Objective. To evaluate the academic experience and satisfaction of students who completed a dual PharmD/MBA degree program and the program’s long-term impact on the students’ career choice and earning potential.

Methods. GPAs, job placement, and starting job salaries were compared between graduates who completed the dual PharmD/MBA program and those who completed only the PharmD program. A satisfaction survey instrument was administered to 17 students who completed the dual PharmD/MBA degree program in May 2007. Data from a standardized job placement and starting salary survey instrument completed by all PharmD graduates were also obtained, as well as all students’ final grade point averages (GPAs). GPAs, job placement, and starting job salaries were compared between graduates who had completed the dual PharmD/MBA program and those who had completed only the PharmD program.

Results. The graduating GPAs of dual-degree students were higher than those of both pharmacy (3.52 vs 3.41, \( p > 0.10 \)) and business (3.82 vs. 3.68, \( p = 0.018 \)) students not enrolled in the dual-degree program. Dual-degree students were slightly less likely to enter a residency (17% vs. 27%, \( p = 0.44 \)) than other pharmacy graduates. Among those who elected not to pursue a residency, both mean starting salaries ($111,090 vs. $101,965) and mean total first-year compensation ($127,290 vs. $110,388) were significantly higher for dual-degree graduates compared to the PharmD graduates.

Conclusions. Students enrolled in the dual-degree program did slightly better academically than students who completed only the MBA or PharmD programs and indicated a high level of satisfaction with the program. Dual-degree graduates reported increased career opportunities and were slated to earn significantly more during their first year in the workforce. These results affirm continuation of our program and make the case for support of similar programs across the nation.

Keywords: dual degree, master of business administration (MBA) degree, curriculum, grade point average, salary, career opportunities
As constructed, pharmacy students take the GMAT and apply to The Citadel’s School of Business Administration during the spring semester of their first year in the College of Pharmacy. In addition to being registered as full-time students in the SCCP pharmacy program (having completed at least 1 semester), students must fulfill all application requirements at the Citadel’s School of Business Administration. These include a satisfactory GMAT score (GMAT \( \geq 410 \)) and undergraduate GPA, 2 letters of reference, and an application essay (Appendix 1). The students then take MBA courses full-time during the summer of their second- and third-professional years and concurrently with pharmacy courses during their second- and third-professional years (no more than 3 MBA credit hours can be taken during the spring and fall semesters). Required courses include Financial and Managerial Accounting, Management Information Systems, Personal Communication, Organizational Theory, and Strategic Management. All of the MBA courses are offered in the evenings, so no scheduling conflicts arise. Of those courses on the list, students in the PharmD only program are also required to take Pharmacy Management, Designs for Outcomes Research, and Pharmacy Law/Ethics. In addition, there are several MBA courses that may count toward the 8 PharmD elective credit hours required, including Professional Communications, Management Information Systems, Financial Management, Marketing Management, Organizational Behavior, Strategic Management, Consumer Behavior, and Human Resource Management. Although the pharmacy curriculum is set, there is some flexibility in the order in which the MBA classes may be taken.

Because the first and foremost mission of the college is to produce qualified pharmacists, applications for the dual-degree program are postponed until students are well into their second semester of classes at the College of Pharmacy. This would give students the opportunity to settle into the pharmacy curriculum and the unique demands of graduate school so that they could better judge whether they were interested in and capable of handling additional coursework toward an MBA. Because there were initially a few cases of students with relatively low first-professional year pharmacy GPAs who chose to pursue the dual degree, applications have since been limited to those students with a cumulative first-professional year GPA greater than or equal to a 3.0. However, this policy was implemented after this particular graduating class began the program and therefore has no bearing on the results.

The initial interest in the dual PharmD/MBA was overwhelming, resulting in a cohort of dual-degree students and a sample size large enough to enable us to draw meaningful conclusions based on survey and academic data. We surveyed this group midway through the program to evaluate their academic experience and satisfaction and found that they were performing above average in both programs and expressed a high level of satisfaction with the program, strongly agreeing that the program facilitated their academic experience and was to determine what if any difference this dual degree made upon graduation.

METHODS

All 76 students graduating from the South Carolina College of Pharmacy-Charleston in 2007 were asked to complete a 12-item survey instrument about job interviews, job offers, eventual placement, starting salaries, and bonuses (Appendix 2). A Student’s \( t \) test was used to determine whether the observed difference in salaries was statistically significant (\( \alpha = 0.05 \)). Analyses were performed using Stata 8.0 software (College Station, TX). The 17 PharmD/MBA dual-degree graduates were asked to complete additional open-ended questions about their experience within the dual-degree program: how difficult did they find the program, did they feel it was worth the effort, and whether/how the dual degree facilitated their job placement.
To determine whether the dual-degree students continued to perform well in the PharmD program despite the extra demands on their time, we compared their graduating GPAs to those of their classmates (n = 59). Again, a t test was used to determine whether the observed difference was statistically significant. To measure whether these dual PharmD/MBA students were also performing well in the MBA program, their mean graduating GPA at The Citadel was compared with that of the other 2007 MBA graduates (n = 68).

RESULTS

Seventy-five (99%) of the 2007 graduates from the College of Pharmacy class completed the survey instrument. Dual-degree graduates listed exposure to the business side of pharmacy, interaction with students outside of the College of Pharmacy, and improved problem-solving, leadership, communication, and writing skills among the most rewarding aspects of the program. Several mentioned the necessity of a business background in today’s world of increasing health care costs and felt better equipped to balance providing optimal patient care with minimizing costs. Furthermore, they unanimously reported that the MBA degree helped to set them apart in the interview process, and many noted that interviewers were particularly interested in the program.

Students enrolled in the dual-degree program did better over the course of their academic career than their counterparts (Table 1). The average graduating GPAs of the PharmD students who elected to enroll in the dual-degree program were higher (mean GPA = 3.52) than the average for the rest of their class (mean GPA = 3.41), although this difference was not statistically significant. The average graduating GPA of the dual-degree students in the MBA curriculum was significantly higher than that of the rest of their class (mean GPA 3.82 vs. 3.68, p = 0.018).

Dual-degree students reported a higher number of job interviews (3.9 vs. 2.5, p = 0.013). Approximately 50% of the graduates ended up in community pharmacy, regardless of their participation in the dual-degree program (47% of PharmDs and 53% of PharmD/MBAs, p = 0.7). Because we collected information on the students’ long-term goals, we were able to code the responses based on whether they indicated a plan to move into a management position or to own/open their own pharmacy, and we found that significantly more dual-degree students (47% vs. 20%, p = 0.03) indicated that one or both of these goals were their intent.

Dual-degree students were slightly less likely to enter a residency (17% vs. 27%, p = 0.44) than other pharmacy graduates. Because residency salaries are generally much lower than traditional hospital or community pharmacy salaries, we analyzed salary data on the subset of students who elected not to pursue a residency (n = 55). Both mean salaries ($110,090 vs. $101,965) and total compensation ($127,290 vs. $110,388, including sign-on bonuses and other inducements awarded during the first year) were significantly higher for dual-degree graduates compared to their PharmD graduate colleagues (Table 2).

DISCUSSION

The increase in the number and popularity of dual PharmD/MBA degree programs in the United States1-6 parallels that of similar dual-degree programs in the colleges of nursing7-9 and medicine10-14. There are currently 30 PharmD/MBA dual-degree programs, 56 master of science (MS), master of nursing (MN), or MSN/MBA dual-degree programs, and 49 doctor of medicine (MD)/MBA dual-degree programs (Table 3).2,14,15 Despite the widespread popularity of these programs and the implicit assumption that an MBA must certainly be an asset to

Table 1. Mean Graduating Grade Point Averages of Students Enrolled in a Dual PharmD/MBA Degree Program Compared to Those of Their Non-Dual-degree Peers

<table>
<thead>
<tr>
<th>Graduating GPA, Mean (SD)</th>
<th>Pharmacy Curriculum</th>
<th>Business Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual PharmD/MBA degree students</td>
<td>3.52 (0.28)</td>
<td>Dual PharmD/MBA degree students</td>
</tr>
<tr>
<td>Non-dual-degree students (PharmD only)</td>
<td>3.41 (0.37)</td>
<td>Non-dual-degree students (MBA only)</td>
</tr>
</tbody>
</table>

Abbreviations: PharmD = doctor of pharmacy; MBA: master of business administration; GPA: grade point average

*p > 0.10, t = −1.29

*p = 0.015, t = −2.51

*p = 0.033, t = −2.18

Table 2. Average Starting Salary and Total First-Year Compensation for Dual PharmD/MBA Degree Graduates Compared With Traditional PharmD Graduates

<table>
<thead>
<tr>
<th>Degree Program</th>
<th>Average Starting Salary, $</th>
<th>Average Total First Year Compensation, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual PharmD/MBA degree students (n = 13)</td>
<td>111,090</td>
<td>127,290</td>
</tr>
<tr>
<td>Non-dual-degree students (PharmD only, n = 55)</td>
<td>101,965</td>
<td>110,388</td>
</tr>
</tbody>
</table>

Abbreviations: PharmD = doctor of pharmacy; MBA: master of business administration
a health professional’s career, this is the first published research comparing job placement and level of remuneration between a relatively large sample of students who chose to participate in one of these programs and those who did not. Considering the fact that few students typically enroll in dual-degree programs each year at any given institution, the number of graduates included in the survey ($n = 17$) was relatively large.

This study demonstrated that dual PharmD/MBA students continued to have an overall high level of satisfaction with the program and performed better academically than their peers in both curriculums. These dual PharmD/MBA students might have self-selected into the program with an accurate assessment of their ability to simultaneously handle the demands of 2 rigorous curriculums. When interviewed, the students attributed their success in both programs to strong time-management skills and a commitment to excel. As stated earlier, the program is designed to allow students to enroll in the dual program only after completing the first 2 semesters of the pharmacy curriculum, allowing the students to determine their interest and capability of handling additional coursework. These results, the increased number of job interviews, and boost in initial earnings afforded by the dual degree upon graduation affirm the continued use of this process at this institution.

In addition, we found that students in the dual-degree program were less likely to enter a residency program. This is interesting but perhaps not surprising, as these students are not necessarily interested in careers in traditional clinical pharmacy. On the other hand, perhaps more education and awareness of pharmacy practice management residencies is warranted, as none of our students applied for such residencies. Many students were either not aware that they existed or did not believe that this additional training was necessary.

The significant difference in salaries between dual-degree and single-degree students suggests that perhaps these students have better negotiating skills and/or are beginning their careers in managerial roles. With the current shortage of pharmacists and the fact that many individuals are not interested in or trained for managerial roles, these graduating pharmacists are often offered these positions at the start of their careers or shortly after entering the workforce.

Our study is potentially limited by student recall bias and the possibility that factors other than a second degree were involved in the higher salaries our dual-degree students received. Although there are many possible confounding variables that were not included in our analysis (such as student interview skills and motivation), potential employers found our dual-degree students highly desirable. It may be that many of the attributes potential employers favored are the same ones that led these students to pursue a second degree in the first place.

Although students have been highly satisfied with the program overall, improvements such as a need for additional advising/mentoring (especially from faculty members with PharmD/MBA backgrounds) and more assistance in registration and financial aid have been noted. In order to address these issues, the College of Pharmacy has appointed a faculty member with a PharmD/MBA background to work with the Citadel to expand their established mentoring program. With regard to registration, additional course sections have been added and class ceilings increased to accommodate student interest in the program. To address concerns regarding financial aid, the financial aid offices at both institutions met to determine the best approach for resolving issues related to their disparate federal funding cycles. The authors believe that the success of the program and the low number of drop-outs can be attributed to consistently addressing these concerns and continuing to improve communication between both Colleges. In addition, as mentioned previously, students are only allowed to enroll in the program after completing the first 2 semesters of the doctor of pharmacy curriculum, which enables them to fully assess their interest and capability. We believe that this is also a key element in preventing later withdrawals.

**CONCLUSION**

Although approximately one third of all colleges of pharmacy in the United States now offer dual PharmD/MBA degrees, this is the first published formal assessment and analysis comparing academic performance, job placement, and salaries of dual-degree students with those in a traditional program. Students enrolled in the dual program did better academically than their counterparts in both the pharmacy and business curriculums and had higher mean job salaries upon graduation. In addition,
these students indicated an overall high level of satisfaction with the dual-degree program. These results affirm the continuation of the dual PharmD/MBA program between The Citadel’s School of Business Administration and the South Carolina College of Pharmacy and provide evidence of significant benefits that could be used to bolster support for and participation in similar programs across the nation.

REFERENCES

Appendix 1. MBA Curriculum and Plan of Study for Dual PharmD/MBA Degree Students at the South Carolina College of Pharmacy

<table>
<thead>
<tr>
<th>MBA Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Accounting for Decision Making (BADM 601)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Economics for Decision Making (BADM 606)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Professional Communications (BADM 608)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Pharmacy Management (PHMPR 663)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Organizational Theory (BADM 607)</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Foundations of Marketing (BADM 609)</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Managerial Accounting for Decision Making (BADM 603)</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Fundamentals of Finance (BADM 605)</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Management Information Systems (BADM 612)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Financial Management (BADM 614)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Marketing Management (BADM 616)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Pharmacy Law/Ethics (PHMPR 711)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Organizational Behavior (BADM 618)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Designs for Outcomes Research (PHMPR 709)</td>
<td>2 hours</td>
</tr>
<tr>
<td>Statistics for Outcomes Research (PHMPR 751)</td>
<td>1 hour</td>
</tr>
<tr>
<td>Strategic Management (BADM 625)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Grand Rounds (PHMPR 838 and 839)</td>
<td>1 hour</td>
</tr>
<tr>
<td>Pharmacy Administration Rotation (PHMPR 849)</td>
<td>4 hours</td>
</tr>
<tr>
<td>Outcomes Management Rotation (PHMPR 855)</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

*Admission Requirements: (1) Be a full-time student in the PharmD program, having completed at least one semester; (2) Submit application to The Citadel’s School of Business Administration along with the following: GMAT scores; undergraduate GPA; 2 letters of reference; and application essay

This is the curriculum that the 2007 graduates completed and the admission requirements they applied under; the MBA curriculum has recently been changed to all 3 credit hour classes with 6 hours of electives and we now require a 3.0 GPA in the pharmacy curriculum for admission
Appendix 2. South Carolina College of Pharmacy Class of 2007 Exit Survey (Administered April and May 2007)

1. Which of the following descriptions fits you best at this time:
   a. Accepted a pharmacist job/position
   b. Received pharmacist job offers but am undecided at this time
   c. Accepted a residency position
   d. Not seeking a pharmacist position at this time (please clarify at end of survey)

2. How many positions have you interviewed for?

3. How many job offers have you received?

4. If you have taken a job, is it full time or part time?

5. If you have taken a job, is it in South Carolina or out-of-state?

6. If you have taken a job, is it:
   a. Community
      i. Community chain company, if so please specify:
      ii. Independent pharmacy, if so please specify:
      iii. Grocery chain company, if so please specify:
   b. Hospital, if so please specify:
   c. Nuclear, if so please specify, if so please specify:
   d. Residency, if so please specify:
   e. Other, if so please specify:

7. What is your annual salary:

8. Will you receive a sign-on bonus?
   a. If yes, please specify the amount:

9. Will you receive tuition reimbursement or other compensation with the first year from your future employer:
   a. If you, please specify the amount:

10. Please include any other details of your contract related to projected advancement and/or special training programs offered by your future employer:

11. What are your long-term (10 years) career goals?

12. Are you in the dual PharmD/MBA degree program?
   a. If so, how difficult did you find the dual degree program?
   b. If so, did you feel it was worth the effort?
   c. Please elaborate on whether (and if so, how) the MBA degree helped to set you apart in the interview process or played a part in your job placement: