RESEARCH

Pharmacy Residents' Pursuit of Academic Positions

Tiffany R. Shin, PharmD,^a Colleen A. Clark Dula, PharmD,^b Bella H. Mehta, PharmD,^b
Jennifer L. Rodis, PharmD,^b Maria C. Pruchnicki, PharmD^b

^a The University of Kansas School of Pharmacy, Wichita, Kansas

^b The Ohio State University College of Pharmacy, Columbus, Ohio

Submitted June 23, 2014; accepted November 9, 2014; published April 25, 2015.

Objective. To describe pharmacy residents' interest in and pursuit of academic positions.

Methods. An electronic presurvey and postsurvey were sent to pharmacy residents during the 2011-2012 residency year. The initial survey evaluated residents' job preferences and interest in academia at the beginning of residency, and the follow-up survey focused on job selection and reasons for pursuing or not pursuing positions in academia.

Results. Nine hundred thirty-six residents responded to the initial survey and 630 participated in both the initial and follow-up survey. Forty-eight percent of those responding to both surveys strongly considered a career in academia in the initial survey, 28% applied for an academic position, and 7% accepted a position. Second-year postgraduate residents were more likely than first-year postgraduate residents to apply for and be offered a faculty position.

Conclusion. Pharmacy residents are interested in academia. While increasing interest among residents is encouraging for faculty recruitment, the academy should also encourage and develop adequate training experiences to prepare residents to succeed in these positions.

Keywords: academia, residency training, faculty recruitment, resident teaching, academic residency

INTRODUCTION

The American Association of Colleges of Pharmacy (AACP) identified faculty recruitment and retention as critical issues to the academic pharmacy profession in 2002.¹ Since that time, the association has published yearly reports on the status of lost and vacant faculty positions at colleges and schools of pharmacy to track the shortage.¹⁻¹¹ AACP proposes several recommendations to improve how new pharmacists prepare to become faculty members. These recommendations include requiring postgraduate training, such as residencies or fellowships, before obtaining a faculty position and incorporating formal preparation in teaching into these trainings.¹² Similarly, the American College of Clinical Pharmacy (ACCP) recommends that postgraduate training should be required for new clinical pharmacy faculty members.¹³ Furthermore, Leiker et al's survey of pharmacy faculty members found 64% of respondents agreed a postgraduate year 1 (PGY1) residency should be required for appointment as an adjunct clinical faculty member or as a preceptor, and 50% of respondents agreed

that a postgraduate year 2 (PGY2) residency should be required for appointment as assistant professor.¹⁴

All residency programs have a required educational outcome to provide medication and practice-related education/training as part of their accreditation standards.¹⁵⁻¹⁸ These outcomes do not specify didactic, experiential, or clinical teaching; however many residency programs, especially those affiliated with schools of pharmacy, include formal teaching instruction as a component of residents' experience, and many now offer teaching certificate programs.¹⁹⁻²⁶ Aistrophe et al found 27% of programs from the online residency directory of the American Society of Health-Systems Pharmacy (ASHP) had a formal teaching certificate program in 2010.¹⁹ Considering the growth of and demand for quality pharmacy residency programs and the ongoing need for pharmacy faculty members, especially within the pharmacy practice division, pharmacy residents continue to be ideal candidates for faculty recruitment.^{27,28}

In 2006, Clark et al found 8% (3/40) of community pharmacy residents accepted faculty positions upon completion of their residencies.²⁹ Factors that influenced their decision included positive teaching experiences and relationships with mentors or preceptors. Sheaffer et al surveyed final-year pharmacy students, pharmacy residents,

---

Corresponding Author: Colleen A. Clark Dula, PharmD,
500 W. 12th Ave, Columbus, Ohio 43210.
E-mail: dula.6@osu.edu

and new pharmacy faculty members to determine motivating or deterring variables in considering a career in academic pharmacy.³⁰ They found the potential need to generate one's salary (eg, grant funding) as the primary deterrent against considering academic positions, while autonomy, flexibility, and the ability to shape the future of the profession were primary motivators.³⁰ Of newly hired, first-time pharmacy faculty members in pharmacy practice or clinical positions in 2012-2013, 56% went directly from residency to their faculty positions, and 29% became clinicians after residency and later took faculty positions.³¹

In the past several years, multiple factors potentially influenced residency graduates' interest in academic and clinical educator positions. In 2008, the declining financial climate in the United States decreased demand for traditional pharmacist positions.³² However, the number of schools of pharmacy continued to rise. One hundred twenty-nine programs offered the doctor of pharmacy (PharmD) as a first professional degree as of January 2014, which represented a more than 40% increase in programs since 2005.^{4,11,33} Furthermore, the changes in health care models continued to promote the expansion of pharmacist roles in all health care arenas. Residency programs grew as well, with the number of PGY1 programs increasing by 65%, and PGY2 programs increasing by 127% between 2007 and 2013.^{34,35} This growth included the emergence of several PGY2 residencies with an emphasis in academia designed to prepare residents to become faculty members.²⁵

Thus, residency programs continue to serve as a prominent training pathway for academic careers. However, no recent studies have investigated the number of new residents pursuing academic careers or the factors influencing their decision, including the aforementioned shifts in the pharmacy profession. The objectives of this study were to determine the percent of pharmacy residents who accepted an academic position at the end of residency and to identify factors that influenced pharmacy residents' decisions to pursue or not pursue careers in academia.

METHODS

The targeted study populations were PGY1 and PGY2 pharmacy residents in the United States during the 2011-2012 residency year. No detailed registry or list of pharmacy residents' individual contact information was available, therefore residency program directors were contacted to distribute the survey to the targeted population. An e-mail list of all 2011-2012 PGY1 and PGY2 program directors was obtained from ASHP, and the total number of residency positions was estimated based on the 2011 ASHP Match results.³⁶

A presurvey/postsurvey design with matched responses was used, and the survey was modified from Clark et al's study.²⁹ Questions were adapted to include PGY1 and PGY2 residents in all settings and to meet the objectives stated above. Questions for both the initial survey and follow-up survey were uploaded into an online survey tool (Qualtrics, Provo, UT). The survey was individualized based on response so participants only answered questions applicable to their career path and interests. Respondents could choose not to answer a question if desired. In October 2011, the initial survey invitation was sent to PGY1 and PGY2 residency program directors with a request to forward the e-mail to their current pharmacy residents. The survey invitation included a brief description of the study and a link to the survey instrument. Residents were offered an incentive (ie, a chance to win a free ASHP midyear meeting registration) for participating. Informed consent was obtained electronically from all participants before starting the survey. A reminder e-mail with a second invitation was sent to program directors after 2 weeks, and the initial survey was closed after 3 weeks. The survey collected resident demographics, information on residency program characteristics, residents' past and anticipated teaching, precepting, and research experiences, interest in academia, job preferences, and characteristics of the ideal job as perceived early in the residency. Participants were also asked to provide an e-mail address where they would receive an invitation to take the follow-up survey at the end of the residency year.

In May 2012, all residents who participated in the initial survey and provided e-mail addresses were sent the invitation to the follow-up survey. A reminder e-mail was sent after 1 week and the survey was closed after 2 weeks. Residents were offered an additional incentive (ie, a chance to win a \$50 Visa gift card) for participating. Questions in the follow-up survey focused on teaching, precepting, and research experience gained during the current residency year, information on residents' job applications and acceptances, reasons for applying for or not applying for academic positions, and job characteristics that influenced their application for and acceptance of a position. Participants' e-mail addresses were assigned a participant number, which was used to match initial survey and follow-up survey responses. All responses were kept confidential and de-identified upon completion of data analysis. The Ohio State University Institutional Review Board determined this study to be exempt.

Responses from nontraditional residents and postgraduate fellows were excluded. Survey results were downloaded from Qualtrics and exported to SAS/STAT v9.3 software, (SAS Institute, Inc., Cary, NC), for statistical

analysis. Multiple responses from the same participant were removed, and only the most complete response was included in the data analysis. Descriptive statistics were generated for both the initial and follow-up surveys. Continuous variables were expressed using mean and standard deviation. Categorical variables were expressed using frequencies and percentages. Univariate analyses compared survey demographics and residency characteristics among respondents who did and did not accept faculty positions. Wilcoxon rank sum tests were used for Likert-scale variables and chi-square or Fisher exact tests were used for categorical variables.

RESULTS

According to the 2011 ASHP Match results, there were 2543 possible postmatch resident positions available for the 2011-2012 residency year.³⁶ Initial survey invitations were sent to 1270 residency program directors to forward to their residents. Nine hundred thirty-six participants were included for analysis of the initial survey, resulting in a 37% (936/2543) initial response rate. Of the 936 participants in the initial survey, 912 provided their e-mails and were sent the follow-up survey in late May 2012. Of those 912 participants, 630 (69%) responded. This yielded an overall 25% response rate (630/2543) of residents answering both the initial and follow-up survey. Residents from across the country were represented, with

at least one resident from each of 49 states. There were no significant differences in baseline characteristics between survey participants who answered the initial survey and the subset that responded to both the initial and follow-up surveys (Table 1). The initial survey asked if residents were seriously considering pursuing an academic career after residency; 47% (435/925) of participants in the initial survey and 48% (300/624) of participants who responded to both surveys agreed with this statement at the beginning of their residency year ($p>0.05$). From this point on, results include only respondents who completed both the initial and follow-up surveys.

The follow-up survey in May 2012 found that 43% (269/624) of respondents were strongly considering a career in academia at the end of residency compared to the 48% (300/624) in the initial survey ($p=0.078$). Nevertheless, residents who were strongly considering academia at either time were more likely to apply for a faculty position ($p<0.001$). Furthermore, residents who chose a faculty position as a top-2 preferred position in the initial survey were more likely to apply for ($p<0.001$) and accept ($p=0.02$) a faculty position at the end of residency. Twenty-eight percent (174/623) of residents applied for a faculty position with a school of pharmacy, while only 7% (42/618) of residents accepted a position (Figure 1). Seven residents did not provide information on positions they had applied for, and 12 residents did not provide

Table 1. Respondent Demographics and Characteristics of Initial Survey

	Responses from Residents Participating in Initial Survey n=936, No. (%)	Responses from Residents Participating in Both Initial and Follow-up Surveys n=630, No. (%)
Male ^{a,b}	243 (26)	168 (27)
Age ^{a,b}		
21 to 24 years	230 (25)	162 (26)
25 to 29 years	595 (64)	397 (63)
≥ 30 years	100 (11)	65 (10)
Type of Residency		
PGY1	670 (72)	443 (70)
PGY2	244 (26)	173 (28)
Combined PGY1/PGY2	22 (2)	14 (2)
Area of Practice		
Pharmacy Practice (General Inpatient)	499 (53)	317 (50)
Community Pharmacy	56 (6)	47 (8)
Ambulatory Care	104 (11)	80 (13)
Inpatient Specialty Practice	174 (19)	112 (18)
Pharmacy Administration	39 (4)	28 (4)
Managed Care	21 (2)	12 (2)
Other	43 (5)	34 (5)

^a 11 respondents in the initial survey did not provide information; percent calculated from n=925

^b 6 respondents that participated in both initial and follow-up surveys did not provide information; percent calculated from n=624

Figure 1. Interest and Pursuit of Faculty Positions at the Beginning and Conclusion of Residency^a, ^a Does not include 12 residents who did not provide information about their final position status, ^b Includes residents in combined PGY1/PGY2 programs, PGY1: postgraduate year 1; PGY2: postgraduate year 2

information about accepted positions, including 2 residents who indicated they had applied for faculty positions but did not indicate if they accepted a position.

The majority of accepted positions were clinical/non-tenure track faculty members (30/42, 71%). The main clinical practice positions for faculty members were in the areas of ambulatory care (17/42, 40%) and inpatient clinical pharmacists (17/42, 40%); other positions included community pharmacy (2/42, 5%), Veterans Affairs (2/42, 5%), and one position in each of a drug information center, an outpatient pharmacy, a long-term care/community/ambulatory care mix, and not-yet specified. Of the accepted positions, 29% (12/42) were with newer schools of pharmacy, defined as schools whose first students were enrolled within the previous 10 years.

Residents who applied for faculty positions were sorted into categories based on their status at the time of the follow-up survey (Figure 2). More PGY2 residents (78/172, 45%) than PGY1 residents (96/437, 22%) applied for faculty positions ($p<0.001$). Of the residents who applied, 59% (46/78) of PGY2 residents were offered a faculty position compared to 29% (27/94) of PGY1 residents ($p<0.001$). Furthermore, a trend emerged of more PGY2 residents (24/78, 31%) than PGY1 residents (17/94, 18%) accepting a faculty position ($p=0.052$). At the time of the follow-up survey, PGY1 residents (28/94,

30%) were more likely than PGY2 residents (10/78, 13%) to be waiting for an offer for a faculty position ($p<0.001$).

Of all the residents who applied for faculty positions, 57% (98/172) received no offer, 28% (48/172) received one offer, 15% (25/172) received multiple offers, and 17% (29/172) declined an offered position. Ultimately, 24% (42/172) of residents who applied for a faculty position accepted a faculty position, 23% (39/172) were waiting on an offer for a faculty position, 41% (71/172) accepted nonfaculty positions, and 12% (20/172) had not yet accepted positions but were no longer interested in them. The overall results of accepted positions for all residents are shown in Figure 3.

Teaching certificate programs were completed by 61% (383/623) of residents, while another 5% (33/623) of residents had training for teaching in noncertificate programs. Residents who completed any teaching program were more likely to apply for faculty positions ($p<0.001$) and subsequently accept the positions ($p=0.011$). Formal training in precepting and research was much lower than in teaching, with only 24% (151/623) of residents having preceptor training and 19% (121/623) of residents having research training. Similar to teaching programs, residents who completed a preceptor training program were more likely to apply for faculty positions ($p=0.005$) and subsequently accept the positions ($p=0.035$). In contrast, completing a research

Figure 2. Status of Residents Who Applied for Faculty Positions^a, ^a Does not include 2 residents who indicated they applied for a faculty position but did not designate if they received an offer or not, ^b Includes residents in combined PGY1/PGY2 programs, PGY1: postgraduate year 1; PGY2: postgraduate year 2

training program did not affect whether a resident applied for ($p=0.26$) or accepted a faculty position ($p=0.23$).

Any teaching experience during residency, including lecture, workshop, or precepting, increased the likelihood that a resident would choose to apply for a faculty position (for all comparisons, $p<0.05$). However, providing a stand-alone lecture and/or workshop did not change the likelihood of being offered a position. Residents who were involved in an entire course at a school of pharmacy were more likely to be offered a faculty position ($p<0.001$) and more likely to accept a position ($p=0.02$) than residents who were not. Delivering lectures to the pharmacy staff or to health care professionals did not correspond to pursuit of positions in academia ($p=0.31$ and $p=0.45$, respectively). Residents who successfully published a manuscript or who had the intent of submitting a manuscript for publication trended toward a higher likelihood of applying for faculty positions ($p=0.063$ and $p=0.051$, respectively), but it did not influence whether a position was offered or accepted.

Residents were asked to rate their feelings of preparedness in teaching, precepting, research, and clinical practice. Residents who felt prepared in teaching and precepting were more likely to apply for faculty positions (for all comparisons, $p<0.01$). Whether residents felt prepared or not prepared in research ($p=0.25$) or clinical practice ($p=0.35$) made no difference in application to faculty positions. Residents who had an influential preceptor affiliated with a school of pharmacy (ie, received partial salary from school) were more likely to apply ($p<0.001$) and accept ($p=0.04$) a faculty position. Table 2

lists the top reasons residents decided to pursue or not pursue a faculty position.

DISCUSSION

Though there is still a need to fill positions, a reexamination of the pharmacy faculty shortage based on the results of this study suggests that the supply of interested candidates may be starting to meet the demand for new faculty members. Combatting the shortage has been an AACP priority for more than a decade. At the height of the faculty shortage in 2006-2007, AACP reported 582 vacant faculty positions at schools of pharmacy in the United States, more than 300 of which were in clinical sciences/practice divisions.⁵ In 2011-2012, this decreased to 395 vacant faculty positions with approximately 210 positions in clinical sciences/practice divisions.¹⁰

This was a comprehensive study of all pharmacy residents in a given residency year. Previous studies evaluating residents' pursuit of academia were retrospective or cross-sectional in design and relied on recall or correlations across populations. As a presurvey/postsurvey design, this study was able to correlate residents' initial interest in academia and eventual pursuit of an academic position within a residency year. Recall bias was reduced by collecting teaching, precepting, and research experiences prior to current residency in the initial survey, then collecting experiences during the current residency in the follow-up survey. No other studies were found that differentiated between application to academic positions and attainment of positions. We were able to determine that more residents applied for academic positions than ultimately obtained positions.

Figure 3. Accepted Positions at Time of Follow-up Survey, n=618^a, ^a 12 respondents from follow-up survey did not indicate information on an accepted position, ^b Community Pharmacy 3.1%; Ambulatory Care 3.6%, ^c Inpatient Clinical 23.6%; Inpatient Staff 3.6%

Many 2011-2012 pharmacy residents in the United States were interested in academia, with 48% seriously considering a faculty position early in residency and 28% applying for a faculty position. By May 2012, 6% of residents were waiting on offers for positions, and 7% accepted faculty positions at a school of pharmacy. By graduation, as many as 13% of residency graduates (the 7% who had accepted positions and the 6% still waiting for faculty positions) may have committed to an academic pathway.

Extrapolating this data to the entire population of more than 2500 residents in 2011-2012, one can estimate that as many as 175 residents may have accepted a faculty position and 150 more may have been ready to accept a faculty position at a school of pharmacy. Though this extrapolation is potentially overestimated because of response bias, it does suggest that there is enough or nearly enough interest by pharmacy residents to fill needed positions across the country today. In fact, these values match closely to data obtained from AACP's 2012-2013

faculty database, which found there were 307 total first-time faculty hires and 167 first-time faculty hires in pharmacy practice departments for the 2012-2013 academic year.³⁷ Many of the 167 first-time faculty hires in pharmacy practice were likely recently graduated residents.

Even so, there remained a consistent number of vacancies year to year, with more than 350 open positions each year from 2003-2013.¹⁻¹¹ Based on this, the discrepancy between the number of residents wanting those faculty positions and of those obtaining them is in alignment with the AACP reports' most cited reason for vacancies: a lack of qualified candidates in the pool.¹⁻¹¹ Though the qualifications themselves are based on various factors, this is likely the difference between those residents who obtained a faculty position and those who wanted a position but did not get one. The implications of this shift (greater supply and demand for high-quality candidates) are substantial in that the focus of faculty training programs will be increasingly geared toward independence in teaching rather than introduction of skills. Clinical

Table 2. Reasons for Applying, Choosing Not to Pursue After Applying, or Not Applying for a Faculty Position^a

Reason	No. (%)
Applied for faculty (n=174)	
Teaching experience in residency	141 (81)
Mentor/preceptor	133 (76)
Teaching experience in pharmacy school	110 (63)
Job availability	67 (39)
Did not continue to pursue faculty after applying (n=92)	
Decided against	32 (35)
Geographic location not suitable	27 (29)
Type of position offered not desired	19 (21)
Not offered a position	15 (16)
Did not apply for faculty (n=448)	
Not interested in academic position	237 (53)
Pursing further training	121 (27)
Did not feel adequately prepared	101 (23)
Geographic location not suitable	56 (13)

^a More than 1 reason could be chosen

practice expertise alone may no longer be sufficient. Better preparing residents to become qualified for faculty positions and developing guidelines for faculty search committees could help close faculty gaps in schools of pharmacy.

A major differentiating factor among candidates when evaluating preparedness for faculty positions was the completion of a PGY1 vs a PGY2 residency. In this study, both PGY1 and PGY2 residents showed a similar interest in pursuing academia. However more PGY2 residents ultimately applied for, were offered, and accepted a faculty position. Nevertheless, PGY1 residents were still interested in academia, with half of the PGY1 residents who elected further training expressing interest in pursuing academia after completing their training. This decision by PGY1 residents is likely strategic, as it would be expected to improve candidates' level of experience, confidence, and maturity. This would provide an advantage to manage the demands of faculty life, particularly for more junior faculty members. This is also consistent with the recommendations from AACP and ACCP that completing a PGY2 residency be required to obtain the rank of assistant professor.^{12,13} We also found that more PGY1 residents with specialties such as community or ambulatory care than general pharmacy practice residents applied for faculty positions. These specialty PGY1 residents possibly felt more prepared and better able to compete against the larger candidate pool with only general pharmacy practice training. Specialty PGY1 residencies are also more commonly associated with schools of pharmacy, which likely increased their exposure to academia overall.

Involvement with an entire course at a school of pharmacy was one of the few factors in our study that significantly impacted a resident's likelihood of being offered a faculty position. These experiences (ie, longitudinal exposure to mentoring as well as a variety of faculty roles and responsibilities) are likely desirable to pharmacy programs with limited resources and multiple open positions. Skills related to student relations, course management, academic conduct, and curriculum oversight and assessment would be highly desired by an academic search committee. Residents with these experiences may have also had a better understanding of academia as a career, and thus projected increased confidence in becoming a faculty member. This combination would result in a candidate who truly stands out in the search process. Still, approximately one-third of faculty positions were left vacant as a result of a lack of qualified candidates, suggesting a disconnect between expectations and competencies across all residency training. Vacancies can be the result of experienced faculty retirements (the cause of nearly a fifth of vacant positions in 2011-2012) or the establishment of newly formed schools and enhanced curricula, so the workload balance of faculty life is also a concern.^{10,38} In other words, retirements may result in fewer resources for mentoring new faculty members, and may increase teaching or practice loads for senior and mid-level faculty members. New faculty members may have greater workload as well, and consequently less time for training and integration. When Conklin and Desselle evaluated job turnover intentions of pharmacy faculty members, they found one of the main reasons why faculty members desired to leave positions was excessive workload.³⁹ Faculty satisfaction and retention become greater challenges if young faculty members do not have requisite skills to manage contemporary educational demands. By adequately preparing residents for the rigors of balancing clinical, teaching, research, and service responsibilities, they should be better equipped to take on the role of contemporary pharmacy educators. Methods to best address this area could be the focus of future research.

In our study, mentors, positive teaching experiences in residency, and positive teaching experiences as students were highly influential factors in a resident's pursuit of academia and could have related to successful attainment of faculty positions. To promote faculty recruitment and preparedness, schools of pharmacy could encourage the provision of robust teaching experiences through academic practice experiences and longitudinal relationships with residents and students.⁴⁰ Both ACCP and AACP recommend schools of pharmacy and residency programs partner together to provide teaching experiences to residents.^{12,26,41} We advise residency

programs to consider that many residents are interested in academia as a career. Our study showed that significantly more residents who had an initial interest in academia applied for a faculty position. Residency programs should work to provide these residents with teaching opportunities. A helpful resource for residency programs is the ACCP white paper, Guidelines for Resident Teaching Experiences, which includes recommendations for basic teaching experiences for all residency programs and recommendations for residencies with teaching certificates.²⁶ They recommend residents concentrate on 4 components: developing a teaching portfolio and self-reflection statement, interacting with a teaching mentor, completing pedagogical readings and discussions, and being involved in various teaching experiences.²⁶ Residencies with teaching certificate programs should have more robust involvement with these components as well. One strategy to improve the quality and preparedness of residents for faculty positions is the development of academic-focused residencies, the goal of which would be to develop future faculty members.^{25,42} In their study of PGY2 academic-focused residencies, Greco et al reported 69% of residents accepted a faculty position immediately after residency.²⁵ This demonstrates the increased effectiveness of academic-focused residencies in producing pharmacy faculty members. Though incorporating ACCP guidelines for teaching experiences will help standardize the experiences across residencies, no guidelines are currently available for developing adequately trained faculty members.²⁶ This may be an impetus for additional years of training as suggested by Helling and Johnson in their article regarding PGY3 subspecialty residencies.⁴³ However, this is a task beyond the scope of this study. We suggest an organization such as AACP create a task force to address the issue and help guide residency programs and schools of pharmacy in creating recommendations to train qualified faculty members.

Limitations of our study include a low survey response rate; however, the overall number of participants was large. Though the survey could not be distributed directly to pharmacy residents, we were able to identify individual residency program directors and provide incentives beneficial for both the director and resident. Though there may have been a response bias towards residents who were already interested in academia, we believe the methods chosen attracted a broader sample. Resident baseline characteristics and initial interest in academia did not significantly change between participants in the initial survey and participants in both surveys, suggesting that participants who responded to both surveys were likely representative of participants in the initial survey. Additionally, the demographic data from our

study was similar to McCarthy and Weber's study of a 2011-2012 residency class, which had 91% aged 20-30, 29% male, and 71% PGY1.⁴⁴ Overall, we believe our sample provides a reasonable snapshot of residents' interest in academia and provides valuable information on potential trends regarding postgraduation interests.

CONCLUSION

Pharmacy residents are interested in academia, and some go on to pursue and obtain faculty positions immediately after residency. This study suggests that the supply of interested candidates is beginning to meet the demand for new pharmacy faculty members. Due to this shift, the focus for faculty recruitment should move from simply increasing resident interest in academia towards adequately preparing residents to succeed in faculty positions. One means of achieving this is through postgraduate training programs such as academic-focused specialty residencies. The results of this study will help residency programs, schools of pharmacy, and aspiring faculty candidates identify and achieve goals regarding preparation for, recruitment to, and success in academic pharmacy faculty positions.

REFERENCES

1. Vacant budgeted and lost faculty positions – academic year 2002-2003. AACP Institutional Research Brief Volume 2. http://www.aacp.org/resources/research/institutionalresearch/Documents/Brief_2.pdf. Accessed May 21, 2014.
2. Vacant budgeted and lost faculty positions – academic year 2003-2004. AACP Institutional Research Brief Volume 5. http://www.aacp.org/resources/research/institutionalresearch/Documents/Brief_5.pdf. Accessed May 21, 2014.
3. Vacant budgeted and lost faculty positions – academic year 2004-2005. AACP Institutional Research Brief Volume 6. http://www.aacp.org/resources/research/institutionalresearch/Documents/Brief_6.pdf. Accessed May 21, 2014.
4. Vacant budgeted and lost faculty positions – academic year 2005-2006. AACP Institutional Research Brief Volume 7. http://www.aacp.org/resources/research/institutionalresearch/Documents/Brief_7.pdf. Accessed May 21, 2014.
5. Vacant budgeted and lost faculty positions – academic year 2006-2007. AACP Institutional Research Brief Volume 8. http://www.aacp.org/resources/research/institutionalresearch/Documents/Brief_8.pdf. Accessed May 21, 2014.
6. Vacant budgeted and lost faculty positions – academic year 2007-2008. AACP Institutional Research Brief Volume 9. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%209%20-%20Faculty%20vacancies.pdf>. Accessed May 21, 2014.
7. Vacant budgeted and lost faculty positions – academic year 2008-2009. AACP Institutional Research Brief Volume 10. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2010%20-%20Faculty%20vacancies.pdf>. Accessed May 21, 2014.
8. Vacant budgeted and lost faculty positions – academic year 2009-2010. AACP Institutional Research Brief Volume 11. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2011%20-%20Faculty%20vacancies.pdf>. Accessed May 21, 2014.

- aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2011%20-%20Faculty%20vacancies.pdf. Accessed May 21, 2014.
9. Vacant budgeted and lost faculty positions – academic year 2010-2011. AACP Institutional Research Brief Volume 12. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2012%20-%20Faculty%20vacancies.pdf>. Accessed May 21, 2014.
10. Vacant budgeted and lost faculty positions – academic year 2011-2012. AACP Institutional Research Brief Volume 13. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2013%20-%20Faculty%20vacancies.pdf>. Accessed May 21, 2014.
11. Vacant budgeted and lost faculty positions – academic year 2012-2013. AACP Institutional Research Brief Volume 14. <http://www.aacp.org/resources/research/institutionalresearch/Documents/IRB%20No%2014%20-%20Faculty%20Vacancies.pdf>. Accessed May 21, 2014.
12. Lee ML, Bennett M, Chase P, et al. Final report and recommendations of the 2002 AACP task force on the role of colleges and schools in residency training. *Am J Pharm Educ.* 2004;68(1): Article S2.
13. 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):722-733.
14. Leiker LL, Mehta BH, Rodis JL, et al. Assessment of pharmacy faculty members' opinions regarding required postgraduate pharmacy residencies. *Am J Health-Syst Pharm.* 2009;66(4): 378-388.
15. American Society of Health-System Pharmacists. Required and elective educational outcomes, goals, objectives, and instructional objective for postgraduate year one (PGY1) pharmacy residency programs, 2nd edition. <http://www.ashp.org/DocLibrary/Accreditation/PGY1-Goals-Objectives.aspx>. Accessed March 7, 2014.
16. American Society of Health-System Pharmacists, American Pharmacists Association. Required and elective educational outcomes, goals, objectives, and instructional objective for postgraduate year one (PGY1) community pharmacy residency programs. <http://www.ashp.org/DocLibrary/Accreditation/RTPCommunityCareGoalsObj2010.aspx>. Accessed March 7, 2014.
17. American Society of Health-System Pharmacists, Managed Care. Required and elective educational outcomes, goals, objectives, and instructional objective for postgraduate year one (PGY1) community pharmacy residency programs. <http://www.ashp.org/DocLibrary/Accreditation/RTPManagedCare-Goals-and-Objective-Criteria2010.aspx>. Accessed March 7, 2014.
18. American Society of Health-System Pharmacists. Educational Outcomes, Goals, and Objectives for Postgraduate Year Two (PGY2) Ambulatory Care Pharmacy Residency Programs. <http://www.ashp.org/DocLibrary/Accreditation/Regulations-Standards/RTPObjAmbulatory032608.aspx>. Accessed March 7, 2014.
19. Aistrope DS, Atridge RT, Bickley AR, et al. Strategies for developing pharmacy residents as educators. *Pharmacotherapy.* 2011;31:65e-70e.
20. Romanelli F, Smith KM, Brandt BF. Certificate program in teaching for pharmacy residents. *Am J Health-Syst Pharm.* 2001;58:896-898.
21. Romanelli F, Smith KM, Brandt BF. Teaching residents how to teach: a scholarship of teaching and learning certificate program (STLC) for pharmacy residents. *Am J Pharm Educ.* 2005;69(2): Article 20.
22. Castellani V, Haber SL, Ellis SC. Evaluation of a teaching certificate program for pharmacy residents. *Am J Health-Syst Pharm.* 2003;60(10):1037-1041.
23. Gettig JP, Sheehan AH. Perceived value of a pharmacy resident teaching certificate program. *Am J Pharm Educ.* 2008;72(5): Article 104.
24. Falter RA, Arrendale JR. Benefits of a teaching certificate program for pharmacy residents. *Am J Health-Syst Pharm.* 2009;66:1905-1906.
25. Greco AJ, Ferreri SP, Persky AM, Marciniak MW. Characteristics of postgraduate year two pharmacy residency programs with a secondary emphasis on academia. *Am J Pharm Educ.* 2013;77(7):Article 143.
26. Havrda DE, Engle JP, Anderson KC, et al. Guidelines for resident teaching experiences. *Pharmacotherapy.* 2013;33(7):e147-e161.
27. AACP COD-COF Joint Task Force on Faculty Workforce. Charge 1: Identify mechanisms, resources, and policies that could be developed and implemented within schools/colleges of pharmacy that would enhance the quality of life of faculty. 2010. <http://www.aacp.org/governance/councilfaculties/Documents/COD-COF%20Workforce%20Task%20Force%20Charge%201%20Report.pdf>. Accessed June 20, 2013.
28. AACP COD-COF faculty recruitment and retention committee final report. June 2004. <http://www.aacp.org/governance/councildeans/Documents/AACPCommitteeonRetentionFinalReport.pdf>. Accessed June 20, 2013.
29. Clark CA, Mehta BH, Rodis, JL, Pruchnicki MC, Pederson CA. Assessment of factors influencing community pharmacy residents' pursuit of academic positions. *Am J Pharm Educ.* 2008;72(1): Article 3.
30. Sheaffer EA, Brown BK, Byrd DC, et al. Variables impacting an academic pharmacy career choice. *Am J Pharm Educ.* 2008;72(3): Article 49.
31. Wanat MA, Fleming ML, Fernandez JM, Garey KW. Education, training, and academic experience of newly hired, first-time pharmacy faculty members. *Am J Pharm Educ.* 2014;78(5): Article 92.
32. Aggregate Demand Index Project, Inc. Pharmacy Manpower Project Inc. <http://www.pharmacymanpower.com/>. Accessed May 21, 2014.
33. Academic pharmacy's vital statistics, American Association of Colleges of Pharmacy. <http://www.aacp.org/about/Pages/Vitalstats.aspx>. Accessed March 7, 2014.
34. ASHP Resident Matching Program. American. Summary of programs and positions offered & filled by program type for the 2007 match. Society of Health-System Pharmacy. 2007. <http://www.natmatch.com/ashprmp/stats/2007summpos.html>. Accessed March 4, 2012.
35. ASHP Resident Matching Program. Summary of programs and positions offered & filled by program type for the 2013 match. American Society of Health-System Pharmacy. 2013. <https://www.natmatch.com/ashprmp/stats/2013summpos.html>. Accessed March 7, 2013.
36. ASHP Resident Matching Program. Summary of programs and positions offered & filled by program type for the 2011 match. American Society of Health-System Pharmacy. 2011. <https://www.natmatch.com/ashprmp/stats/2011summpos.html>. Accessed August 7, 2011.
37. Wanat MA, Garey KW. A blueprint for transitioning pharmacy residents into successful clinical faculty members in colleges and schools of pharmacy. *Am J Pharm Educ.* 2013;77(9):Article 200.

38. AACP Institutional Research Report Series – 2006-2007 Profile of Pharmacy Faculty. Alexandria, VA: American Association of Colleges of Pharmacy; 2006.
39. Conklin MH, Desselle SP. Job turnover intentions among pharmacy faculty. *Am J Pharm Educ.* 2007;71(4):Article 62.
40. Kirdahy K, Turner S, Williams J. Description of an academic teaching rotation for postgraduate year 1 pharmacy residents. *Am J Health-Syst Pharm.* 2012;69:228-231.
41. AACP Commission to Implement Change in Pharmaceutical Education. “Background Paper IV: the responsibility of pharmaceutical education for scholarship, graduate education, fellowships, and postgraduate professional education and training.” *Am J Pharm Educ.* 1993;57:386-399.
42. Medina MS, Herring HR. An advanced teaching certificate program for postgraduate year 2 residents. *Am J Health-Syst Pharm.* 2011;68(23):2284-2286.
43. Helling DK, Johnson SG. The future of specialized pharmacy residencies: time for postgraduate year 3 subspecialty training. *Am J Health-Syst Pharm.* 2014;71(14):1199-1203.
44. 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.