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Attitudes of Doctor of Pharmacy Students Toward the Application of Social and Administrative Pharmacy in Clinical Practice

C. Anderson Johnson  
Claremont Graduate University

J. Lyle Bootman  
University of Arizona

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Attitudes of Doctor of Pharmacy Students Toward the Application of Social and Administrative Pharmacy in Clinical Practice1

To the Editor:

Over the past decade, dramatic changes have occurred in the education of pharmacists. A significant factor in this change has been the introduction of clinical pharmacy. The emerging role of the clinical pharmacist has forced educators to take a second look at the relevance of the pharmacy curriculum. In fact, many of the pharmacy disciplines have re-oriented their specific knowledge objectives to meet the needs of today’s clinical practitioners.

A growing number of pharmacy administration2 faculty are committed to incorporating the social and behavioral sciences into the training of the pharmacist. This concept has been strongly supported by the Study Commission on Pharmacy. Their report stresses that the knowledge of the pharmacist must include not only the physical and biological sciences but the behavioral and social sciences as well(1):

"...the skills required of the future pharmacist must be those of dealing with a drug as a biologically active chemical and those of dealing with the complexities of a living and behaving human individual. These are skills of observation and communication, of data gathering, recording and interpretation; these are skills of synthesis and judgement; these are skills of interpersonal relations, of management and of collaboration and cooperation."

At the University of Minnesota, members of the Department of Social and Administrative Pharmacy are currently developing and implementing a person-oriented, problem-solving interdisciplinary curriculum for training pharmacists. They are attempting to integrate such courses as the social and behavioral aspects of health care and interpersonal communications into the pharmacy program(2).

Recently a report of the American Association of Colleges of Pharmacy on the guidelines for PharmD programs suggested that such programs should include training in the following areas: research methods and statistical analysis; structure and function of the nation’s health-care system; public health and epidemiology; medical sociology; health-care management; communication and problem-solving skills; and psychosocial factors affecting drug prescribing and usage(3,4). Departments of pharmacy administration should make every effort to educate clinical pharmacists with respect to all of those content areas. Evanson et al. stress that pharmacy administration graduate students should be prepared to integrate management and social sciences into the training of clinical pharmacy(5). Similarly, Knapp points out that:

"... during the period of clinical instruction, the student is placed in many situations calling for interactions with physicians and patients. This is the place for the theoretical information transmitted in the pharmacy administration courses to be transmitted into practice."

In essence, they are suggesting that the content material related to pharmacy administration should be taught not only in the didactic phase but must be reinforced during the clinical instruction period. If pharmacy administration is to contribute to the training of patient-oriented practitioners, then this suggestion must be integrated into pharmacy curriculums.

PURPOSE

It is proposed that, if stronger emphasis is given to applying the social and behavioral sciences (and other related pharmacy administration content) to the clinical setting, student resistance will be lowered. This study tests the hypothesis that clinical pharmacy students undergo a change in attitude with respect to the applicability of pharmacy administration content areas to clinical practice. This attitude change occurs, to a large extent, during the period of increased exposure to the clinical setting.

METHODOLOGY

A survey questionnaire was developed to assess the attitudes and opinions of students and clinical faculty in a PharmD program. Questionnaire items were designed to assess attitudes and opinions about the applicability of pharmacy administration to clinical practice. Items 1-8 in Table I were selected as representative of the social and administrative pharmacy subject area. The wording of questions 1-8 taps the perceived need for clinical pharmacists to acquire pharmacy administrative skills. A second set of questions, items 9-13, assess the degree to which clinical pharmacy students and faculty feel a need for support and consultation from persons with skills commonly found among pharmacy administration personnel. Questionnaires were sent in December 1975 to all members of the University of Minnesota College of Pharmacy’s Doctor of Pharmacy classes of 1976 and 1977. Questionnaires were sent a second time in December 1976 to the class of 1977 and to the class of 1978.

The PharmD program at the University of Minnesota is a two-year postbaccalaureate program. The first year consists primarily of courses centering around the pathophysiology and therapeutics of disease. The second year consists of clerkship rotations through a variety of clinical settings, where the PharmD students spend full time interacting with clinical pharmacy physicians, patients and other health-care professionals.

This study was designed to compare student attitudes about pharmacy administration subject matter in the preclinical and clinical

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1 Presented at the APhA annual meeting, New York NY, May 1977.
2 The term "pharmacy administration" is used to encompass both social and administrative aspects of that discipline.
years. The survey technique permitted both cross-sectional and longitudinal comparisons. The primary comparison of interest was longitudinal— that between the class of 1977 during its preclinical year and during its clinical year. A secondary cross-sectional comparison was made between the preclinical class of 1977 and the clinical class of 1976. Finally, all classes were compared to the faculty in clinical pharmacy. Likert-type scales were used to measure the attitudes of the participants. The instrument asked the participants to indicate their degree of agreement or disagreement with the various statements in Table 1. The following values were assigned to the responses for the purpose of analysis: strongly agree = 1, agree = 2, neutral = 3, disagree = 4 and strongly disagree = 5. The lower the attitudinal score the more the respondent was in agreement with the statements. Nonparametric tests, including the Kruskal-Wallis one-way analysis of variance, Wilcoxon's matched-pairs signed-ranks test, and the Kolmogorov-Smirnov two-sample test, were used to analyze the data(10). Preclinical-clinical comparisons for the class of 1977 were made using the Wilcoxon test. All other values reported for two-way comparisons were for Kolmogorov-Smirnov tests.

RESULTS

Response Rates. Fourteen of 15 and 15 of 15 members of the class of 1977 submitted usable responses to the preclinical and clinical questionnaires, respectively. Eleven of 15 members of the class of 1976, 17 of 17 members of the class of 1978, and 14 of 14 faculty members presented usable responses.

Comparison of Preclinical and Postclinical Years for the Class of 1977. Items 1-8 in Table 1 related to general pharmacy administration skills which might be viewed as important to the practice of clinical pharmacy and in which clinical pharmacists might want to develop proficiency. Responses to items 1-8 were averaged to create an index of pharmacy administration skills desirable for clinical practice. Table 1 reveals that the class of 1977 was neutral during the preclinical year on the question of the need for pharmacy administration skills (mean

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<tr>
<td>1. Tools to aid in management planning and evaluation are of significant value to the clinical pharmacy practitioner</td>
<td>2.71 ± 0.91</td>
<td>2.20 ± 0.86^a</td>
<td>1.94 ± 0.66^d</td>
<td>2.82 ± 0.87^cd</td>
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<td>2. The use of such management tools should be taught as part of the PharmD program</td>
<td>3.07 ± 0.92^a</td>
<td>2.40 ± 0.98^ae</td>
<td>2.05 ± 0.83^e</td>
<td>3.09 ± 0.94</td>
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<td>3. A thorough knowledge of the healthcare system is necessary to effectively practice clinical pharmacy</td>
<td>2.57 ± 1.09^a</td>
<td>1.87 ± 0.74^a</td>
<td>2.06 ± 1.03</td>
<td>2.18 ± 0.60</td>
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<tr>
<td>4. The understanding of health and illness behavior should be of important concern to practice clinical pharmacy effectively</td>
<td>2.50 ± 0.86</td>
<td>1.93 ± 1.03</td>
<td>1.82 ± 0.53</td>
<td>1.73 ± 0.47</td>
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<td>5. Because of the overwhelmingly inappropriate use of drugs by the physician, there is a need to investigate the role of social and behavioral attitudes as related to the prescribing habits of the physician.</td>
<td>2.50 ± 0.94</td>
<td>2.47 ± 1.13</td>
<td>2.77 ± 1.15</td>
<td>2.82 ± 1.08</td>
</tr>
<tr>
<td>6. It is necessary that my clinical pharmacy training provide me with necessary skills and knowledge to communicate effectively</td>
<td>2.14 ± 1.03</td>
<td>1.73 ± 1.03</td>
<td>2.29 ± 0.69</td>
<td>1.82 ± 0.41</td>
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<tr>
<td>7. In order to optimally practice clinical pharmacy in terms of quality, the pharmacist must have a sincere concern and understanding of the social, cultural and behavioral attitudes of the patient</td>
<td>2.57 ± 1.09^a</td>
<td>1.87 ± 1.13</td>
<td>1.47 ± 0.51^b</td>
<td>2.27 ± 0.79</td>
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<td>8. A basic knowledge of the application of data processing and management information systems (e.g., computer technology) is necessary to function effectively in the institutional setting as a clinical practitioner</td>
<td>3.50 ± 0.76</td>
<td>3.00 ± 1.25</td>
<td>2.94 ± 0.90</td>
<td>3.09 ± 0.94</td>
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Pharmacy administration skills (average of 1 through 8) | 2.69 ± 0.58^a,b      | 2.18 ± 0.75^b                 | 2.17 ± 0.47^b                  | 2.48 ± 0.46          | 2.15 ± 0.47          |

^a Significant comparison (P<0.05): Pretest:1977 vs. Posttest:1977
^b Significant comparison (P<0.05): Pretest:1977 vs. Pretest:1978
^c Significant comparison (P<0.05): Pretest:1976 vs. Posttest:1977
^d Significant comparison (P<0.05): Pretest:1978 vs. Posttest:1976
^e Significant comparison (P<0.05): Pretest:1978 vs. Posttest:1977
^f Significant comparison (P<0.05): Classes vs. Instructors
score = 2.69), but that they became significantly more positive in their evaluations by the time of the posttest in their clinical year (mean score = 2.18, P < 0.05).

Each of the items was analyzed separately to determine what areas of pharmacy administration contributed to this change. Significant changes (P < 0.05) occurred for statements 2 and 3. These dealt with the usefulness of management skills and the necessity for being well informed about the health-care system.

Student attitudes concerning the understanding of health and illness behavior and the social and behavioral aspects of patient care (statements 1, 4 and 7) changed in the positive direction but only approached statistical significance (P < 0.10). All other pharmacy administration skill items showed positive but statistically unreliable changes. Clinical pharmacy students responded least positively to the need for knowledge of data processing and information-processing skills (item 8; the mean was 3.50 for the pretest and 3.00 for the posttest, indicating a generally neutral response on the five-point scale). Students responded most positively to the need for effective communication skills (item 6; means of 2.14 and 1.73 in the pre- and posttests, respectively).

Responses to items 9-13 were averaged to create an index of pharmacy administration consultation services potentially useful to clinical pharmacists. Clinical pharmacy students were significantly more receptive to pharmacy administration consultation services in the clinical year than during the preclinical year (means of 1.85 and 2.81, respectively, P < 0.005). The greatest change occurred for the general question, "Persons trained in pharmacy administration can make substantial contributions to your practice in clinical pharmacy" (item 9; mean scores of 3.35 and 2.13 during pre- and postclinical years, respectively, P < 0.01). Significant positive changes occurred for responses to all other pharmacy administration services as well. Responses to research methodology, data processing, evaluation research methodology, data processing, evaluation research and statistical method skills were in the beginning quite neutral, shifting to clearly positive responses during the clinical year (items 10-13).

Comparison of the Preclinical Year for the Class of 1978 and the Clinical Year for the Class of 1976. Measurements taken during the clinical year for the class of 1976 and the preclinical year for the class of 1978 permitted comparisons which might replicate the test of the hypothesis that clinical experience predisposes pharmacists to pharmacy administration skills. Table I reveals comparison for the index of pharmacy administration skills desirable for clinical practice. No reliable difference was observed. If anything, the class of 1976 was less favorably predisposed to pharmacy administration than the class of 1978. A reliable difference was obtained for only item 1 where the preclinical class of 1978 agreed more than the clinical class of 1976 in the value of tools to aid in management planning and evaluation (P < 0.05).

The index of usefulness of pharmacy administration consultation services did not reveal a reliable difference between the two classes, although the small difference was in the predicted direction.

In summary, comparisons of the clinical class of 1976 with the preclinical class of 1978 did not replicate the preclinical-clinical difference observed in the class of 1977.

Comparisons Between Student and Faculty Responses. Responses of students were compared with those of faculty. One might predict that faculty, because of their clinical experience, would recognize a greater need than students for pharmacy administration skills. This prediction received only weak support. Faculty were more positively predisposed toward student acquisition of pharmacy administration skills than were members of the class of 1977 during their preclinical year (see Index in Table I; means of 2.15 and 2.69, respectively). Faculty perceived pharmacy administration consultation as more important than the preclinical class of 1977 (means of 1.94 and 2.81, respectively, P < 0.005). No other comparisons proved significant.

**DISCUSSION**

Comparisons for the class of 1977 supported the hypothesis that clinical pharmacy students become more receptive to pharmacy administration skills and services as they gain clinical experience. This seemed to be especially true for pharmacy administration consultation services. Comparisons of the class of 1976 during its clinical phase with the class of 1978 during its preclinical phase failed, however, to support the hypothesis. Failure to find the predicted difference may be due in part to a tendency for each succeeding class to be more favorably predisposed to pharmacy administration than those preceding it. Table II reveals that the class of 1978 was more receptive to pharmacy administration services than was the class of 1977 during the preclinical phase (means of 2.14 and 2.81, P < 0.05). That difference also held for the general questions about the usefulness of pharmacy administration's contributions to clinical pharmacists (item 10, means of 1.88 and 3.35, P < 0.01). Although the difference was not reliable, the trend was for the class of 1978 to be more favorably predisposed to acquiring pharmacy administration skills than the class of 1977 during the preclinical phase (Index in Table I). Item comparisons while significant in only one case (#2) were consistent with the hypothesis in 6 out of 8 comparisons.

Comparing the classes of 1976 and 1977 during their clinical phase lends further, although weak, support for the hypothesis that each succeeding class is more favorably predisposed to pharmacy administration. The Index in Table II reveals a nonsignificant trend for the class of 1977 to be more positive than the class of 1976 about pharmacy administration consultation services. The same nonsignificant trend was observed on three items with no apparent differences occurring on two items in Table II. Table I reveals a similar trend regarding

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**Table II. Value ratings (mean ± SD) for pharmacy administration consultation skills**

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<tr>
<td>9. Persons trained in pharmacy administration can make substantial contributions to your practice in clinical pharmacy</td>
<td>3.35 ± 0.65abc</td>
<td>2.13 ± 0.99a</td>
<td>1.88 ± 0.78a</td>
<td>2.09 ± 0.94b</td>
</tr>
<tr>
<td>10. Research methodology</td>
<td>2.64 ± 0.84ab</td>
<td>1.73 ± 0.46a</td>
<td>2.29 ± 0.69</td>
<td>1.73 ± 0.65b</td>
</tr>
<tr>
<td>11. Data processing</td>
<td>2.57 ± 0.85a</td>
<td>1.60 ± 0.51a</td>
<td>2.18 ± 0.64</td>
<td>2.00 ± 0.45</td>
</tr>
<tr>
<td>12. Evaluative research</td>
<td>2.93 ± 0.83ab</td>
<td>2.00 ± 0.65a</td>
<td>2.53 ± 0.94</td>
<td>2.00 ± 0.45b</td>
</tr>
<tr>
<td>13. Statistical methods</td>
<td>2.57 ± 0.76</td>
<td>1.80 ± 0.41a</td>
<td>2.94 ± 0.85</td>
<td>1.91 ± 0.54</td>
</tr>
<tr>
<td>Pharmacy administration consultation services (average of 9 through 13)</td>
<td>2.81 ± 0.61abcd</td>
<td>1.85 ± 0.44a</td>
<td>2.14 ± 0.67a</td>
<td>1.95 ± 0.49b</td>
</tr>
</tbody>
</table>

a Significant comparison (P < 0.05): Pretest: 1977 vs. Posttest: 1977
b Significant comparison (P < 0.05): Pretest: 1977 vs. Posttest: 1976

c Significant comparison (P < 0.05): Pretest: 1977 vs. Posttest: 1978

d Significant comparison (P < 0.05): Classes vs. Instructors
the usefulness of acquired pharmacy administration skills. The difference
was reliable for item 1 and was in the predicted direction for 7
out of 8 items plus the Index.

It appears that there may have been a trend over the three years
observed for each class to become more favorably disposed to phar-
macy administration and its relevance to clinical pharmacy. Whether
this trend was due to something that the pharmacy administration
program at the University of Minnesota or pharmacy administration
programs, in general, were doing, or to current educational move-
ments in pharmacy as expressed by the Millis Commission Report, or
to differences in the personal attributes of the classes of 1976, 1977
and 1978 one cannot say.

There was an uncontrolled factor which might have accounted
for the more favorable light in which the class of 1977 regarded pharmacy
administration during their clinical year. More than half of the class
had by that time been exposed to a one-quarter course on social and
administrative aspects of clinical pharmacy. However, internal
analyses reveal that those having taken the course showed no greater
attitude shifts than those not taking the course. Furthermore, the only
difference between the two groups occurred during the preclinical
year when those who would subsequently take the course valued
acquiring pharmacy administration skills more highly than those who
would not take the course (means of 2.33 and 2.97, respectively; t =
2.94, P = 0.02). That difference disappeared by the clinical year
(means of 2.27 and 2.09, respectively). Hence this alternative explana-
tion from the findings appears not to be valid.

J. Lyle Bootman and C. Anderson Johnson

Graduate Program in Social and Administrative Pharmacy, University of Minnesota, Minneapolis MN 55455

An Academic Administrative Internship

To the Editor:

The failure of many graduate programs to prepare their students ade-
quately to perform as teachers seems to have been reasonably well
documented. Less well identified among the duties of the college
teacher, particularly the department chairperson, are the administra-
tive duties. Unless a graduate student has had a course in educational
administration and sometimes even if he has), he is likely to be
ill-prepared for some of the administrative aspects of his first
academic position.

Many professions utilize internships to impart practical, real-world
knowledge to the trainee. Internships have been used to create labor-
atories for the training of physicians, hospital administrators, and
pharmacists. It is surprising that graduate students, the future teachers
of these health professionals, are not normally provided with this
exposure to their future working environment, i.e., academia.

Graduate students often have a somewhat naive understanding of
the ins and outs of academia. When the new PhD takes his first
Teaching post, he may experience a cultural shock, akin to the cultural
shock faced by a newly graduated pharmacist who has no practical
experience. Internships are a well-known method of bridging such
gaps between the book and the practice of a career.

In 1976 the Department of Health Care Administration at the Uni-
versity of Mississippi initiated a three-hour course designed to provide
students with just such a field experience in one of a variety of
health-care institutions and agencies. At the time the course was pro-
posed, it was pointed out by one of the authors (PAM) that such an

CONCLUSION

Pending further corroborative or disconfirming data, one can conclude
tentatively that exposure to clinical settings may have the effect of
making salient to clinical pharmacy students the usefulness if not the
necessity of skills and services embodied collectively under the rubric
of pharmacy administration. The investigators will continue to collect
data relative to this hypothesis.

Am J Pharm Educ., 42, 37-40 (1978); received 6/29/77; accepted 11/22/77

References

1. Pharmacist for the Future, Report of the Study Commission on Phar-
macy, Health Administration Press, Ann Arbor MI (1975).
The

2. Stergachis, A.S., Person Orientation in Pharmacy: Definitions, Con-
cepts and Goals for Curricula, The Social Curriculum Project, Uni-
versity of Minnesota, Minneapolis MN (1976).

Programs, October 26-28, 1975, Kansas City MO, American Associ-
ation of Colleges of Pharmacy, Bethesda MD (1976).


10. Siegel, S., Non-Parametric Statistics for the Behavioral Sciences,