Florida Pharmacy Students’ Perspectives on Careers in Oncology

Paige May, PharmD, BCOP; Joseph Ladd, PharmD

BACKGROUND: Supply versus demand is a concern in the field of oncology care, because the availability of oncologists is expected to decrease. Pharmacists may be called on to increase involvement to meet clinical demands. Therefore, it is important to gauge the interest of future pharmacists in careers in oncology.

OBJECTIVES: To determine Florida pharmacy students’ interests in oncology pharmacy, and to identify aspects of the specialization that promote or demote its appeal.

METHODS: We contacted administrators at all 6 colleges of pharmacy in Florida and asked them to distribute a prewritten e-mail requesting student participation in a voluntary, anonymous, electronic survey regarding their views on oncology pharmacy. In addition, school administrators were asked to provide official information about the amounts of didactic and experiential oncology training in their curricula. Designated administrators at each participating college distributed the survey to students, and data abstracted from responses were assessed using descriptive, analytic tools.

RESULTS: Five of the 6 Florida pharmacy colleges participated, and 532 students completed the survey. Although approximately 75% of the participating students were only moderately comfortable or not at all comfortable with the field of oncology, 56% expressed interest in careers as oncology pharmacists. Despite being uninformed about the career overall, students still recognized the clinical and interdisciplinary aspects of oncology pharmacy. The majority of respondents noted that they did not have access to experiential opportunities, and that they received <5 hours of oncology education in their curricula, but college administrators reported more instances of such opportunities. The majority of students requested experiential and shadowing opportunities to increase their interest.

CONCLUSION: The survey results indicate that, although there is interest in oncology among Florida pharmacy students, knowledge gaps exist. The types of knowledge deficits identified from the survey align with participants’ requests for more experience. Maximizing experiential opportunities for students may help close these knowledge gaps.

Pharmacists are becoming increasingly involved in cancer care.1,2 This raises a vital question: How aware are pharmacy students of the expanding roles and opportunities in oncology pharmacy? Supply versus demand is a major concern in the field of oncology care, particularly as the prevalence of cancer continues to grow and the availability of oncologists declines. The American Cancer Society recently estimated that slightly less than 1 in 2 men and women will be diagnosed with cancer at some point during their lifetime.3 For 2015, it was estimated that there would be more than 1.6 million new cancer diagnoses in the United States, and approximately 600,000 cancer-related deaths.3 The demand for oncology services is expected to increase by 48% from 2005 to 2020.4 Driving this increase are improvements in survival rates, the aging and growing population of patients with cancer, and the aging and retiring of the oncology workforce.4 The supply of services provided by oncologists during this time is expected to increase more slowly, by approximately 14%, based on the age distribution and practice patterns of oncologists, as well as the limited number of oncology fellowship positions.4

Pharmacists undergo extensive academic instruction and have the option to pursue postgraduate residency training and oncology board certification, which would prepare them to become valued members of the cancer care team. Pharmacists are becoming increasingly involved in the management of patients with cancer.5 In some areas of the United States, pharmacists’ abilities are already being used in more advanced manners. Pharmacists in North Carolina may become credentialed as clinical pharmacist practitioners, providing drug therapy management under the direction of a physician.6 This may include ordering, changing, and substituting therapies, or ordering tests. Similarly, pharmacists in the Veterans Affairs system may act under a scope of practice with a supervising physician. In 2014, pharmacists in...
California began practicing alongside other providers to administer drugs and biologics, provide consultation about drug therapy and disease management, participate in multidisciplinary reviews of patient progress, and order and interpret tests for the purpose of monitoring and managing drug therapies, among other authorities.5

Involving pharmacists in oncology care has shown favorable results.1,2 Pharmacists often contribute to chemotherapy management by initiating major drug-specific interventions and addressing supportive care. Although the significant role of the pharmacist may be well-recognized, it is often misunderstood and undocumented.5 This can result in underestimation of the importance of pharmacy services, and missed opportunities for improvement and new directions.5 It may also lead to decreased interest in the specialty by pharmacists in training.

As the gap widens between the demand for care in oncology and the supply of oncologists to deliver care, pharmacists have become increasingly involved in the treatment of cancer. This dynamic shift is recent and not well-documented, and likely to result in greater need for oncology pharmacy specialists.

The objectives of this study were to determine the interest of Florida pharmacy students in oncology pharmacy, and to identify aspects of the specialization that promote or demote its appeal. In addition, we aimed to suggest a recommendation for strengthening training and encouraging interest in the specialty of oncology. We hypothesized that interest in oncology pharmacy may be limited by subject matter that is considered too difficult, by responsibilities that are perceived as too emotional, and/or by the risk involved in compounding dangerous materials. We sought to identify students’ current exposure to oncology learning opportunities, as well as their opinions on the specialty.

Methods

Administrators at 6 colleges of pharmacy in Florida were asked to distribute a prewritten and formatted e-mail requesting student participation in a voluntary, anonymous, 13-question electronic survey of their views on oncology pharmacy. The survey entailed 5 dimensions, which were not disclosed to participants, including (1) demographic information (relating to the college of pharmacy; no names or other identifying information were collected); (2) interest for a career in oncology; (3) perceptions of oncology as a specialty; (4) exposure to oncology in school; and (5) desired tools for better understanding of oncology (Appendix, available at www.JHOPonline.com). In addition, school administrators were asked to provide accurate and official information via e-mail about the amounts of didactic and experiential oncology training provided in their curricula.

Each college of pharmacy designated an administrator to distribute the survey 3 times via e-mail, in 2-week intervals. The schools that responded promptly began and maintained distribution cycles on the same dates. Anticipated delays with some colleges, because of prolonged logistical processes or setbacks in timely correspondence, necessitated later start dates. Nevertheless, 3 distributions were to be maintained, at 2-week intervals.

Data abstracted from student responses were assessed using descriptive, analytic tools available through SurveyMonkey. Individual data were imported into Microsoft Excel. The study’s enrollment goal was 500 students. Enrollment was open for 2 months from the start of survey distribution. Clicking on the survey link and completing the survey implied informed consent; no other type of informed consent was obtained.

The study was exempted from review by the University of Florida Institutional Review Board.

Results

Students from 5 of the 6 Florida pharmacy colleges participated in the study. The sixth college did not coordinate logistical processes in time to participate. Overall, 523 students completed the survey. Four schools followed the prespecified cycle of 3 distributions, each 2 weeks apart. These schools are referred to as A, B, C, and D. College E started late but was able to complete 1 round of distribution with only 2 days remaining for data collection.

A total of 160 (31%) students were in year 1 of pharmacy school, 121 (23%) were in their second year, 122 (23%) were in their third year, and 120 (23%) were in their fourth year. Student participants by school included school A, 219 (42%); school B, 166 (32%); school C, 64 (12%); school D, 71 (14%); and school E, 2 (0.38%). One student did not specify a college.

Figure 1 depicts respondents’ comfort levels with oncology. Only 7.6% of respondents reported being very comfortable with the subject. Overall, 56% of respondents expressed interest in careers as oncology pharmacists (Figure 2); the major reasons were interesting subject matter (86%), recognizing emerging roles becoming available (49%), and personal experiences (34%). A total of 20 participants selected “other” as their reason, with most of them citing building relationships with patients and contributing to the search for a cure for cancer. Six students noted that their interest originated from experiences with clinical oncology specialists (eg, discussions, shadowing, rotations). Two students mentioned the growing need for specialists in this area.

Of the subset (43.7%) who claimed to have no interest in oncology pharmacy, 106 respondents provided additional reasons, with most indicating a strong interest...
in different fields, or not knowing enough about oncology pharmacy (Figure 2).

To determine how Florida pharmacy students perceive oncology pharmacy as a specialty, they were asked questions about the field. Of 509 respondents to this question, 238 (47%) reported knowing that board certification is available in oncology. Only 26 (5.1%) students noted that they knew “much” about oncology pharmacy (Figure 3).

Figure 4 shows how students responded when asked, “What activities do you think of when imagining what an oncology pharmacist does?” A total of 11 activities, plus “other,” were presented, from which students were asked to select the top 3. The top 3 activities chosen were (1) calculating chemotherapy doses, (2) optimizing treatment regimens, and (3) answering drug-related questions from oncologists.

Figure 5 and Figure 6 summarize students’ perspectives on the amounts and types of oncology education provided through their curricula, and the availability of didactic and experiential training. Although oncology education was provided, not all students actually participated. Thirty-two of 159 (20%) students who had the opportunity stated that they had participated in elective coursework or experiential opportunities if offered (ie, 7 responders in year 1 or 2; 25 responders in year 3 or 4). Ninety-one (57%) students (ie, 49 in year 1 or 2; 42 in year 3 or 4) noted that they have not participated in this but plan to, and 32 (20%) noted that they have not participated and do not plan to (ie, 5 in year 1 or 2; 27 in year 3 or 4). Four (3%) students reported that electives are not available in their curricula (ie, 1 in year 2; 3 in year 3 or 4).

The last survey question asked participants to identify learning activities that would increase their interest in a career in oncology by selecting from various platforms and providing comments in an “other” field (Figure 7).

Discussion

The study enrollment goal was reached and exceeded expectations without the use of an incentive. The survey results indicate considerable interest in the area of oncology among Florida pharmacy students, but also shows gaps in their knowledge. Many students lack awareness of the pharmacist’s role in managing patients with cancer, and many believe that extensive oncology education would be required.

Demographically, participants were well-distributed among the 4 colleges that observed the 3 distribution cycles, and with respect to their year of pharmacy school. School A, the college with the largest pharmacy student body, accounted for more participants than the other schools. School E had negligible representation because of its limited time frame for data collection.

Interest in oncology exists among pharmacy students, despite the deficits in comfort levels. Although approximately 75% of respondents were only moderately comfortable or not at all comfortable with the field of oncology, 56% of the study sample expressed interest in careers as oncology pharmacists. This percentage is strikingly high, considering that only 1990 of approximately 20,320 pharmacists nationwide hold board certification in oncology pharmacy. However, this survey ascertained interest alone, and many students were early in their pharmacy curricula; therefore, these results do not necessarily reflect the number of students who would pursue a career in oncology pharmacy. Although college D requires completion of an oncology course as part of its curriculum, the comfort level among these students was similar to that of the entire study population—80% were
moderately comfortable or not at all comfortable (the 2 choices showing least comfort), and 50% showed interest either for or against oncology pharmacy. Therefore, additional didactic exposure did not increase students’ comfort levels.

Many students not interested in oncology pharmacy specified that the field was too depressing. Substantial concern was expressed about contact with dangerous chemicals, as well as the perceived level of difficulty. Furthermore, 106 specific comments were received, the majority of which pertained to student interest in other areas of pharmacy. The second-most common reason for disinterest in oncology pharmacy was insufficient knowledge about the subject. Others mentioned that the field was intimidating, scary, or required too much training or postdoctoral education. Based on these responses, it is evident that many students had lost interest in oncology for different reasons—true and misconceived—and many of these involved unfamiliarity with the field.

The majority of survey participants acknowledged knowing little about what an oncology pharmacist does. Similarly, the majority of respondents were not sure about, or were unaware of, the availability of board certification in this area. Only 3 comments were received for this question, one of which stated, “I do not want to form an image of something I do not have a knowledge base on.”

National surveys of pharmacy schools indicate that the range of didactic oncology contact hours varies greatly, from 1 to 85 hours (mean, 42 hours). In 2015, Kwon and colleagues aimed to assess the number of hours devoted to oncology education in US pharmacy schools, recommending 40 hours of didactic training and 4 to 6 weeks of experiential training. In our study, all participating Florida college administrators indicated that their schools offered elective oncology experiential opportunities, and all but 1 incorporated >10 hours of oncology into general coursework. One college required a separate course in oncology; in another school, this was an available elective.

Responses from students regarding their degree of exposure to oncology education did not coincide with official responses from the colleges. More than half (59.1%) of the students claimed having no access to experiential opportunities, and receiving <5 hours of...

Figure 4: What Activities Do You Think of When Imagining What an Oncology Pharmacist Does? (Pick the top 3)

Figure 5: In Your General Pharmacy Coursework (Pharmacology and Pharmacotherapy Courses), How Many Lecture (Not Credit) Hours Are Dedicated to Oncology Education?
Pharmacy Students’ Perspectives on Careers in Oncology

Overall, 36% of students stated that they did not know whether oncology training existed at their pharmacy school. However, it is important to note that 54% of participants were in their first or second year of pharmacy school, and thus would not necessarily have been informed of such opportunities.

Half of the surveyed students had participated in elective oncology opportunities, and 57% noted that they plan to enroll in such activities. When asked which tools could increase their interest in oncology pharmacy, more than 50% of the students stated that more education through general coursework could help accomplish this, and 31% suggested a lecture series. Even more students (approximately 75%) requested experiential and shadowing opportunities. Students noted limited availability of experiences, and the need to dedicate more lecture hours to oncology.

This may suggest a need to inform and encourage students to take advantage of existing opportunities,
such as open office visit hours with oncology faculty; attending live lectures; participating in extracurricular lectures, conferences, group meetings, discussions, and presentations; and becoming involved with practice resource networks. The results also show that although students may not be aware of how much training they already received, they desire more comprehensive education in oncology. This unfamiliarity may explain why many students are not comfortable with oncology.

Many participants were disinterested in oncology pharmacy because they perceived it as being depressing or involving dangerous chemicals. This implies that students may have misconceptions about oncology care. Because survival rates have been improving from year to year, this field may become very rewarding and uplifting. Moreover, various guidelines for the safe handling of hazardous chemicals are now available, which have made this field much safer.12,13

The knowledge deficits identified in this survey align with participants’ request for more experience in this field. In the United States, approximately 73% of pharmacy schools offer fewer than 30 Advanced Pharmacy Practice Experience oncology rotation slots to students each year.10 The average number of slots does not correspond to the number of pharmacy students needing rotations. Maximizing experiential opportunities for students may help close the knowledge gaps. Allowing students to refute their misconceptions by witnessing the oncology pharmacist’s role, the handling of medications, and the variety of patient interactions could help those who are interested in this field. Simply increasing didactic training may not be effective or sufficient for addressing these issues. Furthermore, increasing didactic teaching may not always be feasible in light of competition from other specialties for precious curriculum time.

Securing sites for experiential training is a barrier to educating students in oncology. In the state of Florida, only a handful of postgraduate year 2 residency positions are available in the oncology specialty, in 6 locations, and only 98 locations exist nationally.14 Only 25% of the students in our study characterized “teaching” as a top responsibility of oncology pharmacists, indicating that respondents may not consider oncology pharmacists to be educators. To improve interest and education in this field, more oncology pharmacists should expand their roles to include teaching. Specialists in the field can make drastic improvements in education by reaching out to local pharmacy schools and offering to teach electives, sponsor rotations, and allow shadowing.

It is also important to accommodate the high level of interest. This includes encouraging students to attend conferences, participate in group meetings, and become involved with practice resource networks. At these meetings, more resources could be made available to students, such as roundtable discussions, presentations, posters, lecture series, and discounted or sponsored registrations to encourage student attendance. All of these activities would provide the types of learning experiences and exposure deemed valuable by the student pharmacists in our sample.

Limitations

This study included only preclinical and clerkship pharmacy students in the state of Florida. It did not address the opinions of pharmacy residents, many of whom may consider careers in oncology.

The generalizability of the findings would be improved by a larger sample of respondents from the state’s pharmacy colleges. Although the distribution of the study sample by year of pharmacy school was similar for years 2, 3, and 4 (23% each), year 1 students were overrepresented (31%). Students’ interests likely will change as they progress through pharmacy school.

The extrapolation of the results is limited to the responses to questions posed in the survey, reflecting bias inherent in the study design. Therefore, more research in this area is warranted.

Another limitation is the small geographic region (state of Florida). Studies conducted in other areas of the country may show different levels of interest.

If pharmacists are to become more involved in oncology care, then more training and instruction may be necessary. More opportunities for experiential learning would supplement the didactic education already present in colleges. The knowledge gaps identified in this study suggest gaps in experience. In addition, the surveyed students desire more experiential opportunity.

As may be expected, barriers such as staff resources, clinical and academic calendars, student numbers, and financial constraints may hinder progress in this area. However, the rewards from properly preparing the pharmacy workforce to prevent, treat, and cure cancer could be great.

Conclusion

Our findings indicate that although there is interest in oncology among Florida pharmacy students, knowledge gaps exist. The knowledge deficits identified in our study align with participants’ requests for more experience in oncology. Maximizing experiential opportunities for students may help narrow these knowledge gaps. Research in other geographic areas is warranted to match our findings to national trends.

Author Disclosure Statement

Dr May and Dr Ladd have no conflicts of interest to report.
References