RESEARCH

Pharmacy Residents’ Pursuit of Academic Positions

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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 training.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 Aistrope 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. Sheafer et al surveyed final-year pharmacy students, pharmacy residents,
and new pharmacy faculty members to determine motivating or deterring variables in considering a career in academic pharmacy. 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. 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.

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. 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. 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. This growth included the emergence of several PGY2 residencies with an emphasis in academia designed to prepare residents to become faculty members.

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.

A presurvey/postsurvey design with matched responses was used, and the survey was modified from Clark et al’s study. 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. 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, 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 residents 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

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

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
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
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.
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. 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.

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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

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

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

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.
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


