Pharmacists’ Satisfaction with their Pharmacy Education: Were they Prepared for OBRA-90?1

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On January 1, 1993, the Omnibus Budget Reconciliation Act of 1990 (OBRA-90) went into effect. This law mandates that pharmacists counsel patients and perform prospective drug utilization review. The question to be answered was: Are pharmacy schools properly preparing their students to perform according to the OBRA-90 guidelines? A questionnaire was mailed to 665 recent graduates of seven pharmacy schools around the country. A total of 303 individuals returned the questionnaire for a 45.6 percent response rate. MANOVA techniques were utilized to analyzed the data. Results indicated that recent graduates were generally satisfied that their pharmacy education prepared them to meet OBRA-90 counseling and drug use review requirements. Pharmacists were most satisfied with their education in preparing them to address problems relating to duplicative therapies and least satisfied with their knowledge of self-monitoring techniques. This study was an attempt to evaluate recent graduates opinions about their pharmacy education with respect to their practice.

INTRODUCTION

Universities and colleges must constantly review their curricula to ensure they are providing the best professional education possible. In addition, schools must ensure that they are adjusting to society’s needs and preparing professionals to meet the latest challenges. In the early seventies, competency statements and learning objectives were being considered as a remedy(1). The notion of defining, in explicit terms, the competencies a student should possess at the completion of an educational program is what has given competency-based education its appeal(2). The applicability of competency-based education to pharmacy, dentistry, medicine and other professions was also evident at the time.

Popovich and Martin reported on the development of a system to assess the competency development of senior pharmacy students at the University of Kansas in 1975(3). They stated that, no matter how capably the college faculty performs or how well the curriculum is designed, the key question is whether the graduating students are competent in the discipline they have chosen. As students progress through a pharmacy curriculum, there should be a steady and continual educational development. This should culminate in the last professional year with the students learning to apply their educational backgrounds within the externship program in preparation for graduation. Popovich and Martin based their research methodology on the above assumptions. They administered three proficiency examinations on three different dates to senior pharmacy students, registered pharmacists and nonpharmacy students. The research demonstrated that an appropriate testing technique can quantify the competency development of senior pharmacy students. This series of examinations demonstrated that, during the last professional year, students’ performance and ability with pharmacy information and knowledge approached and eventually equaled that of a control group of registered pharmacists(3).

As it can be perceived in the reports that have been done developing competency-based programs, the ideas of competency-based curricula have grown since the seventies(4-9). Investigators continued to develop and suggest new ideas into the late 1980s(10,11). Much has been written about pharmacy curricula, yet very little has been reported on the degree of competence that the students graduating from these programs feel they gained from their curricula. There are several authors, however, that surveyed pharmacists’ opinions on pharmacy curricula.

Creighton University School of Pharmacy conducted a study in 1972(12). They mailed 1,294 questionnaires to pharmacists in Midwestern and West coast regions of the United States. The respondents were asked to rate their training or education in each area, and to rate the value of

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each curricular area in current practice as well as in future practice. The authors were able to identify areas where the school needed to place more attention based on the views of the pharmacists surveyed.

The University of Southern California conducted an investigation in 1978(13). One hundred twenty-nine third-year pharmacy students collected the data for the study. The investigators trained and instructed the students to collect specific patron requests and the pharmacists responses to them. The investigator found that 17 percent of the total number of requests were clearly in the professional realm and represented attempts from the patients to seek advice or gather information to use in making a decision about their health. Two-thirds of the number of professional questions asked were requests for information or advice about selection, dosage, quality or effects of OTC drugs, or requests for advice about the relief of specific symptoms or for information about health matters(13). This suggested that instruction in OTC use should be a very important part of the pharmacy curricula.

According to Smith et al., there are ample data on what pharmacists do and how frequently, as well as the importance of various professional functions. There have been scarce data generated on the gap between the level of perceived importance of various practice activities and functions and the perceived level of competence to perform these upon graduation(14). This led to a study conducted at the University of Kentucky in 1990. The purpose of this research was to determine if there is a gap, and if so, how this information may be used for curricular assessment and design. The authors' major finding was that the incongruence between the rating of perceived importance and competence of the 19 practice activities clearly indicated a perceived need for greater competency in academic programs at the University of Kentucky. The incongruence was greatest for management activities. This study found a need for more emphasis in management skills followed by patient care, dispensing and public health functions in the University of Kentucky's curriculum(14). The authors recommended that consideration be given to making the following courses a requirement for graduation: computer applications, OTC drugs and devices, communications, geriatric pharmacy practice, drug literature evaluation, and management(14).

On January 1, 1993, a new law affecting the way pharmacy is practiced went into effect. This law, called the Omnibus Budget Reconciliation Act of 1990 (OBRA-90), mandates that pharmacists conduct patient counseling and perform prospective drug utilization review (DUR). Its intent is to detect problems with drug therapy that are known and consequently preventable(15). Information that pharmacists must consider to be compliant with OBRA-90 includes: name and description of the medication, dosage, route, frequency, duration of therapy, special directions and/or procedures for administration of the medication, side effects, interactions and contraindications, storage/stability-temperature and lighting conditions, refill information, directions in the event of a missed dose, and self-monitoring techniques.

The OBRA-90 goals are to improve patient compliance and outcomes, avoid complications, and decrease costs associated with health care to the government and the patients. Independent, chain, hospital and mail order pharmacies are rapidly changing their policies to comply with the new law and regulations. Many companies have conducted seminars for their pharmacists to encourage and train them in the area of patient counseling. New computer programs have been developed or are being developed to assist pharmacists in counseling effectively.

These new challenges to the pharmacy profession have led to unanswered questions: Are pharmacy schools properly preparing their students to face these new challenges? If not, pharmacy schools must revise their curricula and make the necessary adjustment to better prepare their students.

The main goal of pharmacy schools is to graduate the best professionals. To achieve this goal, schools must adjust to new changes and challenges. Self-evaluation of the school curricula is necessary to make the proper changes. The purpose of this study is to survey recent pharmacy graduates to obtain responses that will help identify areas that must be addressed.

OBJECTIVES

The purpose of study is to measure the level of satisfaction with the education received from the schools of pharmacy. The specific study objectives were to determine whether:

- current pharmacy schools’ curricula adequately prepare pharmacists to face OBRA-90 challenges;
- the level of satisfaction of the University of Georgia pharmacists is the same as for the pharmacy graduates of other schools;
- the level of satisfaction of male pharmacists is the same as for female pharmacists;
- the level of satisfaction between different ethnic backgrounds is the same;
- the level of satisfaction between the different age groups of pharmacists is the same;
- the level of satisfaction between pharmacists of different practice settings is the same;
- the level of satisfaction of PharmD pharmacists is the same as for BS pharmacists.

METHODS

A questionnaire was developed to measure the level of satisfaction of the recent graduates on how well pharmacy school had prepared them to meet the challenges brought by OBRA-90. The areas that were chosen to be addressed in the questionnaire were those areas addressed by OBRA-90. The questionnaire appears in the Appendix.

Seven constructs were chosen a priori to represent the areas addressed by OBRA-90. A committee of five pharmacists, two hospital pharmacists (PharmD), two retail pharmacists and a PhD in pharmacy administration with a pharmacy background, developed the questions to represent each of the constructs in the questionnaire. The answers to questions representing a single topic area were pooled to determine the level of satisfaction for that construct. The seven constructs considered as the pooled variables are: drug interactions and contraindications, OTC drug knowledge, special instructions, polypharmacy and compliance, side effects, self-monitoring techniques, and dosages. The questions that comprise each of the constructs are as follows. (Refer to the Appendix for the questionnaire):

- Drug interactions and contraindications: comprised of Questions 1, 2A and 2B;
- OTC drug knowledge: comprised of Questions 3A, 3B,
3C, 3D, 3E, 3F, 4A, 4B, 4C, 4D, 4E, 4F and 4G:
- Special instructions: comprised of Questions 5, 8, 11, 12A, 12B, 12C, 12D, 12E, 17A, 17B and 17C;
- Polypharmacy and compliance: comprised of Questions 6 and 16;
- Side effects: comprised of Questions 7 and 10;
- Self-monitoring techniques: comprised of Questions 9A, 9B and 9C;
- Dosages: comprised of Questions 13, 14, and 15.

Each question was formatted on a Likert-type scale that ranged from one to five. “One” indicated that the pharmacist felt very dissatisfied with the education provided by the pharmacy school; and “five” indicated that the pharmacist felt very satisfied with the education provided by the pharmacy school.

A pretest was conducted to test the validity and reliability of the survey and to estimate the response rate. The questionnaire for the pretest was administered to a group of pharmacists from the Athens, Georgia area. Cronbach-Alpha was performed to test internal consistency of each construct. The Cronbach-Alpha scores ranged from 0.68 to 0.89.

Twenty pharmacy schools were selected at random to be included in the study. Only seven schools were willing to participate and release the former students’ addresses. The schools that participated in the study were Auburn University, University of Florida, University of Georgia, University of North Carolina at Chapel Hill, Ohio Northern University, University of Oklahoma, and University of Texas at Austin.

Questionnaires were mailed to 665 recent pharmacy graduates of seven pharmacy schools around the country. Only recent graduates (less or equal to one year since graduation) were selected to participate in the survey, since it was not the purpose of the study to measure the level of satisfaction gained by work experience. After the first mailing, four weeks were allowed for the responses to the questionnaire. The questionnaires were mailed a second time to the nonrespondents. After the second mailing, three weeks were allowed for the responses to the questionnaire.

Multivariate Analysis of Variance (MANOVA) was used to analyze the data to determine the level of satisfaction of pharmacy students with their education based on the OBRA-90 pharmacy practice requirements. An alpha level of 0.05 was used in this study to assess statistical significance. The MANOVA model used the seven constructs as dependent variables. Missing data were replaced with the sample average for that particular item and school. The Tukey-Kramer procedure was used for the multiple comparisons within the independent variables. The Tukey-Kramer procedure was one of the possible solutions to the problem of multiple comparisons with a fixed error rate in which there is a high probability of declaring at least one pair of means significantly different when is really not. This procedure also had the advantage that it can be used for unequal sample sizes.

RESULTS
A total of 303 pharmacists returned the questionnaires for a 45.56 percent response rate, 28 questionnaires were returned with wrong addresses. The sample of respondents consisted of an average age of 25 years, 85.8 percent with a bachelor degree of pharmacy, 68.1 percent female and 50.3 percent working in chain pharmacies.

Due to budget constraint a nonresponse rate analysis was not conducted, and it represents a limitation to this study. The respondents were compared to the make up of their respective school to determine how representative were they of their school population with respect to gender and degree conferred. No significant differences were found at an alpha level of 0.05 percent. Therefore, we concluded that the sample was representative to the make-up of their schools. However, the respondents were not compared with respect to other variables such as age or practice setting since the schools could not provide statistics with respect to these variables. This also represents a limitation to this study.

Question 18 was excluded from the evaluation of the study because it was found that externship and internship were seen differently at each school. This issue was raised by some of the respondents in their comments of the open question (Question 19). Question 4, from the demographic questions, was also excluded due to the fact that the majority of the respondents placed themselves in the top 10 to 20 percent of their class and we consider this finding to be not possible; maybe the respondents were biasing their answers to this question. Question 8 and 9, from the demographic questions, were later excluded after considering their relevance to the study. The study’s purpose is to determine how satisfied pharmacists are with respect to their education. Therefore, two questions were considered not relevant to the study.

For the sample population the levels of satisfaction on
their education with respect to OBRA-90 guidelines ranged from 4.07 for the polypharmacy and compliance construct to 3.52 for the self-monitor construct. All the scores were significantly different from “3” (neutral) at an alpha level of 0.05 (Figure 1).

Comparisons between the schools were not possible in this study because in order to get some of the students’ address listing from the schools, we agreed not to compare the individual schools. Therefore, we were only able to compare the University of Georgia pharmacists to the rest of the sample.

The levels of satisfaction for the University of Georgia sample ranged from 4.24 for the polypharmacy and compliance construct to 3.58 for the OTC construct while the total sample levels of satisfaction ranged from 4.02 for polypharmacy and compliance construct to 3.39 for the self-monitor construct. The polypharmacy and compliance and the side effect constructs were significantly different between the two groups at an alpha level of 0.05 (Figure 2).

The levels of pharmacist satisfaction with their education in preparing them for OBRA-90 did not vary with gender, ethnicity or age. (Figures 3, 4 and 5.) However, when the population was divided by work place, the construct of polypharmacy and compliance between independent and others was significantly different (Figure 6).

The sample was also divided between BS and PharmD pharmacists. The levels of satisfaction for the BS pharmacists ranged from 4.06 for the polypharmacy and compliance construct to 3.57 for the self-monitor technique construct. For the PharmD pharmacists, the level of satisfaction ranged from 4.17 for the dosage and polypharmacy and compliance constructs to 3.20 for the self-monitor construct. The construct of dosage was significantly different between the two groups at an alpha level of 0.05 (Figure 7).

DISCUSSION AND CONCLUSIONS
In general, recent graduates are satisfied that their pharmacy education prepared them to meet OBRA-90 counseling and drug use review requirements. An examination of the results of the study suggests that there are areas where pharmacy schools should review their curriculum for further improvement. Self-monitoring techniques and OTC were the lowest scoring areas. Pharmacy schools might consider upgrading the self-monitoring techniques and OTC areas since our health care system is moving into more outpatient care and self-treatment for health conditions. However, constructs’ scores such as drug interactions, special use instructions, polypharmacy and compliance, side effects and dosages, suggest that pharmacy schools are preparing their students well with respect to these areas.

The sample was stratified between pharmacist graduates from the University of Georgia and those from other
satisfactory. It is possible that the OBRA-90 program's emphasis on patient counseling and education may have contributed to the pharmacists' satisfaction with their education. However, the level of satisfaction varied among the different pharmacy schools. The University of Georgia pharmacists were more satisfied with their education compared to other schools.

**APPENDIX. QUESTIONNAIRE**

**Pharmacy School Curriculum Research Survey**

Please indicate (circle appropriate response) your level of satisfaction with the education you received while in Pharmacy School with respect to preparing you to confidently perform the following activity/

- **VS** = Very Satisfied
- **S** = Satisfied
- **N** = Neutral
- **D** = Dissatisfied
- **VD** = Very Dissatisfied

1. Identify potential series contraindications between existing medical conditions and prescription medications.
   - VS S N D VD

2. Detect possible drug interactions.
   - a. Between over-the-counter (OTC) and legend (Rx) drugs. VS S N D VD
   - b. Among Rx drugs. VS S N D VD

3. Know appropriate use of OTC drugs for specific groups.
   - a. Infants VS S N D VD
   - b. Elderly patients VS S N D VD
   - c. Renal impaired patients VS S N D VD
   - d. Hypertensive patients VS S N D VD
   - e. Children VS S N D VD
   - f. Pregnant/Lactating women VS S N D VD

4. Recommend an OTC drug that corresponds to specific patient symptomatology.
   - a. "Cold" symptoms VS S N D VD
   - b. Allergies VS S N D VD
   - c. Headaches VS S N D VD
   - d. Dermatological problems VS S N D VD
   - e. Arthritis VS S N D VD
   - f. Muscle aches VS S N D VD
   - g. Stomach "problems" VS S N D VD

5. Instruct patients on the correct response to a forgotten dose of their medication. VS S N D VD

6. Identify and counsel patients who are taking more than one medication with the same therapeutic effect. VS S N D VD

7. Evaluate an adverse drug reaction (ADR) and take appropriate action on behalf of the patient. VS S N D VD

8. Instruct the patient on the correct procedure for over-dose or ingestion of toxic substances. VS S N D VD
   a. Diabetic products  
   b. Home pregnancy test  
   c. Blood pressure  
10. Explain common side effects of prescribed medications.  
11. Advise patients on the proper storage/stability of their prescribed medication.  
12. Direct patients on the proper usage of unique products.
   a. Inhalers  
   b. Ophthalmic preparations  
   c. Vaginal products  
   d. Rectal products  
   e. Nebulizers  
13. Judge whether the dosage for a patient is appropriate as written by the physician.  
14. Communicate to physicians the need for a change in dose, frequency or medication when the prescription written by the physician is not within the standard of practice.  
15. Warn patients of the potential hazards of simultaneous use of particular medications and routine activities in life.  
16. Observe refill trends in patients, in order to appraise compliance levels.  
17. Advising patients of special instructions for taking their prescriptions.
   a. Take with food or milk  
   b. When is appropriate to crush a medication  
   c. When is appropriate to split a tablet  
18. In general, I was satisfied dissatisfied  
   a. with my externship experience.  
   b. with my internship experience.  
19. I wish my formal pharmacy education had better prepared me for ________________________________.

Demographic Questions

Please indicate your response by circling the appropriate answer or filling in the blank.

1. What is your current site of practice?
   a. Less than 5 Drug Stores Chain
   b. More than 5 Drug Store Chain
   c. Independent Drug Store
   d. Government
   e. Hospital
   f. Nursing Homes
   g. Other ____________

2. Degree awarded in pharmacy school.
   a. B.S. Pharmacy  
   b. Doctor of Pharmacy (Pharm.D.)  
   c. Other _______

3. What year did you graduate? ________

4. How would you classify yourself in academic ranking for your graduating college of pharmacy class?

5. What year were you born? ________

6. Gender  
   a. Male  
   b. Female  

7. Ethnic origin
   a. White  
   b. Black  
   c. Hispanic  
   d. Asian  
   e. American Indian  
   f. Other  

8. How much time would you estimate you spend counseling an average patient?
   a. < 30 seconds  
   b. 31 to 60 seconds  
   c. Between 1 to 2 minutes  
   d. Between 2 to 3 minutes  
   e. Between 3 to 5 minutes  
   f. Over 5 minutes  

9. Excluding internship hours, how many hours per week did you spend working in a pharmacy while in school?
   a. None  
   b. < 5 hours  
   c. Between 5 and 10 hours  
   d. 10 to 20 hours  
   e. Between 20 to 30 hours  
   f. 30 to 40 hours  

Note: Would you like to receive a summary of our results?
   Yes _____  No _____

If yes, please write your address clearly here, since this will be your mailing label: