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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 and others have discussed ways in which the application of the discipline, social and administrative pharmacy, can enhance clinical education(6,7).

Unfortunately, pharmacy administration educators are faced with some very real problems in developing programs pertinent to the training of clinical pharmacists. Some educators question the application of pharmacy administration skills to the clinical setting(5,6). Also, as suggested by Wertheimer, there is a lack of competent pharmacy administration instructors(8). Of more concern is that students oftentimes do not see the relevance of the social and behavioral sciences when taught in the didactic setting(9).

In finding a solution to the latter problem in particular, Blaug(7) points out that the relevance and success of the social and behavioral sciences in the education of pharmacists depend upon many factors including:

"... the multidisciplinary context in which they are presented, the involvement of the social and behavioral sciences as basic to all areas of pharmacy, their teaching

and reinforcement throughout the entire pharmacy curriculum, the extent to which humanization occurs in learning experiences of the pharmacy student, and the extent to which the teaching and learning of the social and behavioral sciences results in improved patient care."

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

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 I. 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 I 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 I reveals that the class of 1977 was neutral during the preclinical year on the question of the need for pharmacy administration skills (mean

Table I. Value ratings (mean ± SD) for pharmacy administration skills

Items	Class:1977 (N = 14)		Class:1978 (N = 17), pretest	Class:1976 (N = 11), posttest	Instructors (N = 14)
	Pretest	Posttest			
1. Tools to aid in management planning and evaluation are of significant value to the clinical pharmacy practitioner	2.71 ± 0.91	2.20 ± 0.86 ^c	1.94 ± 0.66 ^d	2.82 ± 0.87 ^{c,d}	2.07 ± 0.62
2. The use of such management tools should be taught as part of the PharmD program	3.07 ± 0.92 ^a	2.40 ± 0.98 ^{a,e}	2.05 ± 0.83 ^e	3.09 ± 0.94	2.50 ± 0.86
3. A thorough knowledge of the health-care system is necessary to effectively practice clinical pharmacy	2.57 ± 1.09 ^a	1.87 ± 0.74 ^a	2.06 ± 1.03	2.18 ± 0.60	1.93 ± 0.62
4. The understanding of health and illness behavior should be of important concern to practice clinical pharmacy effectively	2.50 ± 0.86	1.93 ± 1.03	1.82 ± 0.53	1.73 ± 0.47	1.93 ± 0.48
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.	2.50 ± 0.94	2.47 ± 1.13	2.77 ± 1.15	2.82 ± 1.08	2.54 ± 0.97
6. It is necessary that my clinical pharmacy training provide me with necessary skills and knowledge to communicate effectively	2.14 ± 1.03	1.73 ± 1.03	2.29 ± 0.69	1.82 ± 0.41	1.83 ± 0.58
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	2.57 ± 1.09 ^b	1.87 ± 1.13	1.47 ± 0.51 ^b	2.27 ± 0.79	1.86 ± 0.66
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	3.50 ± 0.76	3.00 ± 1.25	2.94 ± 0.90	3.09 ± 0.94	3.00 ± 0.96
Pharmacy administration skills (average of 1 through 8)	2.69 ± 0.58 ^{a,b,f}	2.18 ± 0.75 ^a	2.17 ± 0.47 ^b	2.48 ± 0.46	2.15 ± 0.41 ^f

^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 ($P < 0.05$): Posttest: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 ($P < 0.05$).

Table II. Value ratings (mean \pm SD) for pharmacy administration consultation skills

Items	Class:1977 (N = 14)		Class:1978 (N = 17),	Class:1976 (N = 11),	Instructors (N = 14)
	Pretest	Posttest	pretest	posttest	
9. Persons trained in pharmacy administration can make substantial contributions to your practice in clinical pharmacy	3.35 \pm 0.65 ^{a,b,c}	2.13 \pm 0.99 ^a	1.88 \pm 0.78 ^c	2.09 \pm 0.94 ^b	2.14 \pm 0.95
In my future clinical practice, I expect to utilize personnel with the knowledge or skills in:					
10. Research methodology	2.64 \pm 0.84 ^{a,b}	1.73 \pm 0.46 ^a	2.29 \pm 0.69	1.73 \pm 0.65 ^b	1.92 \pm 0.76
11. Data processing	2.57 \pm 0.85 ^a	1.60 \pm 0.51 ^a	2.18 \pm 0.64	2.00 \pm 0.45	2.15 \pm 0.69
12. Evaluative research	2.93 \pm 0.83 ^{a,b}	2.00 \pm 0.65 ^a	2.53 \pm 0.94	2.00 \pm 0.45 ^b	2.08 \pm 0.76
13. Statistical methods	2.57 \pm 0.76	1.80 \pm 0.41 ^a	2.94 \pm 0.85	1.91 \pm 0.54	2.00 \pm 0.82
Pharmacy administration consultation services (average of 9 through 13)	2.81 \pm 0.61 ^{a,b,c,d}	1.85 \pm 0.44 ^a	2.14 \pm 0.67 ^c	1.95 \pm 0.49 ^b	1.94 \pm 0.77 ^d

^a Significant comparison ($P < 0.05$): Pretest:1977 vs. Posttest:1977

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

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

^c Significant comparison ($P < 0.05$): Pretest:1977 vs. Pretest: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 pharmacy 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 movements 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 explanation from the findings appears not to be valid.

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An Academic Administrative Internship

To the Editor:

The failure of many graduate programs to prepare their students adequately 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 administrative 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 laboratories 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 books and the practice of a career.

In 1976 the Department of Health Care Administration at the University 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 proposed, 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.

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internship for future pharmacy professors might be worthwhile. In this paper, the authors report on the experience gained in three semesters with three students.

ORGANIZATION

The internships were rather loosely structured and were adapted to the needs and schedules of each student as well as to the varying schedule of the instructor-preceptor. There were several common characteristics, however.

Students spent the equivalent of about one work day a week on the course. Each completed, as part of the internship, two or more special projects which were actually incorporated into the administration of the department. Each participated in (i) opening and discussing the disposition of mail received in the department office, (ii) meetings of the department faculty and (iii) numerous philosophical discussions about general and specific aspects of departmental administration. Regular weekly meetings were scheduled and supplemented by meetings arranged on a convenient (or sometimes crisis) basis.

Students maintained running lists of questions and suggestions, most of which were handled routinely at weekly meetings. Opportunities were provided for the student to tell how he would handle a situation, answer a letter, or change a policy. In many cases student suggestions were incorporated into the workings of the department.

Some, but not all, students attended meetings of department chairmen and the curriculum committee as well as meetings with the associate dean.