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Abstract

Purpose: To determine whether a faculty-led mock-interview activity enhanced pharmacy student preparation for the residency interview process and increased match rates. **Methods:** Twenty-eight doctor of pharmacy students volunteered for a 40-minute mock-interview session with 2-person faculty teams. A standard roster of 12 interview questions was derived from published literature and the faculty members' experience. Feedback on the student's interview performance was provided verbally during the session. Following the interview, students were given a 2-part survey instrument. The first part of the survey was administered immediately following the mock-interview session and the second part was administered after the standard date for residency program results (known as "Match Day"). Participant match rates were compared to American Society of Health-System Pharmacists (ASHP) national rates. **Results:** 82.5% (23 of 27) of students in the mock-interview group matched a postgraduate year 1 (PGY1) program. Compared to national rates (61.9%), more students in our surveyed mock-interview group matched a PGY1 residency ($P = .015$; odds ratio [OR] 3.546, 95% CI 1.161-12.116). **Conclusions:** Higher match rates were seen in the students completing the mock residency interview compared to ASHP national rates. In general, students completing the mock interview found the process helpful and felt better prepared for their residency interviews.

Keywords

pharmacy residency, pharmacy student, interview, match

Introduction

Clinical postgraduate training for pharmacy students and pharmacists has existed for at least 50 years. Originally termed "internships," these programs were designed to augment hospital training for new pharmacist graduates, specifically for management positions. In 1962, the American Society of Health-System Pharmacists ([ASHP] known at that time as the American Society of Hospital Pharmacists) started an accreditation program to assure quality training for residents. The number of pharmacy residency positions (both general pharmacy practice and specialty positions) and applicants for these programs increased steadily throughout the latter quarter of the 20th century. However, it was not until the 2000s that the number of applicants to pharmacy residency programs began to outpace the available positions. By 2009, pharmacy residencies were regarded as more and more competitive; and in both 2009 and 2010, the number of applicants who did not secure a residency in the "match" program exceeded 1000 candidates.

In general, many colleges of pharmacy encourage students to complete residency training. The American Association of Colleges of Pharmacy published a white paper in 2004 recommending that curricula in colleges of pharmacy include regular exposure to academia and postgraduate training.¹ A recent survey study by Dunn et al found that colleges of pharmacy have a wide variety of programming, experiential education opportunities, and elective activities that promote awareness of residencies, fellowships, and other graduate training programs.²

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With increasing competition for residency positions, students may desire assistance and training in the facets of the interviewing process to give them the best chance of “matching” with a program. A number of the Clinical Sciences faculty at a private College of Pharmacy therefore developed a standardized mock residency interview exercise, utilizing faculty participants’ own experiences as well as published literature on the subject.³ To the authors’ knowledge, no reports evaluating the impact of a standardized mock residency interview process have been reported. The objective of this study was to determine whether a faculty-led mock-interview activity enhanced pharmacy student preparation for the residency interview process and increased match rates.

Methods

Eight faculty members in the Department of Clinical Sciences within a private College of Pharmacy volunteered their time to develop and conduct a mock-interview activity with fourth-year doctor of pharmacy students who were interested in completing a residency. An e-mail was sent to the students detailing the service and times available. The interested students also received an attached letter to disclose the voluntary study component of the interview, informing them of the option to participate in the interview service without completing the postinterview surveys that would be used for study purposes (Appendix A). The mock-interview sessions were 40 minutes in length, conducted by a 2-person faculty interview team, and offered in late December 2010 and early January 2011 prior to the commencement of the residency interview season. Students interested in volunteering for the mock-interview process were scheduled into available slots. A standard roster of interview questions derived from the published literature by Mancuso and Paloucek³ and faculty experience was used (Appendix B). During the first 20 to 25 minutes of the session, the student was asked the standardized roster of questions. The following 15 to 20 minutes were used for the faculty team to debrief the student on their assessment of the interview and to answer any student questions. The faculty members developed and utilized a checklist of interview assessment discussion topics to help standardize all student feedback. The checklist was comprised of topics such as student’s introduction, content of answers, verbal/nonverbal cues, closing the interview, suggestions for questions to ask during the interview, and professional dress/demeanor. At the conclusion of the interview session, the students were provided a copy of the letter (Appendix A) detailing the study surveys and reminding them of the voluntary option to participate in the study.

All students were e-mailed the 2-part survey instrument developed using Qualtrics Survey Research Suite software (Provo, Utah). By completing the survey, the students implied consent to participate in the research. The first survey was administered immediately following the mock-interview session (Appendix C). The goal of this survey was to collect basic demographic and training information, as well as ascertain students’ impression of the mock-interview process, level

of confidence when interviewing, and additional preparation they intend to complete prior to participation in invited residency interviews. The second survey was administered after the standard date for residency program results, known as “Match Day,” in March 2011 (Appendix D). The goal of this survey was to collect information regarding match results, assess benefits of and similarities between the mock interview and actual interviews, and to determine effort made to proactively prepare following their mock interview for the residency interview process.

Descriptive statistics were used (including percentages and means/medians) for demographic and survey data. Categorical data were compared using chi-square and Fisher’s exact test where appropriate.

Additionally, to assess the potential impact of the interview service, the investigators procured information from ASHP and National Matching Services, Inc concerning the overall residency program assignment percentages nationally as well as from the individual studied private college of pharmacy.

Results

Survey Results

Twenty-eight students participated in the mock interview and were later surveyed on the experience. Twenty-five (89.3%) responded to the survey distributed prior to the Match. Complete demographic information regarding the respondents can be found in Table 1. Most of those who responded were female (80%). All were pursuing a doctorate of pharmacy and almost half of the respondents were pursuing an additional degree or concentration. Those surveyed were applying to a mean of 7.12 (standard deviation [SD] 2.05) residencies and a majority were seeking residencies in a hospital setting (80%). Respondents had held a mean of 4.14 (SD 2.83) leadership positions in their years in the professional program. Nearly half of the respondents had met with the College’s Professional and Career Development Services Coordinator in the past year, but only 1 (4%) had previously participated in a mock interview with staff.

Following the faculty-led mock-interview sessions, 92% strongly agreed or tended to agree that their interview skills had improved. In addition, all respondents agreed or tended to agree that they were able to identify areas to improve upon for their upcoming residency interviews. While all respondents agreed or tended to agree that the questions they were asked during the mock interview were similar to what they expected, 88% agreed or tended to agree that they understood these questions better following the mock interview. No respondents felt like they did not learn anything from the mock-interview process. When evaluating the quality of the mock-interview process, all respondents strongly agreed or tended to agree that the faculty feedback session was helpful for them. Most felt that the time allotted for the mock interview (88%) and faculty feedback (92%) was appropriate. See Table 2 for further detail regarding the pre-Match survey.

Table 1. Pre-Match Respondent Demographics^a

	Gender			
	Female—20 (80%)		Male—5 (20%)	
Degrees currently pursuing	Doctor of pharmacy— 25 (100%)	Diabetes concentration— 9 (36%)	Masters of public administration—1 (4%)	Other minors—2 (8%)
Residency area sought	Hospital—20 (80%)	Ambulatory care—9 (36%)	Community practice— 2 (8%)	Specialty/other—3 (12%)
Number of programs applied to	Mean—7.12 (SD 2.05) Range—5-13			
Leadership positions held	Mean—4.14 (SD 2.83) Range—0-10			
Mock interview in the past year	Yes—1 (4%)		No—24 (96%)	
Met with the college's Career Development Coordinator	Yes—12 (48%)		No—13 (52%)	

^a Results reported as N (%) unless noted otherwise.

Table 2. Pre-Match Survey Responses^a

Question	Strongly Agree	Tend to Agree	Not Sure	Tend to Disagree	Strongly Disagree
I feel like my interview skills have improved after this mock-interview session.	9 (36%)	14 (56%)	2 (8%)	0	0
I have identified specific areas where I can improve my interview/interviews.	17 (68%)	8 (32%)	0	0	0
Following the mock interview, I feel like I have a better understanding of questions that may be asked in the interview process.	11 (44%)	11 (44%)	3 (12%)	0	0
The questions during the mock interview were similar to what I expected.	16 (64%)	9 (36%)	0	0	0
I did not learn any additional information by participating in the mock-interview process.	0	0	1 (4%)	6 (24%)	18 (72%)
The feedback I received from the faculty members following the mock interview was helpful.	19 (79.2%)	5 (20.8%)	0	0	0
The time allocated for the mock-interview process was adequate.	11 (44%)	11 (44%)	3 (12%)	0	0
The time allocated for feedback from the faculty members was appropriate.	12 (48%)	11 (44%)	2 (8%)	0	0

^a Results reported as N (%).

Twenty-seven (96.4%) students participated in the post-Match survey (Table 3). Twenty-three (85.2%) of these had matched with an ASHP accredited (or eligible) residency program. Twenty-five (92.6%) responded that they had secured any residency (regardless of accreditation status). Three (13%) respondents of 23 did not match initially with an ASHP accredited (or eligible) program, but suggested that they were intending to interview or had interviewed with additional programs. Following the Match, subjects were also asked to recall the mock-interview process. Twenty-six (96.3%) respondents strongly agreed or tended to agree that the questions encountered during the mock interview were similar to those in actual residency interviews. Similarly, 26 (96.3%) strongly agreed or tended to agree that the faculty feedback session was helpful. Overall, 25 (92.6%) strongly agreed or tended to agree that participating in the mock-interview program helped them in residency interview process.

Comparison to National Match Data

According to National Matching Services, 3277 applicants participated in the postgraduate year 1 (PGY1) Match.⁴ Of these, 2027 (61.9%) matched a PGY1 program. It is currently unknown how many nonmatching applicants signed with a program in the post-Match “scramble”; however, only 146 (6.7%) PGY1 positions remained unfilled following the Match. Forty-four graduates from the studied college of pharmacy participated in the PGY1 Match in 2011. Of these, 36 (81.8%) matched an accredited program. A total of 41 graduates from the college of pharmacy ultimately went on to any residency in 2011 (including those from the “post-Match scramble” and those entering a non-Match program).

By comparison to national rates, a greater proportion of students in our survey group matched an ASHP accredited (or eligible) program ($P = .015$; odds ratio [OR] 3.546, 95% confidence

Table 3. Post-Match Survey Responses^a

Question	Strongly Agree	Tend to Agree	Not Sure	Tend to Disagree	Strongly Disagree
The questions in the mock interview were similar to the questions I encountered in my actual residency interview/interviews.	12 (44.4%)	14 (51.9%)	1 (3.7%)	0	0
The feedback I received from the faculty members following the mock interview was helpful.	18 (66.7%)	8 (29.6%)	1 (3.7%)	0	0
I feel that participating in this program helped me during the actual residency interview process.	17 (63%)	8 (29.6%)	2 (7.4%)	0	0

^a Results reported as N (%).

interval [CI] 1.161-12.116). The match rates in the surveyed mock-interview group did not differ significantly from the match rates of all candidates from the studied college of pharmacy ($P = 1.000$; OR 1.278, 95% CI 0.298-5.778); however, only 16 candidates from the institution did not participate in the mock-interview process. The match rate for candidates from the college of pharmacy were significantly greater than the national rate ($P = .007$; OR 2.775, 95% CI 1.234-6.486).

Discussion

Our results demonstrate that students who participated in a mock residency interview where they received feedback and could have questions addressed felt more prepared for subsequent interviews and were more likely to successfully match than the national average. As residency positions become increasingly competitive, it is important for colleges of pharmacy to expand their efforts in preparing students not only for the rigors of residency training but also for the demands of the interview process. We feel that a mock-interview process that utilized a combination of published, frequently asked questions, and original questions may have succeeded in providing students a competitive edge in attaining a residency slot. Based on the published accounts of residency preparation services, this is a novel method to prepare residency candidates that may be implemented in colleges of pharmacy to enhance student success in placement.

Dunn et al surveyed colleges of pharmacy to ascertain what methods were in place to prepare students for and to promote residency training. The authors state that although the majority of respondents did not have a formal curriculum to prepare students for postgraduate training, most did offer informal programs or information. Examples of these activities included a lecture, seminar, panel discussion, residency “club,” one-on-one mentoring during advanced pharmacy practice experiences (APPEs), or a required residency program visit. The authors did not report any programs that were designed to simulate the interview process and enhance student preparation for this.²

Prescott detailed a service aimed at preparing students for the American Society of Health-System Pharmacists Midyear Clinical Meeting (ASHP-MCM) that included a required informational forum and a detailed packet of information.⁵ Students

surveyed by Prescott rated this service very positively in helping them prepare for ASHP-MCM and to search for postgraduate training. The service also included optional curriculum vitae (CV) preparation and practice interviewing sessions by volunteer faculty members. Specific details of this component are limited, as this was not the study’s primary objective. Only 8 students participated in the optional interview service and student feedback on the service was less positive regarding this service compared with others (25% of students participating somewhat disagreed that it was useful for improving their interviewing skills). The student feedback on the interviewing component presented by Prescott differs from the current study where no students disagreed and 92% of students strongly agreed or tended to agree with the statement, “I feel like my interview skills have improved after this mock-interview session.”

A strength of this project is the high response rate of students participating in the interview process to the 2 surveys that were administered (89% for survey 1 and 96% for survey 2), indicating results are likely reliable and representative of participants. This may also be reflective of students’ desire to provide feedback on what they felt was a valuable aid in their preparation. All of the participants tended to agree or strongly agree that the feedback received from faculty members following the mock interview was helpful (Appendix C question 11). Additionally, all students tended to agree or strongly agree that specific areas for personal improvement were identified during the interview (Appendix C question 12). Based upon the overwhelmingly positive feedback to these 2 survey statements, the authors’ conclude that the guided feedback portion of the mock-interview process is extremely beneficial for students and should remain in place for future mock-interview sessions.

As part of the project, students were also asked to list 3 steps they were going to take in order to further prepare for the upcoming residency interviews. Interestingly, many students stated they were going to acquire additional information on each residency program and develop a list of specific questions pertinent to each program. Other students indicated that they would continue to practice possible questions with their specific responses. Several students wanted to develop strategies that would decrease nervousness and eliminate the use of distracting fillers when answering questions. A few students

intended to analyze and address any problematic nonverbal gestures. The authors' believe this action-promoting survey question further motivated students to enhance their oral communication, presentation, and interviewing skills. These skills are essential for obtaining and securing a residency position during these competitive times.

It should be noted that not a single student marked tended to disagree or strongly disagree for any item except item 13 (I did not learn any additional information by participating in the mock-interview process.), in which the authors would expect students to mark tended to disagree or strongly disagree based upon our study objective. This includes the few students indicating that they did not match to a program. This may suggest that all of the students participating in the process felt adequately prepared for the residency interviews. The use of a negative question also serves as a control to make sure participants are thoughtfully responding to each question.

A limitation that must be considered is the lack of ability to show a significant difference between participants and nonparticipants in Match results at the studied college of pharmacy. With 28 students participating in the interview preparation service of 44 overall that entered the Match process, a majority of the College's candidates actually participated in the program. Given the small number of students that did not participate in the mock-interview service, it is admittedly difficult to gain insight with these survey results. It is also possible that students who did not participate in the service were more confident in their interviewing skills and therefore did not feel the need to participate in the program.

An additional limitation is the absence of data available on how the match rates compared to last year, as ASHP Web data only includes the current year.

Finally a limitation to our study would be its small sample size. However, we captured the majority of students applying for residency training that academic year. Given that, traditionally, a minority of students pursue residency training, a larger multicollge study could be done to further validate our results.

Conclusion

Our results demonstrate that students who participated in a mock residency interview and received feedback from faculty felt more prepared for subsequent residency interviews. The students we surveyed from our mock-interview group were more likely to successfully match than candidates nationally. Continued provision of and identification of areas for expansion are recommended areas of focus for research in the future.

Appendix A: Letter to the Student Detailing Volunteer Study

Dear Pharmacy Student,

As a student interested in pharmacy postgraduate education, we invite you to participate in a research project conducted by participating faculty members of the Department of Clinical

Sciences in the College of Pharmacy and Health Sciences (COPHS) at _____. This project is being completed in conjunction with a new program to give Pharmacy students who wish to pursue a residency a chance to experience a mock-interview session to better prepare them for actual residency interviews. **Knowledge gained from this research project will be used to gauge the utility of this activity and to improve the mock-interview process in the future.**

This study involves attending a single mock-interview session (which you have already agreed to) as well as completing 2 surveys which will involve the following:

- An initial survey will be administered asking questions about the mock interview and your perceptions about the activity as well as some general demographic information about you (age, gender, degree(s) pursued, etc)
- A second survey will be administered after the end of residency assignment process (eg, "Match Day"). This survey will ask some of the same questions concerning your opinions about the usefulness of the mock-interview session you received in relation to your actual interviews and if you felt the process was helpful to you.
- Both surveys are relatively brief and should take less than 15 minutes to complete. All information collected will be confidential and no information that could identify you will be given to anyone other than those faculty participating in the study.

The Institutional Review Board (IRB) at the University has exempted this study from review, meaning they feel that minimal risk can occur from your participation in this study.

The survey questionnaires will not contain any information that identifies you. Please do not indicate your name anywhere on the surveys. A summary of the results of the project may ultimately be written in a professional health care journal or presented at a meeting of health care professionals.

You are free not to participate in this study and still participate in the mock-interview exercise. No penalty will occur from not participating in the study portion of this activity.

The investigators hope that the mock interview will improve the chances of students who participate in this project secure a residency. However, no guarantees can be made of the impact of this exercise on being selected for a residency program. You may or may not secure a residency position irrespective of this project.

Completion and return of the first questionnaire indicates your consent to participate in this research project. You may stop participating in the study at any time with no penalty to you whatsoever. If you have any questions about the content of the questionnaire or would like a copy of the final results, please call Dr _____ at _____. If you have any questions regarding your participation in the research study, please contact IRB Chair Dr _____ at _____. Thank you for your consideration and willingness to participate in this very important project.

Sincerely,

Appendix B: Residency Candidate Interview Questions

1. Tell me about yourself.
2. What attracted you to the profession of pharmacy?
3. Why do you want to do a residency?
4. Think of a program you have applied to and imagine that we are the residency directors for that program. What is it about this program that interests you?
5. Describe a significant or memorable contribution you made to a patient's care.
6. If I were to ask your current preceptor to describe you, what words would he or she use?
7. What are your weaknesses?
8. Where do you see yourself in 5 years?
9. If you are given multiple projects all due within a short period of time, how do you prioritize your time?
10. Describe a conflict you have had with a coworker, preceptor, or physician. How did you handle this?
11. If you were alone on a desert island, what 3 medications would you bring with you and why?
12. What do you like to do in your free time?

Appendix C: Student Survey #1

Administered immediately following the mock-interview session

1. What is your gender? Male Female
2. What type of residency are you seeking this year? (if applicable, check all that apply)
Ambulatory Care, Community Practice, Hospital, Long-Term Care, Managed Care, Specialty (please specify), Other (please specify)
3. How many programs are you applying to?
4. How many leadership positions have you held during your time in the professional program (P1 through P4 years)?
5. Which degrees and/or concentrations are you currently pursuing at Drake? (check all that apply)
PharmD (Doctor in Pharmacy), MBA (Masters of Business Administration), MPA (Masters of Public Administration), JD (Juris Doctorate), Diabetes Concentration, Other (please specify)
6. Aside from this mock-interview session today, have you participated in any other mock interviews in the last year?
Yes No
7. Have you met with the College of Pharmacy Professional and Career Development Services Coordinator in the last year?
Yes No
8. Following the mock interview, I feel like I have a better understanding of questions that may be asked in the interview process.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
9. The questions asked during the mock interview were similar to what I expected.

- Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
10. I feel like my interview skills have improved after this mock-interview session.
Strongly Agree Tend to Agree Not Sure Tend to Disagree Strongly Disagree
11. The feedback I received from the faculty members following the mock interview was helpful.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
12. I have identified specific areas where I can improve prior to my interview(s).
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
13. I did not learn any additional information by participating in the mock-interview process.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
14. The time allocated for the mock-interview process was adequate.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
15. The time allocated for feedback from the faculty members was appropriate.
Strongly Agree Tend to Agree Not Sure Tend to Disagree Strongly Disagree
16. Now that you have completed the mock interview, please list three things that you are going to do to prepare for your residency interview(s).

Appendix D: Student Survey #2 Administered Following "Match Day"

1. I matched with an ASHP Accredited/Eligible residency program.
Yes No
2. I secured ANY residency (answer regardless of accreditation status).
Yes No
3. I did not match with an ASHP Accredited/Eligible residency program initially, but intend to continue pursuing a residency by interviewing with additional programs.
Yes No
4. The questions in the mock interview were similar to the questions I encountered in my actual residency interview(s).
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
5. The feedback I received from the faculty members following the mock interview was helpful.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree
6. I feel that participating in this program helped me during the actual residency interview process.
Strongly Agree Tend to Agree Not Sure
Tend to Disagree Strongly Disagree

