RESEARCH ARTICLES

Admission and Progression Standards at U.S. Schools and Colleges of Pharmacy: An Exploration of Criteria Changes

William B. Lobb, BS and Noel E. Wilkin, PhD

Department of Pharmacy Administration, Research Institute of Pharmaceutical Sciences, School of Pharmacy, The University of Mississippi

Objectives. The entry-level PharmD was implemented to enhance the ability of pharmacy graduates to practice pharmacy. This raised the question of whether the changes in curricula and program length were accompanied with changes to the admission and progression standards employed by schools and colleges of pharmacy.

Methods. A questionnaire was faxed to deans of schools of pharmacy to elicit information about admission and progression standards. Fifty-four useable responses were received.

Results. Some admission and progression criteria were based on aspects of the previous degrees and some were new. Along with changes to objective admission and progression standards (eg, GPA, PCAT), a notable finding was the addition of more qualitative evaluations (eg, interviews and essays) to the admissions process.

Conclusions. These findings provide preliminary evidence that schools and colleges of pharmacy seem to be developing unique pharmacy degree programs through changes to their admission and progression standards in addition to their curricular changes.

Keywords: Admission, progression

INTRODUCTION

Pharmacy education has advanced as the entry-level, clinically based Doctor of Pharmacy (PharmD) degree has replaced the Bachelor of Science (BS) degree. Currently, pharmacists are able to practice if they hold either of 2 different pharmacy degrees, the BS or the PharmD. The PharmD can be obtained by completing 1 of 3 different educational tracks – the entry-level 6-year track, the traditional post-baccalaureate track, and the non-traditional post-baccalaureate track.

In the June 1995 association newsletter of the American Association of Colleges of Pharmacy (AACP), Sprague and colleagues questioned whether the new entry-level PharmD degree was truly a “Doctoral” degree. They pointed out that this degree will not confer a clinical status on PharmDs that is equivalent to that of MDs and that even if that was a goal of pharmacy education, many schools and colleges did not plan to significantly alter their curricula.

Nevertheless, many within the pharmacy community believe that the change to the sole entry-level PharmD degree was a sound decision and good for the profession. One of the primary goals for the change was to better prepare pharmacists for a growing clinical role. The accreditation standards of the American Council on Pharmaceutical Education (ACPE) for the entry-level PharmD degree necessitated curricular changes to address the need for additional education that lengthened most programs by 1 academic year. These changes raise the question of whether other changes were made during the transition to an entry-level PharmD degree. Some of the key predictors of academic performance of pharmacy students reside in the admission and progression standards of the institution (for example, see Chisholm and colleagues, 1997 and 1999).
Chestnut and Phillips explored the potential for changes in admission criteria at colleges of pharmacy between 1997 and 2000. Their study explored the current admissions requirements of schools and colleges of pharmacy and how they might change by the year 2000. In general, most colleges did not anticipate significant changes in admission criteria in the future. However, some individual institutions were initiating changes that would have implications on their future admission criteria. Unfortunately, these anticipated changes were neither linked to the degrees currently offered by those institutions, nor were anticipated changes in progression criteria examined.

The education required to provide students with the abilities necessary to be successful pharmacists in today’s environment, which includes increased clinical activity, could be different from yesterday’s environment. The possession of these abilities, lifelong learning and study skills, interpersonal and communication skills, and leadership abilities can be assessed at the time of admission and during progression through the program. This is not to say that these abilities were undesired or unvaluated by the programs prior to the adoption of the sole entry-level PharmD degree. But, are they receiving greater importance or scrutiny now, with the advent of the sole entry-level PharmD degree, than in years past?

While the implementation of the PharmD degree as the entry-level degree has brought with it substantial changes, eg, curricular changes, abilities-based outcomes, and assessment of abilities, it indeed may be true that admission standards have not changed. In addition, it could be possible that the progression standards for the professional degree also have remained the same following the adoption of the PharmD. This is not to imply that they should have changed, but what if they have? The contrasts between the BS degree, current entry-level PharmD, and previously offered, post-baccalaureate PharmD programs’ admission and progression criteria may provide preliminary evidence of whether academia’s change to an entry-level PharmD degree brought changes in the criteria that were used with the previous BS program or the traditional post-baccalaureate PharmD degree programs. We sought to determine whether the admission and progression criteria for this new entry-level PharmD degree program more closely resembled that for the traditional post-BS PharmD degree or the BS degree.

The purpose of this research was to explore the changes to the admission and progression standards that the schools and colleges of pharmacy underwent during the transition from a BS entry-level degree to an entry-level PharmD degree. In addition, the impact of this change on the school’s volume of applications, quality of applications, class sizes, and graduation rates also were explored.

**METHODS**

A 2-page, self-report questionnaire was developed (to obtain a copy of the Schools and Colleges of Pharmacy Admission Practices Questionnaire, please contact the corresponding author). The instrument was peer-reviewed by the pharmacy administration faculty and graduate students. Then the instrument was pretested for clarity by the Dean of Academic Affairs at the School of Pharmacy. This resulted in clarifying the wording of a few questions in regards to their syntax, but not their underlying intent. The questionnaire was faxed to the deans of all 82 accredited schools and colleges of pharmacy in the United States in the spring of 2001. If no response was received from someone at the school after 2 weeks, then the questionnaire was faxed to the dean a second time. Any surveys that had incomplete information were faxed back to the respondent with those specific questions that needed clarification marked. Overall, the response rate was 57 of 82 (70%). After removing 3 surveys that were unusable due to item nonresponse, the useable response rate was 54 of 82 (66%).

The survey was divided into 3 distinct sections. The first section consisted of the college or school’s demographic information, including the number of students enrolled, funding status (public vs. private), types of degrees offered, the format in which the degrees are offered (0-6, 2-4, etc.), and progression policies. The second section examined changes in demographics observed since the institution of the entry-level PharmD. These possible changes included the number of applications received, the number of applications that met minimum admission standards, the average class size, the average graduating class size, the number of students with progression issues, the number of students who did not finish the coursework, the pass rates for the North American Pharmacist Licensure Examination (NAPLEX), and an “other” category in which the respondent could describe program changes not specified in the questionnaire.

The third section included questions asking the respondents to provide information that would allow for comparisons across the 3 degree types: the BS, the entry-level PharmD, and the traditional post-baccalaureate PharmD (post-BS PharmD) programs at their school or college. If the program had graduated students from either of the degree tracks in the last 10 years, then the
Table 1: Responses from College of Pharmacy Administrators to a Survey Regarding Changes that Took Place After Implementation of the Entry-Level PharmD Program

<table>
<thead>
<tr>
<th>Question</th>
<th>n</th>
<th>Increased</th>
<th>Decreased</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of applications received by your school per year has:</td>
<td>51</td>
<td>22%</td>
<td>63%</td>
<td>16%</td>
</tr>
<tr>
<td>The number of applications received that meet minimum enrollment requirements has:</td>
<td>51</td>
<td>41%</td>
<td>35%</td>
<td>24%</td>
</tr>
<tr>
<td>The average entering class size has:</td>
<td>48</td>
<td>40%</td>
<td>21%</td>
<td>40%</td>
</tr>
<tr>
<td>The average graduating class size has:</td>
<td>46</td>
<td>41%</td>
<td>24%</td>
<td>35%</td>
</tr>
<tr>
<td>The percent of students required to retake courses for progression has:</td>
<td>48</td>
<td>19%</td>
<td>19%</td>
<td>63%</td>
</tr>
<tr>
<td>The percent of students who do not complete the degree program has:</td>
<td>46</td>
<td>0%</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>First time candidate NAPLEX passage rates have:</td>
<td>42</td>
<td>40%</td>
<td>5%</td>
<td>55%</td>
</tr>
</tbody>
</table>

*45% decreased, then recovered

respondent was asked to describe some of the program characteristics. Among these were admission standards, including minimum grade point averages (GPAs) and Pharmacy College Admission Test (PCAT) scores, and progression standards, including GPA per course or year. Paired t-tests and chi-square analyses were performed when appropriate to analyze for differences among degree types.

**RESULTS**

Of the schools that responded, 62% were publicly funded institutions. Only one college responded that the only pharmacy degree offered was the BS degree. Twelve colleges still offered both a BS and a PharmD degree, and 38 offered only a PharmD. The progression track that was most common was 2 years pre-pharmacy coursework and 4 years of pharmacy coursework.

Currently, colleges and schools of pharmacy employ a number of methods to aid students who fail to meet minimum progression standards. Among them, the retaking of a particular course was most common (89%). Seventy percent of respondents said retaking a year of coursework was an option. Other methods included retaking a semester (54%), followed by remediation, defined as additional coursework (30%) and retesting (24%).

The second section of the questionnaire allowed for examination of the changes seen since adopting the entry-level PharmD degree. Those respondents whose schools did not offer an entry-level PharmD were asked to skip to the third section. All questions were phrased with the transition to the PharmD as the reference point, and respondents were asked to identify levels of change in a variety of program aspects, such as the number of applications received, the number of applications that met minimum admission standards, the average class size, the average graduating class size, the number of students who had to retake a course, the number of students who failed to finish the degree program, NAPLEX passage rates, and an “other” category for program changes not specified in the questionnaire. The responses are reported in Table 1.

Over half of the deans surveyed reported a decrease in the number of applications received following the institution of the entry-level PharmD degree. Of those who had seen a decrease in numbers, 72% have seen a recovery in the number of applications. While 41% of the respondents reported an increase in the number of applications that failed to meet the minimum requirements, 40% of respondents reported an increase in their average entering class size and 41% reported an increase in their graduating class size. No respondents reported an increase in the number of students who did not finish the program since instituting the entry-level PharmD. Only 5% of the schools observed a decrease in NAPLEX passage rates compared to the 40% of respondents reporting an increase in passage rates for students with the new degree. In addition to these changes, the respondents also reported changes in curriculum (98%), student/applicant quality (56%), admission standards (66%), and progression standards (34%).
Table 2: Comparison of Grade Point Average Standards for the Three Pharmacy Degree Programs as Reported by Schools of Pharmacy

<table>
<thead>
<tr>
<th>Question</th>
<th>PharmD</th>
<th>BS in Pharmacy</th>
<th>Traditional Post-BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is/was the minimum acceptable GPA for admission to your program?</td>
<td>n=46</td>
<td>n=26</td>
<td>n=18</td>
</tr>
<tr>
<td></td>
<td>2.0-3.0 (2.62)</td>
<td>2.0-3.0 (2.43)*</td>
<td>2.0 – 3.0 (2.74)</td>
</tr>
<tr>
<td>What is/was the average GPA of entering classes?</td>
<td>n=48</td>
<td>n=24</td>
<td>n=10</td>
</tr>
<tr>
<td></td>
<td>2.9-3.7 (3.30)</td>
<td>3.0 – 3.7 (3.31)</td>
<td>3.0-3.5 (3.23)</td>
</tr>
</tbody>
</table>

For respondents answering for B.S. and entry-level PharmD only:

<table>
<thead>
<tr>
<th>Question</th>
<th>PharmD</th>
<th>B.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is/was the minimum acceptable GPA for admission to your program?</td>
<td>n=23</td>
<td>n=23</td>
</tr>
<tr>
<td></td>
<td>2.0-3.0 (2.52)</td>
<td>2.0-3.0 (2.44)*</td>
</tr>
<tr>
<td>What is/was the average GPA of entering classes?</td>
<td>n=21</td>
<td>n=21</td>
</tr>
<tr>
<td></td>
<td>2.9-3.7 (3.32)</td>
<td>3.0 – 3.7 (3.30)</td>
</tr>
</tbody>
</table>

*Different from the other degrees, P<0.05

The third section of the questionnaire compared admission and progression standards among the 3 program types: BS, entry-level PharmD, and traditional post-BS PharmD. The first questions dealt with the changes in both minimum GPA (standardized to a 4.0 scale) requirements and average GPA for the entering class. While the minimum requirements decreased on the continuum between traditional PharmD to BS, the average entering class GPA was consistent (Table 2).

Table 2 reports the aggregate means for all responding schools, however, comparison of differences can only be performed on schools that reported data for each of the degree types compared. The minimum acceptable GPA for BS and entry-level PharmD programs was significantly different (P<0.05). When comparing only those programs that reported numbers for both the PharmD and BS degrees (n=23), the average minimum acceptable GPA for admission into the PharmD program was 2.52 (± 0.29), compared to 2.44 (± 0.34) for the BS program (P<0.05). None of the average GPA scores for the entering classes were significantly different among groups. The average GPA of the entering class in the programs that reported numbers for both the entry-level PharmD and BS programs (n=21) was 3.32 (±0.18) and 3.30 (±0.15), respectively.

In addition to minimum and average GPAs, minimum and average PCAT scores were examined. Fifty-six percent of the entry-level PharmD programs reported using the PCAT, compared to 50% of the BS programs and none of the traditional PharmD programs. Given the nature of the post-BS PharmD program, it is not surprising that the PCAT was not used as a criterion for determining admission to those degree programs. Only 6 schools reported the actual PCAT composite scores and the results from those questions are not reported. Only 14% of the entry-level programs, 15% of the BS programs, and 9% of the traditional PharmD programs reported using additional standardized tests other than the PCAT for making admission decisions. These included the American College Testing (ACT) exam and the Scholastic Aptitude Test (SAT).

Two questions explored measures used to assess applicant quality, namely a written essay and an interview. Eighty percent of the entry-level PharmD programs required an interview, as compared to 47% of the BS programs (P<0.05). In addition, more of the entry-level PharmD programs required an essay or another assessment of writing ability (94%) (P<0.05) than either the BS programs (68%) or the traditional PharmD programs (68%).

The percentages of respondents who reported considering or accepting a subminimum applicant do not differ drastically across all 3 program types (Table 3). Respondents who reported either a decrease in applications or a decrease that later recovered did not report considering or accepting applicants who fell below the minimum standards to a greater extent than those who reported no decrease in applications.

Ninety-two percent of the PharmD programs, 89% of the BS programs, and 91% of the post-BS

Table 3: Percentages of Pharmacy Programs that Considered Accepting or Had Accepted a Subminimum Applicant

<table>
<thead>
<tr>
<th>Question</th>
<th>PharmD</th>
<th>BS in Pharmacy</th>
<th>Traditional Post-BS PharmD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does/did your school ever consider an applicant who did not meet minimum requirements?</td>
<td>Yes=55%</td>
<td>Yes=47%</td>
<td>Yes=48%</td>
</tr>
<tr>
<td>Does/did your school ever accept an applicant who did not meet minimum requirements?</td>
<td>Yes=40%</td>
<td>Yes=32%</td>
<td>Yes=32%</td>
</tr>
</tbody>
</table>

PharmD programs reported using GPA standards in making decisions concerning academic progression. In addition, 10% of the entry-level PharmD programs reported using high-stakes exams, an exam that a student must pass in order to progress, compared to 7% of the BS programs and none of the traditional PharmD programs. Overall, the minimum GPA acceptable for progression followed the same pattern that the minimum GPA for admission did, ie, post-BS PharmD programs had higher aggregate mean GPAs (2.37 ± 0.47) than entry-level PharmD programs (2.08 ± 0.20), which were higher than the BS programs (2.00 ± 0.00). This mean difference (0.08) resulted from an increase in the respective program’s required minimum GPA for progression at 4 schools when they implemented the entry-level PharmD program. In comparing the BS degree programs to the entry-level PharmD degree programs among schools that provided responses for each degree type, we found that some schools had increased their minimum GPA required for progression (2.00 vs. 2.06; P<0.05). However, these minimums were not increased as high as the minimum GPAs required for progression in the post-BS PharmD degree (2.08 vs. 2.32; P<0.05).

Finally, 30% of the entry-level PharmD programs reported to vary the progression requirements based upon a student’s position in the curriculum. The BS programs reported this only 13% of the time and the post-BS PharmD programs reported varied progression standards in only 17% of the programs.

DISCUSSION

The results from this study seem to indicate that the adoption of the PharmD as the entry-level degree in pharmacy corresponded with a number of changes. First, a majority of responding colleges reported a decrease in the number of applications. While this decrease has recovered in most of those schools, there are many issues that may have led to the decrease in applications; among them are the economic climate, changes in the job market, and the change in the degree.

Thirty-nine percent of colleges reported that their entering class size had increased, while 21% said their enrollment had decreased and 40% had seen no change. Similar percentages were reported for changes in graduating class sizes. In addition, since the adoption of the entry-level PharmD, only 5% of colleges reported a decrease in the NAPLEX passage rates compared to 40% of schools that reported an increase. There are several potential explanations for this difference. This improvement in NAPLEX passage rates could be the result of better prepared graduates, more qualified applicants, or changes in the NAPLEX exam.

One particular issue of interest is the consideration and acceptance of students whose applications fall below the minimum requirements. One might wonder whether the change to an entry-level PharmD coupled with a drop in the number of applications increased the willingness of schools to consider these types of applications. While the percentages did not differ across the degree types, roughly 40% of schools reported accepting an applicant who failed to meet the minimum requirements. The question remains as to what factors led the schools to accept such an applicant and what effect these decisions had on student progression and graduate quality.

While the minimum admission GPA requirements have changed slightly (aggregate means = 2.62 for the entry-level PharmD compared to 2.43 for the BS and 2.74 for the post-BS PharmD) among the 3 degree types, the differences between the BS and entry-level PharmD minimum admission GPAs were significant. This result stems from 5 of 27 responding schools increasing their minimum admission GPAs and no responding schools decreasing their minimums. These changes in minimum criteria seem to have had no practical effect because the average entering GPA of classes was not different across the 3 degree types. Furthermore, the respondents who reported their programs had experienced a decrease in applications did not report a corresponding decrease in standards.

The largest practical change in admission standards appears to be a shift to adding qualitative measures to
the established quantitative measures of GPA and PCAT. The prevalence of the use of interviews and essays was higher in the entry-level PharmD programs than it was in either the BS or post-BS PharmD programs. This finding may indicate a transition in admission standards focused on the admission of students with initial higher levels of communication abilities. It remains to be seen if these efforts are effective in identifying such students.

In the transition from the BS degree to the entry-level PharmD, 4 schools reported an increase in the minimum GPA levels required for students to progress in the curriculum. A higher proportion of responding schools reported to vary the progression standards based on a student’s position in the curriculum for their entry-level PharmD program as compared to the other degree types. While it is possible that this is a result of the establishment of varying progression hurdles, it is not possible to determine whether these hurdles are progressively more difficult or progressively easier from this research.

The majority of schools maintained the minimum GPAs required for progression in the BS program when transitioning to the entry-level PharmD program. At the schools that reported GPAs for both degree types, the mean GPAs for progression were not different between the entry-level PharmD and the BS degree programs (2.06 vs. 2.00; \( P > 0.05 \)). Thirty percent of the respondents reported that the minimum progression GPA varied for their entry-level PharmD degree programs based on a student’s position in the curriculum. Only 13% of the respondents reported that the minimum progression GPA for their schools’ BS degree programs varied as well. While this can be interpreted to mean that, for some programs, there are different minimum progression criteria based on how long a student has been in the program, the more important question is why were these changes implemented and what effect have they had on student progression and graduate quality. Ultimately, it appears that the GPA is the primary determinant of progression in all 3 degree programs and that the minimum GPA required to progress is similar for the BS program and entry-level PharmD degree programs and lower than that for the post-BS PharmD degree program.

Limitations

There are a number of limitations to this study that are worth mentioning. More extensive pretesting of the instrument beyond the Dean of Academic Affairs may have yielded a more reliable and valid instrument. This potential for a lack of clarity in the questionnaire is a limitation to the study.

While this study attempted to capture a census of the currently accredited colleges and schools of pharmacy, the useable response rate, 54 of 82 (66%), was another limitation of this study. Item nonresponse affected the ability to find statistically significant differences, but did not alter the overall conclusions of the study. For example, 98% of schools reported a change in their curricula following the implementation of the entry-level PharmD degree. Additionally, the number of schools that reported results for both the BS and the entry-level PharmD degree was low, 39% of the sample and 26% of the 82 pharmacy schools. This also limits the generalizability of our results, but does not limit the ability to find some significant differences between the degrees. For these reasons generalizations beyond the sample might be subject to scrutiny, but the study does identify areas that are worthy of further exploration.

CONCLUSIONS

The face of the pharmacy profession continues to change, as does the education of pharmacists. The use of admission and progression criteria provides opportunity to regulate or enhance this education. According to the findings of this study, the most notable change in the admission and progression standards since the transition to an entry-level PharmD is the increased use of qualitative evaluations that assess writing and communication abilities as criteria for advancement.

The findings of this study indicate that schools have created entry-level PharmD programs that are unique by taking some attributes from the BS program (eg, PCAT), some attributes from the post-BS PharmD program (eg, minimum admission GPA), and by establishing some new attributes (eg, qualitative assessments). These findings do not answer the question as to whether standards (both admission and progression) were adopted as a result of experiences gained in the previous programs or a result of current trends in pharmacy education. Regardless of the cause, these findings provide preliminary evidence that schools and colleges of pharmacy seem to be adopting unique pharmacy degree programs through changes to their admission and progression standards, in addition to curricular changes.

REFERENCES


