance of residency training to the continued evolution of pharmacy practice. One of the American Society of Health-System Pharmacists' (ASHP's) long-term goals is for all entry-level pharmacists employed in hospitals and health systems to have completed an accredited postgraduate year 1 (PGY1) residency.³ The ASHP Pharmacy Practice Model Initiative (now termed the Practice Advancement Initiative) emphasizes residency training as essential to optimizing practice models to support effective direct patient care provider roles.⁴ In addition, both ASHP and the American College of Clinical Pharmacy (ACCP) have recommended that all pharmacists involved in direct patient care complete a PGY1 residency by 2020.^{2,3,5} From

an academic perspective, schools and colleges of pharmacy are required by current Accreditation Council for Pharmacy Education (ACPE) standards to provide information on postgraduate education to student pharmacists.⁶

Over the last five years, an average of 35% of residency applicants did not match with a PGY1 residency program.⁷ Although the number of programs and positions during this period increased, the match rate has remained relatively consistent because of the rising number of applicants.⁸ Since 2014, the number of PGY1 positions has increased 28%, from 2,859 to 3,662. In this same period, the number of applicants for PGY1 residencies has increased 34%, from 4,142 to 5,560.⁷ The reason for this growing demand is likely multifactorial and could be attributed to the expansion of colleges and schools of pharmacy since 2000, student desire to improve marketability in the setting of declining job prospects, and promotion of residency training as necessary for direct patient care by professional organizations.⁹ With the number of candidates seeking postgraduate residency

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training increasing, student pharmacists must be adequately exposed to information about the purpose of residency, as well as preferred qualifications for residency candidates, the application process, and resident roles and responsibilities. A 2010 survey of pharmacy schools in the United States indicated that the majority of institutions did not have a structured curricular program designed to prepare students for and expose students to residency training.¹⁰ However, many colleges and schools did report having informal programs of varying structures intended to promote residency, including lectures, seminars, small group discussions, and panels.^{8,10}

The ACPE requires introductory pharmacy practice experiences (IPPEs) to “expose students to common contemporary U.S. practice models.”⁶ Since 2003, the University of Georgia (UGA) College of Pharmacy has offered an Introduction to Postgraduate Residency Training IPPE as a required component of its experiential Doctor of Pharmacy (PharmD) program in order to provide student pharmacists with curricular exposure to this career path.⁶ The UGA faculty members continue to see the residency IPPE as an important strategy to enhance student exposure to residency training, meet college accreditation standards, and address professional organization recommendations. From 2003 to 2015, the experience took place during the summer between the second and third year of the PharmD program, with credit applied toward fall semester courses. During a recent curriculum revision, faculty members moved the experience to the summer between first and second year to provide students with earlier exposure to residency training. The IPPE was also moved so that it would follow a first-year course on career opportunities in which residency training is discussed in a didactic setting. As an experiential learning opportunity, this IPPE supplements informational programs about residency by providing direct, in-person exposure to this career pathway and the role of residencies in contemporary pharmacy practice. During the curriculum transition, both second-year (P2) and third-year (P3) students completed the residency IPPE in summer 2016. The purpose of this study was to evaluate the impact of completing a formal introductory experience at a residency site on student pharmacists’ knowledge and perceptions of postgraduate residency training.

METHODS

The four-hour pharmacy residency experience provided student pharmacists the opportunity to visit a residency training site; speak with residency program directors, preceptors, and current residents; and directly observe residents in their practice environments. The ex-

periential hours completed through the summer IPPE were applied to a fall semester course. Students were expected to meet the following learning objectives after the experience: explain the residency application process; describe qualifications that make residency applicants more competitive candidates; discuss the characteristics and structure of residency programs; describe responsibilities and typical daily activities of pharmacy residents; and discuss careers for which residency training may be beneficial.

In the spring semester prior to the onsite summer experience, students attended an orientation with the faculty coordinator to review the purpose for the IPPE and learning expectations. During this orientation, students were instructed to review the IPPE activity list to prepare for the visit. Immediately following the onsite experience in the summer, students were required to complete a written reflection assignment and an evaluation of the preceptor and site. In the fall semester, students were required to attend a semi-structured debriefing session led by faculty members; these sessions included discussion prompts related to the course objectives and the IPPE activity list. The purpose of this session was to allow students to identify similarities and differences between sites, ensure consistent learning outcomes, discuss themes identified in reflections that faculty members felt needed to be addressed, and answer any remaining questions about residency. Student grades for this IPPE were pass/fail based on the preceptor’s evaluation, completion of the written reflection (graded on pass/fail scale by faculty), and participation in the debriefing. The preceptor evaluation consisted of six questions assessing students on participation in experience activities, communication, professionalism, and understanding of objectives. Student understanding of objectives was also assessed by faculty members through review of written reflections. All components had to be passed to successfully complete the experience.

To ensure that the experience met learning objectives at all sites, both residency program directors and students were provided with a list of activities to promote consistency. Discussion topics included orientation to the site’s pharmacy residency program, overview to residency training in general, methods for researching programs, and the process for applying to programs. The primary intent of the students’ visit was for them to have interaction with a current resident, including the opportunity to observe day-to-day activities. Because daily activities during a limited duration experience tend to vary, a list of suggested activities for resident interaction was provided to allow for flexibility at specific sites. The discussion topics and suggested activities are listed in Table 1. In

Table 1. Activity List Provided to Student Pharmacists and Preceptors for an Introduction to Postgraduate Pharmacy Residency Training Experience

| Component | Activities |
|--|---|
| Orientation to Pharmacy Residency Site | Describe the pharmacy layout and tour the facility Describe the scope of pharmacy services delivered by the site Describe the pharmacy residency history at the site Number of years in existence Number/type of current residents Where previous residents are currently employed and what type of positions they have taken |
| Orientation to Residency Training (National Perspective) | What is the purpose of pharmacy residency training? Define the scope of residencies Define PGY1, PGY2 Identify types of residency sites: community, hospital, ambulatory care, managed care, etc. How is a residency structured? Types of experiences (ie, rotations, longitudinal experiences, research, staffing) Role of the residency program director and preceptors Describe the typical stipend and other benefits Identify the national accrediting body for residency training Discuss the residency accreditation process and the difference between accredited and non-accredited programs Discuss national organization recommendations regarding residency training and its role in providing direct patient care (ASHP/ACCP 2020 Vision, ASHP PPMI/PAI, etc.) Discuss the importance of residency training in a competitive job market Discuss how a residency differs from “on-the-job training” |
| Researching Programs | Discuss where students can find information about residency programs in the area or throughout the nation Describe residency showcase opportunities (regionally/nationally) Identify key considerations when comparing residency programs (eg, opportunity to do teaching certificate, rotation opportunities, structured program versus more flexibility to choose, presentation opportunities, community service opportunities, certifications, travel) |
| Applying for Residency Programs | Describe the application and interview process Discuss the strategy of applying to multiple programs Discuss the costs involved in interviewing Describe the matching process for PGY1 programs and how the process differs for PGY2 training programs Describe the current competitiveness of pharmacy residency training matching Identify qualifications that can make candidates stronger applicants for residency programs |
| Interaction with Pharmacy Resident | Discuss the resident’s motivation for seeking postgraduate residency training Describe the resident’s year-long experience (types of rotations, teaching opportunities, administrative projects, research, presentations, etc.) Identify the most challenging part of the residency training experience Identify the most/least satisfying part of the residency training experience Describe opportunities the resident has to precept/educate students on APPEs/IPPEs Observe/describe the typical responsibilities and daily routine for pharmacy residents. Suggested activities can be site-specific and may include: Shadowing residents during to day-to-day activities as appropriate for site. For example: Show students what they will be doing on a particular rotation Show students where residents complete staffing and what their responsibilities include Round with residents Observing and discussing research projects/posters completed by residents Observing and discussing MUEs completed by residents |

Abbreviations: IPPE=introductory pharmacy practice experience, PGY1=postgraduate year one, PGY2=postgraduate year two, ASHP=American Society of Health-System Pharmacists, ACCP=American College of Clinical Pharmacy, PPMI=Pharmacy Practice Model Initiative, PAI=Practice Advancement Initiative, APPE=advanced pharmacy practice experience, MUEs=medication use evaluations

addition, only accredited sites were used as they were required to meet external standards and would ensure that all students had a similar experience.

To encourage students to think critically about the experience, demonstrate knowledge of residency programs, and evaluate the impact of the IPPE, students completed a reflective writing assignment after the visit using the following prompts: describe how the visit added to your understanding of pharmacy residency programs; discuss your current postgraduate plans and whether these include pursuing residency training; what skills and experiences are further developed with completion of a residency program?; and do you feel that residency training would be important in obtaining certain types of pharmacy positions in the future?

In the summer of 2016, two classes of students completed the experience. The P2 students completed the new curriculum, while the P3 students completed the old curriculum. Investigators decided to use the curriculum transition as an opportunity to assess the program and the impact on both second- and third-year student learning and perceptions. All students who completed the experience during summer of 2016 were included in this study.

Students submitted a summer availability form to facilitate site placement. Experiential faculty members recruited residency sites across the state to have sufficient capacity and to decrease travel time for students. Fifteen ASHP-accredited residency programs provided this experience in 2016; 13 sites were hospital-based PGY1 programs, one site was a PGY1 community program, and one site was a PGY2 ambulatory care program. Of the 14 PGY1 programs, eight programs also offered PGY2 residencies. All inpatient sites were licensed with at least 300 beds. Placements were made based on site availability, student availability, and student rankings of preferred region.

The availability form also featured a six-question pre-experience survey instrument to gather perceived student baseline knowledge and interest in residency training. Students were asked to rate survey items on a five-point Likert scale from 1=strongly disagree to 5=strongly agree. The wording of survey items was reviewed by multiple pharmacy faculty colleagues and staff to ensure clarity.

Students were asked to complete six of the pre-experience survey items again as part of the post-experience evaluation: I plan to pursue residency training after pharmacy school; I understand the application process for pharmacy residency programs; I understand qualifications that may make residency applicants more competitive candidates; I understand the characteristics and structure of residency programs; I understand the respon-

sibilities and typical daily activities of residents; and I understand the types of careers for which residency training may be beneficial. In addition, a question regarding the overall impact the experience had on student interest in pursuing residency training was collected and rated on a scale of 1=strongly decreased to 5=strongly increased interest).

The services of the UGA Statistical Consulting Center were enlisted to determine appropriate tests and analyze quantitative data for this project. Pre- and post-survey responses were assigned a value (-2, -1, 0, 1, 2), where positive numbers aligned with agreement (agree, strongly agree), and negative numbers corresponded with disagreement (disagree, strongly disagree). The pre- and post-survey responses were compared using paired *t* tests. The overall benefit of the experience on perceived understanding of residency training was assessed by comparing the summation of the five individual knowledge-based pre- and post-experience responses. Because the “plan to pursue residency” and the “overall impact on interest in residency” statements were interest-based, these items were excluded from this benefit summation. The *t* test was also used to compare the summation of pre- and post-experience responses between P2 and P3 classes. R was the statistical program used for this analysis (R Foundation for Statistical Computing, Vienna, Austria).

For qualitative analysis, student reflections were assessed using a grounded theory approach. Investigators used a thematic text analysis, which was informed by the analytic procedure developed by Glaser and Strauss.^{11,12} An initial coding scheme for the responses was developed by one of the authors who had training in qualitative analysis. After the author read all responses, she identified themes related to each of the open-ended prompts for the responses and created coding categories within the themes. Once codes were established, the authors with a pharmacy background and students completing an advanced pharmacy practice experience independently reviewed and coded the responses for each question, with two readers coding each response.

Reviewer codes were analyzed for each student response. Only those codes that were identified in common between two reviewers were used to interpret the student reflections. Those responses for which there were no common codes were labeled as “no agreement.” Any of the initially identified codes found to be present in less than 5% of all reflections were removed. The UGA Institutional Review Board (IRB) determined the study to be exempt from IRB review and approval based on the nature of the data used.

RESULTS

A total of 276 students completed the Introduction to Postgraduate Residency Training IPPE in the summer of 2016 (138 second-year and 138 third-year students). Student responses to the pre- and post-survey questions relating to perceived knowledge of residency training are outlined in Table 2. A significant difference was seen between pre- and post-experience survey responses of P2 and P3 students. While students’ perceived knowledge regarding the learning objectives improved after the experience, there was not a significant change in future post-graduate plans among either class. In response to the interest-based statement, “I plan to pursue residency training after pharmacy school,” the pre- and post-survey means were the same for the P2 class (0.5 on the pre- and post-experience survey) and the P3 class (0.3 on the pre- and post-experience survey). However, both P2 and P3 students reported that the experience had an overall positive impact on their interest in residency training (0.7 and 0.8, respectively).

Using summation analysis, investigators also examined the difference between classes in regard to perceived knowledge-based objectives for the experience. While there was not a significant difference in post-survey responses between P2 and P3 classes, the second-year students had a significantly lower pre-survey mean ($p < .001$).

Evidence of knowledge gained through this experience was also demonstrated in the student reflection assignment. For analysis of common reflection themes, 138 P2 and 137 P3 reflections were reviewed. One of the third-

year reflections was removed from the study because of suspected academic dishonesty. Initially, 36 themes were identified and used for coding. Inter-rater reliability (IRR) was computed using the number of respondents for each group (P2=138 and P3=137). Inter-rater reliability for the P2 responses was 99%, while the IRR for the P3 responses was 95%. These high IRR ratings suggest consistency in the reviewers’ interpretation of student responses. The 25 common themes appearing in 5% or more of the remaining reflections are shown in Table 3. The most common themes identified were that completing the residency IPPE clarified the day-to-day responsibilities of a resident, provided insight into the application process, and emphasized the importance of completing a residency before assuming clinical/hospital pharmacy positions. Excerpts from selected student reflections are included in Appendix 1.

DISCUSSION

Given the current challenges in securing postgraduate residency positions, colleges and schools of pharmacy should promote graduate success and competitiveness by providing opportunities for student pharmacists to learn about residency training during school. This manuscript describes the results of one strategy, creating a required Introduction to Postgraduate Residency Training IPPE, on promoting this career path to students. To our knowledge, this experience is the only required curricular introductory experience described in the literature that involves a visit to a residency training site.

Table 2. Survey Responses for Second- and Third-Year Student Pharmacists Before and After Completing a Required Introduction to Postgraduate Residency Training Experience

| Survey Item ^a | P2 Pre-experience, Mean Score | P2 Post-experience, Mean Score | <i>p</i> Value | P3 Pre-experience, Mean Score | P3 Post-experience, Mean Score | <i>p</i> Value |
|---|-------------------------------|--------------------------------|----------------|-------------------------------|--------------------------------|----------------|
| I understand the application process for pharmacy residency programs. | -0.4 | 1.2 | <.001 | -0.1 | 1.1 | .003 |
| I understand qualifications that may make residency applicants more competitive. | 0.2 | 1.4 | <.001 | 0.6 | 1.3 | <.001 |
| I understand the characteristics and structure of residency programs. | -0.4 | 1.2 | <.001 | 0.1 | 1.3 | <.001 |
| I understand the responsibilities and typical daily activities of residents. | -0.5 | 1.1 | <.001 | -0.1 | 1.2 | <.001 |
| I understand the types of careers for which residency training may be beneficial. | -0.6 | 1.4 | <.001 | 0.7 | 1.4 | <.001 |
| Summation | -1.6 | 6.4 | <.001 | 1.2 | 6.3 | <.001 |

Abbreviations: P2=second professional year, P3=third professional year

^a Each of the “understand” questions was measured on a 5-point scale from -2 (strongly disagree) to 2 (strongly agree)

Table 3. Themes Identified in Reflections Written by Student Pharmacists Who Completed a Required Introduction to Postgraduate Residency Training Experience

| Item | P2 (N=138), % | P3 (N=137), % | Total (N=275), % |
|--|------------------|------------------|---------------------|
| Positive response to experience | 93 | 98 | 95 |
| Neutral response to experience | 4 | 2 | 3 |
| Negative response to experience | 3 | 1 | 2 |
| Themes relating to “Describe how the visit added to your understanding of pharmacy residency programs.” | | | |
| Clarified resident day-to-day responsibilities and requirements for completing a residency | 62 | 47 | 55 |
| Highlighted how competitive it is to get a residency (including requirements for qualifying for a residency) | 12 | 10 | 11 |
| Illustrated the benefits of completing a residency | 6 | 9 | 8 |
| Showed the purpose of participating in a residency program | 1 | 9 | 5 |
| Emphasized that residents are treated as professional pharmacists making real decisions (not just as students who observe) | 6 | 7 | 7 |
| Taught me that a residency is the equivalent of approximately 3-5 years of experience | 9 | 13 | 11 |
| Gave me insight on how to prepare for the application process | 38 | 34 | 36 |
| Themes relating to “Discuss your current postgraduate plans and whether these include pursuing residency training as an option.” | | | |
| Undecided | 12 | 7 | 10 |
| I am open to the idea of pursuing a residency | 4 | 9 | 7 |
| I will pursue a residency after graduation | 20 | 18 | 19 |
| As a result of this experience, I will pursue a residency/I am more open to the idea of pursuing a residency after graduation | 14 | 7 | 11 |
| I am not interested in pursuing a residency after graduation; going into a field of pharmacy where residency is not needed | 8 | 18 | 13 |
| Themes relating to “What skills and experiences are further developed with completion of a residency program?” | | | |
| Time management | 14 | 5 | 9 |
| Critical thinking | 7 | 6 | 6 |
| Interprofessional teamwork/collaboration/communication | 22 | 18 | 20 |
| Professional autonomy/confidence/professional judgment | 16 | 15 | 15 |
| Professional communication skills | 7 | 7 | 7 |
| Leadership/project management | 8 | 10 | 9 |
| Research skills | 5 | 11 | 8 |
| Patient care/clinical skills | 14 | 13 | 13 |
| Themes relating to “Do you feel that the postgraduate residency experience would be important in obtaining certain types of pharmacy positions in the future?” | | | |
| Residencies are important for hospital/clinical pharmacists | 18 | 35 | 26 |
| Residencies are essential for those who want to specialize in a particular type of pharmacy practice | 10 | 9 | 9 |
| Not needed for retail/independent/community pharmacy practice | 8 | 4 | 6 |
| Residencies are required in order to get certain jobs | 14 | 7 | 10 |
| Residencies are required in order for a pharmacist to be marketable and secure a job | 1 | 10 | 6 |

Abbreviations: P2=second professional year; P3=third professional year

Student knowledge of residency training as assessed by surveys completed before and after the IPPE indicated a significant increase in perceived knowledge of residency training in all areas. Although this technique may lead to students potentially over-

estimating their knowledge, the consistently higher post-survey results suggest that student knowledge did improve. In addition, common themes identified in qualitative analysis support the students’ growth in perceived knowledge of residency training.

Although this experience has been offered to third-year students since 2003, summer 2016 was the first year it was also offered to second-year students before being fully transitioned to a second-year experience in the new UGA COP PharmD curriculum. One of the key factors leading to moving the IPPE to earlier in the curriculum was student feedback from previous years. Faculty members who had graded students' reflections in the past had shared that P3 students had often indicated they would have preferred to complete the IPPE earlier in their education in order to have had the chance to make themselves more desirable residency candidates. Because some students had not chosen to take advantage of informal opportunities to learn about residency training in the past, this required experience was the first exposure they received.

When evaluating the impact of this experience on P2 students compared to that on P3 students, there was not a significant difference in perceptions as reflected in post-experience surveys, indicating that both groups had a similar understanding of residency training following the IPPE. The P2 students demonstrated a larger mean increase in perceived knowledge compared to P3 students, indicating P2 students were less confident in their knowledge before the experience. This could have been because of the P3 students' greater length of time in the professional school environment, resulting in increased exposure to informal residency learning opportunities. Therefore, completing this experience earlier in the curriculum resulted in P2 students having a similar level of understanding as P3 students, but may have also allowed them additional time to pursue opportunities that would make them more competitive residency candidates.

In contrast to the increased knowledge regarding residencies, there was not a significant change in plans to pursue residency training; however, qualitative analysis of reflections revealed that students overwhelmingly thought the residency IPPE was a positive experience (95%). Subsequently, the lack of change in plans was not seen as negative by the investigators, as the purpose of the experience was not to convince students to pursue residency training. Rather, the purpose of the experience was to give students firsthand exposure so that they could make an informed decision about postgraduate training. Some students noted this experience made them more confident in their decision to pursue or not pursue a residency.

Analysis of the reflective writing assignment integrated into this experience supports reflection as an important component of experiential education, as described in Kolb's Experiential Learning Theory.¹³

While students were given four general prompts for writing their reflective essay, authors identified 25 separate themes appearing in 5% or more of reflections. Approximately half of themes identified by authors were present in a relatively small number of reflections, with 12 out of 25 themes occurring in less than 10% of reflections. This indicates most students were able to draw independent conclusions from the experience while achieving the core objectives for the IPPE. Although there was variability in themes identified, this could be attributed to the reflection prompts. Because reflection prompts were open-ended and designed to capture what individual students felt was most important, we were not surprised by the variability in responses and felt that themes identified were appropriately linked to the intended purpose of the course. An additional consideration regarding the qualitative analysis was that reflections were completed prior to the fall debriefing. While reflections were representative of student learning from the onsite experience, the analysis does not account for additional learning that may have occurred during the debriefing.

Limitations of this experience included administrative and logistical considerations and variability between sites. Because students were placed at external sites for this IPPE, preceptor and program recruitment was necessary to ensure sufficient capacity to provide the experience. Students may incur costs to participate with sites that have clearance requirements such as background checks. Although faculty made efforts to standardize the IPPE and ensure consistent objectives were achieved (eg, preceptor communication and training, discussion topic list, suggested activities), the day-to-day activities differed between sites, just as they do between APPE sites. In addition, students were only directly exposed to one type of residency during the IPPE, and most were inpatient-based residencies. For students interested in outpatient-based or specialty residencies, site availability was limited. To address this, faculty members reviewed various types of postgraduate training options during the debriefing. To offer a broader perspective, the two faculty members leading the debriefing had different backgrounds; one had completed hospital-based residency training and the other had completed outpatient-based residency training.

Colleges and schools of pharmacy use a variety of methods to expose students to postgraduate training options; these include curricular and co-curricular options such as residency workshops, seminars, and curricular pathways/tracks.^{8,10} The Introduction to Postgraduate Residency Training IPPE, offered at

UGA since 2003, differs from other initiatives in design. Not only is this experience required for all UGA PharmD students, it also allows for direct observation of a residency program and the daily activities of residents. In addition to exposure to residency during this IPPE and the previously mentioned Career Opportunities course, since 2010 UGA also has offered an Introduction to Postgraduate Residency Training elective course designed to provide education on residency training opportunities for P3 students.¹⁴ Other residency-specific learning opportunities at UGA are co-curricular in nature and commonly occur during professional organization events and activities. Given the results of this study, faculty members plan to continue offering the IPPE to expose students to residency as a postgraduate training option.

CONCLUSION

The IPPE described in this manuscript demonstrates a formalized curricular strategy for educating PharmD students on postgraduate residency training. Integrating this experience into the UGA curriculum allowed the college to provide consistent residency training exposure to all students, which aligns with college accreditation standards and professional organization recommendations. With the increasing number of residency program applicants, it is important for colleges and schools of pharmacy to use available resources and strategies to educate students about this career path, allowing them to make informed decisions about their postgraduate options.

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REFERENCES

1. Johnson TJ. Pharmacist work force in 2020: implications of requiring residency training for practice. *Am J Health-Syst Pharm.* 2008;65:166-170.
2. Knapp KK, Shah BM, Kim HBH, Tran H. Visions for required postgraduate year 1 residency training by 2020: a comparison of actual versus projected expansion. *Pharmacotherapy.* 2009;29(9):1030-1038.
3. American Society of Health-System Pharmacists. ASHP long-range vision for the pharmacy work force in hospitals and health systems. *Am J Health-Syst Pharm.* 2007;64:1320-1330.
4. American Society of Health-System Pharmacists. The consensus of the Pharmacy Practice Model Summit. *Am J Health-Syst Pharm.* 2011;68:1148-1152.
5. Murphy JE, Nappi JM, Bosso JA, 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):722-33.
6. Accreditation Council for Pharmacy Education. Accreditation standards and key elements for the professional program in pharmacy leading to the Doctor of Pharmacy degree. <https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf>. Published February 2, 2015. Accessed March 13, 2018.
7. Statistics for applicants 2013-2018. National Matching Services Inc. <https://natmatch.com/ashprmp/stats.html>. Accessed August 28, 2018.
8. Hidayat L, Huggins CE, Venugopalan V, Berrios-Colon E. Preparing students to enter the race for postgraduate training. *J Pharm Pract.* 2017;30(4):476-482.
9. Brown DL. A looming joblessness crisis for new pharmacy graduates and the implications it holds for the academy. *Am J Pharm Educ.* 2013;77(5):Article 90.
10. Dunn BL, Ragucci KR, Garner S, Spencer A. Survey of colleges of pharmacy to assess preparation for promotion of residency training. *Am J Pharm Educ.* 2010;74(3):Article 43.
11. Glaser BG, Strauss AL. *The Discovery of Ground Theory: Strategies for Qualitative Research.* New Brunswick, NJ: Aldine Transaction; 1967.
12. Strauss AL, Corbin JM. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* 2nd ed. Thousand Oaks, CA; SAGE; 1998.
13. Tsingos C, Bosnic-Anticevich S, Smith L. Reflective practice and its implications for pharmacy education. *Am J Pharm Educ.* 2014;78(1):Article 18.
14. Phillips BB, Bourq CA, Guffey WJ, Phillips BG. An elective course on postgraduate residency training. *Am J Pharm Educ.* 2012;76(9):Article 174.

Appendix 1. Supporting Quotations from Student Reflections

Student Quotes

Themes relating to “Describe how the visit added to your understanding of pharmacy residency programs.”

“Before having my IPPE [...], I really did not have much of an idea of what the benefits of a pharmacy residency could be. In our career opportunities class, we had many different guests come by and talk to us about their careers and residency programs, but my IPPE [...] was the first time that everything clicked. Listening to people talk about residency programs never piqued my interest but being in the hospital and touring was a great experience. The residents that showed us around really made me excited that this could be a potential career route. They went through the ins and outs of what they do on a daily basis and seemed genuinely excited with their career choice.”

“I thoroughly enjoyed my experience [...] – although short, it was more than informative. This experience gave me great insight into residency programs, from the application process to what a typical day looks like as a resident. Before this experience, I had a very limited amount of knowledge about residency programs, but I left feeling confident.”

Themes relating to “Discuss your current postgraduate plans and whether these include pursuing residency training as an option.”

“Being able to talk with the two residents and ask them any questions I had about residency gives me a clearer understanding of pharmacy residency which allows me to make a well-educated decision of whether it is something I would like to pursue. My current postgraduate plans do not include pursuing residency training and I feel confident in this decision especially after my residency visit IPPE.”

“This particular experience really opened my eyes to residencies. Before, I was set on working in a community retail pharmacy, but after actually experiencing a day with a current resident I think I may want to pursue a residency in a hospital setting.”

“The preceptor gave us a better understanding of the residency projects and the expectations he has of his residents. He also spoke to his own residency experience and how [it] was vital for him and his fellow residents to learn how to be self-reliant, work along with other health-care professionals and find the balance between work and home life. These lessons were helpful in the transition from student to professional.”

Themes relating to “What skills and experiences are further developed with completion of a residency program?”

“One benefit of completing a residency program would be the opportunity to spend more time working in a group setting. Being able to collaborate with these other healthcare professionals would help me improve both my communication skills and help me provide better care for my patients. A residency program would also give me the chance to apply the knowledge and perfect the skills that I have spent years learning in classrooms and labs, while still having someone to guide me and answer any questions that I might have.”

(Continued)

Appendix 1. (Continued)

Student Quotes

Themes relating to “Do you feel that the postgraduate residency experience would be important in obtaining certain types of pharmacy positions in the future?”

“There are many career opportunities that I think residency is essentially necessary for. While on this visit we talked to many different types of clinical pharmacists that focused on coagulation, infectious disease, internal medicine, and ER pharmacy. I love that some clinical pharmacists round with the doctors and are an essential part of a patient’s treatment plan.”

“I do think that residency training is important for many current pharmacy positions as well as for pharmacy jobs in the future, and I don’t think it is ever a bad idea to pursue residency training. The residency director [...] said, “Residency training is like an insurance policy.” I have reflected on this statement since my experience, and think that this statement will come back to me over the next two to three years as I decide whether or not to apply for a residency. [...] I will carry this experience and what I have learned with me as I reflect on the possibility of going forward with residency training when the application time comes.”

Abbreviations: IPPE = introductory pharmacy practice experience, ER = emergency room