# A PILOT STUDY OF AN INTERACTIVE APPROACH TO CONTINUING PROFESSIONAL EDUCATION AND PHARMACY ADMINISTRATION

by

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# Chapter 1

## INTRODUCTION

> In today's rapidly evolving world, adequate professional services cannot be provided by any person who has failed to keep abreast of the new knowledge and skills that are constantly replacing outmoded ideas and practices.
>
> Cyril O. Houle

Pharmacy, like many professions, is rapidly changing with the discoveries of new technology and advances in research. Computerization, new drug formulations, changes in drug status and competitive services are but a few of these changes. The individual pharmacist must attempt to adapt to these changes to maintain a competent knowledge base for appropriate activity in the profession.

A generally accepted method of acquiring new information and refreshing old information is continuing professional education. Programs like postgraduate extended courses and extended curricula are another avenue for pharmacists to acquire new knowledge.[1] These two approaches are important components of lifelong learning processes for professionals. In 1983, twenty-

eight (28) states require (or will soon require) that pharmacists pursue continuing professional education (CPE) credits (also referred to as Continuing Education Units: CEU's) as a prerequisite for relicensure.[2]

In seeking CEU's, pharmacists have a wide range of program subject areas to choose from. According to a 1980 national study which surveyed American Council on Pharmaceutical Education (ACPE) approved program providers, twenty (20) different areas of interest were categorized.[3] (Table 1) A variety of programs that have been developed in the past few years provide CPE in these areas.[4]

Table 1 indicates that pharmacists have two primary categories of program areas to pursue: clinical and managerial. Programs are offered through a variety of methods or presentation including: live lectures, written correspondence, tele-lectures, audio cassettes and video. Future programming will be open to more types of methods of presentation as telecommunication advances are made.

Interest in or pursuit of continuing professional education can be viewed as self-perceived (self-directed) as the individual evaluates and decides which area of interest and method of presentation are most important.

Individual program choice may be determined through a variety of motivational factors as outlined by Mergener in a survey of pharmacists' reasons for participation in CPE. (Table 2)

Table 1

A list of program topic areas offered by ACPE approved providers of continuing pharmacy education in 1980.[5]

| Areas of interest | Frequency |
|---|---|
| Management topics* | 111 |
| Antibiotics/anti-infectives | 55 |
| Geriatrics/aging | 53 |
| Topics for industry personnel | 47 |
| Nutrition/vitamins/TPN | 44 |
| Psychotherapeutics | 42 |
| Pulmonary/lungs/asthma | 37 |
| Cardiology/angina/B-blockers/CHF | 35 |
| Pharmacy law topics | 35 |
| Antihypertension | 34 |
| Cancer and therapy | 32 |
| Pain | 32 |
| Communication skills | 31 |
| Diabetes | 30 |
| Poisoning | 27 |
| New concepts in drug therapy/new drugs | 26 |
| Bioavailability/pharmacokinetics | 24 |
| Dermatologicals/acne | 23 |
| Ostomies/appliances/supports | 21 |
| EENT | 20 |

*(includes managing skills, financial, personnel, inventory, computers, merchandising, and communications)

Table 2

Reasons for participation in CPE programs[6]
(Motivational Factors)

| Factors | Rank |
|---|---|
| Competency-related curiosity | 1 |
| Compliance with external influence | 2 |
| Community Service | 3 |
| Professional advancement | 4 |
| Interpersonal relations | 5 |
| Escape from routine | 6 |

Mergener showed that competency-related curiosity was the highest ranked motivational factor for 264 pharmacists in his study. It is then possible to look at program choice as being related to an individual's educational need.*

Continuing Professional Education Program Emphasis

As stated earlier, at least two major categories exist in the area of CPE: clinical and managerial related programs. Most of the programs currently offered provide information about disease states or drug related areas.[8] Shannon's national survey on areas of interest reinforces this statement as only 10% of

*This educational need is the discrepancy between what individuals (or organizations or societies) want themselves to be and what they are, the distance between aspirations and reality.[7]

the 1980 programs listed in Table 1 are in pharmacy administration or pharmacy management. Is this small percentage of CPE management programs sufficient to handle the number of pharmacists interested in the area, or should more diverse programming be developed? It is this area of diverse programming in pharmacy administration/management and continuing professional education that this paper will address.

## Pharmacy Administration and Continuing Professional Education

One of the reasons for today's low percentage of pharmacy management CPE programs can be traced to past pharmacy licensure practices. An example was Ohio's initial 1972 requirement for relicensure. Only one-third (1/3) of the total continuing professional education credits required for relicensure could be received in the area of pharmacy administration.[9] This meant that pharmacists were required not only to pursue CPE credits, but two-thirds (2/3) of these credits had to be in clinical areas of interest. Presently Ohio's laws have changed to full credit given for any topic area if the programs are approved by the American Council on Pharmaceutical Education

(ACPE).[10] Although this is but one example, the change in licensure in Ohio reflects the general concerns expressed by professional organizations and educators that pharmacy management is a viable area for CPE to pursue.

The development of more diverse CPE management programs is encouraged by professional organizations' statements and financial reports indicating an educational deficiency in the area. The "National Association of Retail Druggists (NARD) has repeatedly tried to get colleges and their deans to understand that students need more (pharmacy) management training, retailing knowhow, financial knowledge, and human relations skills-more, in fact, of everything that is not being taught enough or taught poorly."[11] The conclusion drawn by NARD is that a deficiency is seen in the schools themselves,the preparatory level for the profession. Taken one step further, this argument indicates that recent graduates and some older pharmacists will find themselves without certain skills and knowledge in pharmacy administration.

Financial reports confirm that this deficiency does exist in the profession. According to the 1982 Lilly Digest, "15 percent of the participating pharmacies

(those in the Lilly survey) lost money during the year and 22 percent produced no more than a 2 percent net income."[12] It is a relatively common complaint that the low net income and business failures of independent community pharmacies can be traced to poor management practices.[13] These observations indicate that the schools are teaching little or no management courses and therein lies the reason for the shortcoming of some pharmacists. Another possibility is that some pharmacists are poor managers even though they have received some managerial training.

The schools of pharmacy, as a whole, cannot take sole responsibility for pharmacy business failures. "However, pharmacy educators must admit that there is a wide difference among the schools in the emphasis and scope of pharmacy management programs."[15]

With this wide variety of education in the pharmacy administration and pharmacy management area and the low financial returns noted, recent graduates from some of the pharmacy schools will require or seek help from CPE. The students' school of pharmacy helps contribute to the extent that the graduates will pursue CPE.[16] It is unfortunate that the schools of pharmacy have not promoted this participation. It is then the

responsibility of CPE to educate the pharmacist on the types of programs available for those pharmacists who received no information or inadequate information in the area of pharmacy administration and pharmacy management.

Professional Organization's Views

NARD's position regarding the need for this continuing professional education in management was expressed by former president Neil Pruitt when he stated:

> "...there are a number of my colleagues around the country who could benefit from seminars - a form of continuing education, if you will - about sound business practices, from inventory control to estate planning... it is our (NARD's) hope that through attendance at these meetings (seminars), pharmacists will come away with a better understanding of the financial tools they can employ to run their business more successfully."[18]

Mr. Pruitt's remarks can be taken to heart as some of the pharmacists in practice today feel that it is the other person who has the economic and managerial problems. The underlying theme is the "quality pharmaceutical service can be maintained...only if adequate net income is produced from operations."[19] The attitude that "the economic side of the profession will take care of itself" must be stopped.[20]

This particular point of view is not only expressed by NARD, but has been reinforced by James Dolusio, former Chairman of the Board of the American Pharmaceutical Association in his 1982 address where he stated:

> "I believe that there is considerable practitioner frustration resulting from unsolved, economic problems. I know that practitioners have been hopeful that the profession's educational arm could be of aid in the economic area. Admittedly, our colleges have not made the contribution that they should... I am pleased to say that pharmacy education recognizes these views within the profession and is making a more significant commitment to areas such as pharmacy economics, management, and administration. Be that as it may I remain alarmed about the antagonism expressed by some."[21]

The pharmacy profession must not let a few people charge that there is an incompatibility with economics and professional practice. Smith and Chambers' contention is that "in the first place the economic and professional aspects are not incompatible, and secondly we hold that greater proficiency in the economic aspects of the profession will open the doors to greater opportunities for professional services."[22]

There must be an adequate economic level to work from if the profession is to expand to include

drug information, compliance checks, maintenance drug prescription writing, home consultation and other professional services. This economic level can only come from knowledge of how to improve administrative and managerial efficiency.

This combination of economics and professionalism is not limited to a specific practice setting. The American Society of Hospital Pharmacists (ASHP) newsletters have stressed the importance of CPE in all areas. Their national meetings contain programs geared toward a variety of management topics.[23]

Pharmacists' Beliefs on Pharmacy Administration

As is seen with all adult education endeavors, one must attempt to find out what the participants' beliefs are about the subject in question. The California Pharmacist recently published results on a survey of California pharmacists' attitudes and beliefs in the areas of pharmacy administration and management. "The pharmacists licensed to practice in California overwhelmingly endorsed the need for more business, management, amd administrative courses in the pharmacy school curricula."[24] The study indicates again that both community and hospital pharmacists

believe that these skills are important to one's professional activities.[25]

Endorsement by pharmacists for more courses in the schools' curricula is unfortunately being responded to rather slowly. Perhaps this is due to the schools' perceived lack of importance of the subject.[26] Since this process is going rather slowly in the schools, it is then the role of CPE to provide courses in the principles of pharmacy management and administration.[27]

## Analysis of the Problem

Although the results of the previously mentioned literature and organizational views are not correlated to the amount or type of CPE programs the pharmacists can attend, the arguments expressed may be interpreted in three ways. First, some pharmacists who would possibly benefit from attendance at these continuing professional education programs are not present. Second, the knowledge that is being transferred is not or cannot be applied by the individual pharmacists. And third, the topics being presented are not appropriate for the needs (deficiencies) of the individual pharmacist. Indications that there

is a need for additional knowledge and skill development in the administrative and managerial areas are prevalent in the profession. It is again unfortunate that even in today's journals like the California Pharmacist recommendations to take business school courses versus continuing professional education programs are still prevalent.[28]

Need for this Study

Schools of pharmacy likely will be attempting to increase their roles as educators in pharmacy administration and management following the recommendations of pharmacists and pharmacy organizations. Kirk's contention for schools is that a blending of theory with actual practice is a very important component of the effective teaching of pharmacy administration.[29] "The faculty in pharmacy administration areas have a responsibility to offer management courses and create in a significant number of students the desire to seek out management positions and take the responsibility to work out the manager role; to not just advise others."[30] Techniques of management can be taught in the classroom, but behaviors required to use those techniques successfully can be developed

only through actual practice.[31] Future pharmacy school graduates should be given a chance to use the administrative/management skills that are taught.

Along with the school's responsibility in an education role, there appears a need to develop and explore new CPE programming that would be knowledge oriented as well as promote the use of this knowledge through various skills associated with this area. "This type of continuous learning can occur only if we devise some method to allow practice experience to be used as acceptable educational experiences."[32]

This pilot study combines roles both of the school of pharmacy and continuing professional education with emphasis placed on the pharmacists' interests and views on the CPE component of this study. The requirements of an organized continuing education experience were reviewed; however, no actual attempt was made to determine the practicality of CEU's for this pilot study.[33]

## Objectives of this Pilot Study

The purpose of this study is to determine pharmacists' views and interests regarding a pharmacy administration course offered at the University of

Wisconsin, School of Pharmacy. This determination will be based on: the pharmacist's workplace (place of employment), the pharmacist's position (manager, assistant manager, fulltime staff pharmacist, part-time staff pharmacist), and the pharmacist's views on a new CPE program approach.

A secondary purpose of this pilot study is to determine the usefulness of pharmacy students as data collectors and analysts for managerial and administrative areas. Emphasis will be placed on pharmacists' views of the analysis and not on individual students'. The objectives of this study are as follows:

1. To determine if there is a relationship between experimental course participants (pharmacists) and non-participants (pharmacists) with regard to their interest in specific pharmacy administration and pharmacy management topics.
2. To determine if there is a relationship between experimental course participants (pharmacists) and non-participants (pharmacists) with regard to their interest in specific pharmacy administration and

pharmacy management topics and the pharmacists' workplace.

3. To determine if there is a relationship between experimental course participants (pharmacists) and non-participants (pharmacists) with regard to their interest in a new CPE approach to specific pharmacy administration and pharmacy management topics.

4. To determine if there is a relationship between experimental course participants (pharmacists) and non-participant (pharmacists) with regard to their future interests in this new approach to specific pharmacy administration and pharmacy management topics.

5. To determine if there is a relationship between experimental course participants (pharmacists) and non-participant (pharmacists) with regard to their interest in pharmacy students as resources in this new approach to pharmacy administration and pharmacy management topics.

6. To determine if there is a relationship between experimental course participants (pharmacists) and non-participants (pharmacists) with regard to their interest in pharmacy students collecting data and performing analysis on specific pharmacy administration and pharmacy management topics.
7. To determine if there is a relationship between computerized and non-computerized pharmacies with regard to analysis of specific pharmacy administration and pharmacy management topics.

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# Chapter 2

# METHODOLOGY

## A New Course Approach

The idea for this pilot study was derived from a course offered at the University of Wisconsin, School of Pharmacy in 1982. The course, entitled Pharmacy Administration 621 (Contemporary Community Pharmacy Practice) was an elective course for fifth year pharmacy students who had previously completed a pharmacy management course. This prerequisite course emphasized financial statement analysis, pricing policies, space management, return on investment and personnel management.[1]

The objective of Pharmacy Administration 621 was to apply this acquired knowledge of basic administrative tools/skills (from the prerequisite course) to actual pharmacy practice settings. To accomplish this, students were provided with a set of seven course approved projects related to pharmacy administration and pharmacy management. (Table 3) The limitation of seven topics was established in the course to help students focus on topic areas that were related to their previous and present course work.

Table 3

Projects available for data collection and analysis by students in elective course Pharmacy Administration 621

| Project title |
| --- |
| Financial Analysis |
| Over the Counter Pricing Analysis |
| Personnel Management |
| Prescription Inventory Efficiency |
| Prescription Pricing Analysis |
| Space Management |
| Traffic Flow Analysis |

Individual pharmacy students considered a pharmacy setting in which to apply these administrative skills. Working in pairs, they approached various pharmacists to determine which of the seven project topics would be of interest to the individual pharmacists. After this initial consultation, the students selected three of the seven projects to pursue considering the recommendations of the pharmacists. Once the decision was completed, students were advised to collect their data and conclude the analysis without infringing on the pharmacists' time by asking questions.

Alternatively, the instructor encouraged students to consult with him regarding questions on data collection and data analysis.

An example of data collection and analysis performed for one of the projects, Prescription Pricing Analysis, is reported below.

Students were to randomly select a sample of fifty recently filled, private pay prescriptions. In addition, two samples of twenty-five recently filled, third party pay prescriptions were also randomly selected. The selection process was emphasized during the initial class time to ensure proper selection using some random sampling tables. An optional approach of reviewing the first five or ten prescriptions of each day was presented.

The data collected from prescriptions included the date, drug, prescription number, quantity and price after discounts. Each prescription was then evaluated based on the source of supply, size of bottle purchased and quantity (but not cash) discounts. The gross profit for each sample was calculated and expressed in dollars and percents, arranged by different costs and gross profit percentages. These statistics would help to determine various trends in prescription pricing. If, for example, a cost range of thirty to forty dollars per prescription was found to return only a five percent profit margin, the students

would recommend a possible alternative pricing approach based on the individual pharmacy situation.

These recommendations would be presented in written reports to the pharmacists and instructor at the completion of a project. Students also presented their data and findings in seminar sections for other students' recommendations.

Confidentiality was emphasized regarding the data and results obtained. Students were not to include the name of the pharmacy in any of the reports. It is not the intent of this author to infringe on this confidentiality in any way. (Appendix A contains the project descriptions for all of the topics presented)

## Idea for a Pilot Study

As previously mentioned, the idea for this pilot study was generated from Pharmacy Administration 621 course content, individualized written reports and method of presentation for the students. This led to determining pharmacists' views on the seven topics discussed earlier in Table 1. Further exploration of their views on future CPE courses like Pharmacy Administration 621, was of interest.

## Construction of the Interview Questionnaire

Based on the objectives of the pilot study and the background course information, an interview questionnaire was developed (Appendix B). The questionnaire consists of general questions addressing the levels of interest of pharmacists in the seven topic areas. Questions pertaining to Pharmacy Administration 621 and the effect that a course like this has or could have on pharmacists were also developed.

In addition, information was asked on the use of computers in providing administrative and managerial analysis. It was of interest here to determine if computerized pharmacies evaluated information from their systems to help with managerial decisions.

## Style of the Questionnaire

The questionnaire combines dichotomous style questions with presupposition lead-in questions.[2] The latter are particularly useful in anticipation that the pharmacists' practice experience will contribute to the responses about the seven project topic areas discussed.

Emphasis was placed on the closed question

system, with a combination of quantitative and qualitative components.[3] The strength of this combination derives from the simplicity of data analysis with standardized answers.[4] An example of the quantitative analysis question is the use of the Likert scale (with one being low and five being a high response)which results in these standardized responses. The qualitative questions allow the interviewees to elaborate and explain their responses.

Interview Process

Since this questionnaire was designed to be administered as an interview, it was used as an interview guide approach design.[5] The interviewer was able to ask follow-up questions based on the pharmacist's responses. By using the interview process design, an attempt was made to individualize the interview as well as increase the comprehension of data collected.[6]

Interview length was kept to approximately twenty minutes to prevent interruption of the functioning of the pharmacy. Attempts were made to enhance the responses of the interviewees within this time limitation. To do this, an opening statement inviting comments on any questions given was made to allow

flexibility in responses. They were also encouraged to answer questions with the utmost frankness to lead to more concise responses. Special emphasis was placed on the opening statements with regards to their order and clarity bringing similarity to all interviews.

Sample of Pharmacists

A sample of pharmacists (N=20) was chosen by students in Pharmacy Administration 621. Selection consisted of any pharmacy that would be useful for the students' work as well as any pharmacist that was interested in these projects being performed. These pharmacists were classified into the experimental group for this pilot study.

A control sample of pharmacists (N=18) was selected for this pilot study after conclusion of the semester. This control sample was matched with the experimental group based on community size and pharmacist workplace (chain or independent pharmacy). Of primary importance was matching a given experimental rural pharmacy with a given population to that of a control rural pharmacy with a similar population.[7] Workplace was also matched to ensure selection of similar type pharmacies.

This matched group design is often referred to as a randomized block design.[8] However, it is better to refer to this study as being a modification of this design. The experimental group was not a randomized block design although all other procedures are similar to the block design.

A mixed model exists within this type of sampling selection in which some nuisance variables may be involved.[9] These variables may or may not have an effect on the pilot study including such variables as personal training or involvement in some types of CPE. It is not the intent of this author to separate out those pharmacists who have or have not participated in CPE in the past.

## Analysis of Data

The quantitative and qualitative data collected were hand coded after all of the interviews were completed. All quantitative data was entered into the VAX 780 computer system. Statjob and Minitab programs were used to tabulate and analyze the data. A series of Minitab programs were run including: two-tailed t tests and analysis of variance (ANOVA). Some of the data was cross tabulated using the Minitab process.

All statistical tests were performed at a 95 percent level of confidence with alpha equal to 0.05.[10] This indicates that if the hypothesis is accepted, the probability is 95 percent that the true mean is in the specific confidence interval. There is then a five percent chance of rejecting the hypothesis even though it is true.

Qualitative analysis was performed to reinforce data from the quantitative results. The reason for using this combination approach is to "permit seemingly isolated activities to fit together; it moves separate efforts toward a common integrated purpose."[11] As an example, if the quantitative results of a study indicate that pharmacists respond to question y with a mean of 4.0, the qualitative aspects help to determine why this was the answer. This non-numerical approach is an attempt to look at various responses by one individual and incorporate these responses with those of another. Explanations of the answers indicate that other variables not in the questionnaire can be accounted for. Qualitative analysis makes an attempt to join together these responses or explanations into a coherent definition or answer. "The strategy is to allow the important dimensions to emerge from the

analysis of the study. These dimensions (explanations) can make the difference beyond the point on a standardized scale."[12]

The qualitative results of a program or study are as important as the quantitative results. Pharmacy Continuing Educators must be able to bring a variety of different educational and experiential backgrounds together to help construct the future of the profession and the programming of Continuing Professional Education. Qualitative analysis as used in this pilot study can only help support the meaning of the quantitative results.

## Limitations of this Pilot Study

There are a number of limitations of this pilot study. The small sample size used may have an effect on the data as preselection of a non-randomized experimental group does exist.

Second, travel distance had an effect as the pharmacies were limited within sixty miles of the University of Wisconsin, School of Pharmacy, to help decrease the costs of this study. This radius may also indicate a preselection of pharmacies.

Third, the time of the interview (approximately

twenty minutes) may not have given the pharmacists the opportunity to explain certain responses. This may have occured even though the questionnaire was used as an interview guide.

Finally, errors in interpretation and coding of the pharmacists' responses may occur. To avoid this type of misinterpretation, a tape recorder was used during the interviews. This recording was authorized by the pharmacists and helped in verification of the data collected.

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10. Hays, p.375-378.

11. Patton, 1980, p.39.

12. Patton, 1980, p.74.

# Chapter 3

# FINDINGS

The purpose of this chapter is threefold. First, tabulation of demographic data will be outlined. This data will aid in determining the diversity of the matched population sample.

Second, analysis of the data collected on the pharmacy administration topics will be presented. This analysis will look at responses to questions about specific pharmacy administration topics. Results of the analysis will be provided and analyzed by the pharmacist's group, position, and workplace variables.

Finally, analysis of the program (Pharmacy Adminstration 621) will be presented using data from both control and experimental groups. This analysis will explore pharmacists' interests in this methodology of programming. Pharmacists who participated in this Pharmacy Administration 621 program are considered the experimental group for this pilot study.

Quantitative analysis of the following hypotheses will be performed with two-tailed t tests and analysis

of variance (ANOVA). Qualitative analysis, included with the above analysis, will use non-numerical data provided by the respondents (pharmacists).

Demographic Results

Results listed in Tables 4 - 9 are a tabulation of demographic information recorded at the end of the interview. Table 4 indicates that 29 (76%) of the pharmacists interviewed were pharmacy owners and/or pharmacy managers. This large percentage is a result of the students' selection of the experimental group. The reason for this selection was that students were to consult with the manager of the pharmacy first and then work with whomever was available. Twenty-six (68%) of the pharmacies involved in the study were independents while the other 12 (32%) were chain pharmacies (Table 5). Tables 4 and 5 also show the comparison of the matched control sample to the experimental sample. The two variables of position and workplace are matched accordingly to this design. Tables 6 - 10 also show how the samples are matched, indicating years of experience, square footage of the pharmacy, the prescription volume per day , the total sales volume per year and community size respectively. This data was

used to verify the matched sampling that was selected for this pilot study.[1]

Table 4

Work Position Held by Pharmacists Involved in Pilot Study

| Position | Percent Distribution Experimental Group N=20 | Control Group N=18 |
|---|---|---|
| Manager/Owner | 75.0 (15) | 77.7 (14) |
| Assistant Manager | 5.0 ( 1) | 11.1 ( 2) |
| Intern | 0.0 ( 0) | 0.0 ( 0) |
| Staff Fulltime | 15.0 ( 3) | 5.6 ( 1) |
| Staff Parttime | 5.0 ( 1) | 5.6 ( 1) |

Table 5

Place of Employment For Pharmacists Involved in Pilot Study

| Workplace | Percent Distribution Experimental Group N=20 | Control Group N=18 |
|---|---|---|
| Large Chain | 10.0 ( 2) | 11.1 ( 2) |
| Small Chain | 25.0 ( 5) | 16.7 ( 3) |
| Independent | 65.0 (13) | 72.2 (13) |

Table 6

Year of Original Licensure For Pharmacists Involved in Pilot Study

| Year | Percent Distribution Experimental Group N=20 | | Control Group N=18 | |
|---|---|---|---|---|
| 1980 - present | 0.0 | (0) | 0.0 | (0) |
| 1975 - 1979 | 35.0 | (7) | 27.8 | (5) |
| 1970 - 1974 | 15.0 | (3) | 11.1 | (2) |
| 1965 - 1969 | 15.0 | (3) | 11.1 | (2) |
| 1960 - 1964 | 10.0 | (2) | 11.1 | (2) |
| 1955 - 1959 | 5.0 | (1) | 11.1 | (2) |
| 1950 - 1954 | 15.0 | (3) | 11.1 | (2) |
| 1945 - 1949 | 0.0 | (0) | 11.1 | (2) |
| 1940 - 1944 | 5.0 | (1) | 5.6 | (1) |

Table 7

Square Footage of
Pharmacies Involved in Pilot Study

| Square Feet | Percent Distribution Experimental Group N=20 | | Control Group N=18 | |
|---|---|---|---|---|
| Less than 1000 | 0.0 | (0) | 5.6 | (1) |
| 1001 - 2000 | 35.0 | (7) | 44.4 | (8) |
| 2001 - 3000 | 25.0 | (5) | 16.6 | (3) |
| 3001 - 4000 | 10.0 | (2) | 11.1 | (2) |
| 4001 - 5000 | 5.0 | (1) | 5.6 | (1) |
| 5001 - 6000 | 20.0 | (4) | 5.6 | (1) |
| 6001 - 7000 | 0.0 | (0) | 11.1 | (2) |
| 7001 - 8000 | 0.0 | (0) | 0.0 | (0) |
| Greater than 8000 | 5.0 | (1) | 0.0 | (0) |

Table 8

Daily Prescription Volume For Pharmacies Involved in Pilot Study

| Volume per day | Percent Distribution Experimental Group N=20 | | Control Group N=18 | |
|---|---|---|---|---|
| Less than 51 | 40.0 | (8) | 27.8 | (5) |
| 51 - 75 | 34.0 | (6) | 44.4 | (8) |
| 76 - 100 | 10.0 | (2) | 11.1 | (2) |
| 101 - 125 | 0.0 | (0) | 11.1 | (2) |
| 126 - 150 | 15.0 | (3) | 5.6 | (1) |
| 151 - 200 | 5.0 | (1) | 0.0 | (0) |

Table 9

Yearly Sales Volume For
Pharmacies Involved in Pilot Study
(in thousands)

| Volume | Percent Distribution | |
|---|---|---|
| | Experimental Group N=20 | Control Group N=18 |
| 151 - 200 | 10.0 (2) | 11.1 (2) |
| 201 - 250 | 15.0 (3) | 11.1 (2) |
| 251 - 300 | 15.0 (3) | 11.1 (2) |
| 301 - 350 | 20.0 (4) | 16.7 (3) |
| 351 - 400 | 0.0 (0) | 11.1 (2) |
| 401 - 500 | 5.0 (1) | 11.1 (2) |
| 501 - 600 | 10.0 (2) | 11.1 (2) |
| 601 - 750 | 0.0 (0) | 5.6 (1) |
| Greater than 750 | 25.0 (5) | 11.1 (2) |

Table 10

Community Size of Pharmacist's Workplace

| Population | Percent Distribution Experimental Group N=20 | Control Group N=18 |
|---|---|---|
| 1001 - 10,000 | 20.0 ( 4) | 22.2 ( 2) |
| 10,001 - 50,000 | 10.0 ( 2) | 11.1 ( 2) |
| 50,001 - 100,000 | 5.0 ( 1) | 0.0 ( 0) |
| 100,001 - 200,000 | 65.0 (13) | 66.7 (12) |

Administration/Management Topic Interests

Hypothesis I: The levels of interest between experimental and control group participants are equivalent with regard to specific Pharmacy Administration and Pharmacy Management topics.

This hypothesis deals with the level of interest a participant has for seven specific topics presented in the interview regardless of which group, based on demographics, the participant is in. Results listed in Table 11 support the hypothesis for six of the seven topics; however, over the counter (OTC) pricing analysis shows a significant difference between the two groups. Pharmacists in the experimental group responded with higher interest than their counterparts. This response can be attributed to two variables.

Table 11

Comparison of Experimental and Control Group Pharmacists and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Experimental group N=20 Mean* | S.D. | Control Group N=18 Mean | S.D. | df | t-value |
|---|---|---|---|---|---|---|
| Financial Analysis | 4.15 | 0.933 | 3.39 | 1.38 | 29 | 1.972 (NS) |
| OTC Pricing Analysis | 4.00 | 1.21 | 2.94 | 1.43 | 33 | 2.435 SIG. |
| Personnel Management | 3.55 | 1.23 | 2.78 | 1.53 | 33 | 0.600 (NS) |
| Prescription Inventory Efficiency | 4.10 | 1.02 | 4.00 | 1.19 | 33 | 0.277 (NS) |
| Prescription Pricing Analysis | 4.15 | 1.09 | 3.50 | 1.47 | 31 | 1.538 (NS) |
| Space Management | 4.10 | 1.02 | 3.33 | 1.46 | 30 | 1.861 (NS) |
| Traffic Flow Analysis | 3.35 | 1.27 | 2.67 | 1.37 | 34 | 1.589 (NS) |

* Based on Likert scale of 1 to 5; with 5 the high response

First, pharmacists in the experimental group had previous interest in the competitive pricing market as indicated by the qualitative results. Slightly over 50% (11) of the experimental pharmacists were considering some type of OTC pricing review since they expressed concern about the competitive atmosphere. This was especialy prevalent among the smaller chain pharmacies whose concerns are their competitors, large chains.

Second, Pharmacy Administration 621 increased awareness of all subject areas. The control group mean for all seven topics was lower than the experimental group (Table 11). Although OTC pricing analysis was found to be the only significantly different category, the experimental group appeared to have both an increased interest in and awareness of all topics presented.

Quantitative results also show a relatively low mean response for the experimental group in traffic flow analysis. This was unusual as the qualitative results indicated that 30% (16) of the pharmacies had the project performed. Of these 16 pharmacies, 4 changed their pharmacy layout in some fashion. One pharmacist felt that the recommended change allowed his customers better movement through the pharmacy even

though no actual data analysis had been performed because the change was completed one month earlier.

With the exception of OTC pricing analysis, the hypothesis holds true as both groups' interests are equivalent with regard to the specific topics presented.

Pharmacist's Workplace

Pharmacist's workplace can be divided into three classifications: independents, large chains and small chains. Even though there is a wide variety of places of employment, this study is concerned with these three divisions.

> Hypothesis II: Within each of the three classifications, the levels of interest in experimental and control group participants are equivalent with regard to specific Pharmacy Administration and Pharmacy Management Topics.

Results of the analysis of interest regardless of place of employment are presented in Tables 12 - 19. Control group data is presented in Tables 12 - 15 while the experimental group data is presented in Tables 16 - 19. These tables represent a two tailed t test comparison of workplace for: large chains compared to small chains (Tables 13 and 17), large chains compared to independents (Tables 14 and 18), small chains compared

to independents (Tables 15 and 19) and ANOVA's of control (Table 12) and experimental groups (Table 16). ANOVA Tables for both the control and experimental groups did not indicate any significant differences (Tables 12 and 16 respectively). Planned post-hoc analysis was then performed using two-tailed t tests since this pilot study was concerned with the overall trends of the respondents' level of interest (High or Low). Two-tailed t test analysis was performed (Tables 13 - 15 and 17 - 19) as the null hypothesis will be rejected if the sample mean is too far away from the population mean in either direction (High or Low).[2] The probability of these tests detecting a significant difference (trend) is greater with a planned than an unplanned comparison on the same sample means.[3] A review of the Tables shows two significant results.

Table 15 contrasts the small chain pharmacies with independent pharmacies in the control group. Small chains have a significantly higher interest in long-term personnel than short-term high school students. This objective was evident as these pharmacists felt the desire for a good service image when compared to the independents. Interest was primarily expressed in the areas of motivation and employee satisfaction.

Table 19 compares the same type of pharmacies in the experimental group. Here, OTC pricing analysis is significantly higher for the small chains. While the small chains are trying to be service competitive with independents, they are also trying to stay price competitive with the large chains. Qualitative results represented the small chains' concern and interest for more information to update and/or revamp their current pricing strategy.

All of the other t tests conducted supported the hypothesis of equivalent interests regardless of one's place of employment. No significant differences were found when the large chains were compared to the other two groups. The small numbers in each of the categorized groups severely limits the interpretation of the comparisons in the following Tables.

Table 12

Comparison Between Control Group Pharmacists and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Large Chain N=2 Mean | S.D. | Small Chain N=3 Mean | S.D. | Independents N=13 Mean | S.D. | F-Ratio |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 3.5 | 0.71 | 3.00 | 1.73 | 3.46 | 1.45 | 0.13 (NS) |
| OTC Pricing Analysis | 4.0 | 0.00 | 3.00 | 1.73 | 2.77 | 1.48 | 0.61 (NS) |
| Personnel Mamagement | 4.0 | 1.41 | 4.67 | 0.58 | 2.85 | 1.52 | 2.29 (NS) |
| Prescription Inventory Efficiency | 4.5 | 0.71 | 4.33 | 0.58 | 3.85 | 1.34 | 0.37 (NS) |
| Prescription Pricing Analysis | 3.5 | 0.71 | 3.33 | 2.08 | 3.85 | 1.34 | 0.37 (NS) |
| Space Management | 4.5 | 0.71 | 2.67 | 2.08 | 3.31 | 1.38 | 1.75 (NS) |
| Traffic Flow Analysis | 3.5 | 0.71 | 3.67 | 1.15 | 2.31 | 1.38 | 1.75 (NS) |

Table 13

Comparison of Large and Small Chain Pharmacists in the Control Group and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Large Chains N=2 Mean | S.D. | Small Chains N=3 Mean | S.D. | df | t-value |
|---|---|---|---|---|---|---|
| Financial Analysis | 3.5 | 0.707 | 3.00 | 1.73 | 2 | 2.447 (NS) |
| OTC Pricing Analysis | 4.0 | 0.000 | 3.00 | 1.73 | 0 | * |
| Personnel Management | 4.0 | 1.41 | 4.66 | 0.577 | 1 | -0.632 (NS) |
| Prescription Inventory Efficiency | 4.5 | 0.707 | 4.33 | 0.577 | 2 | 0.277 (NS) |
| Prescription Pricing Analysis | 3.5 | 0.707 | 3.33 | 2.08 | 2 | 0.128 (NS) |
| Space Management | 4.5 | 0.707 | 2.66 | 2.08 | 2 | 1.408 (NS) |
| Traffic Flow Analysis | 3.5 | 0.707 | 3.66 | 1.15 | 2 | -0.200 (NS) |

* All of the numbers are identical - therefore computation is impossible

Table 14

Comparison of Large Chain and Independent Pharmacists in the Control Group and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Large Chains N=2 Mean | S.D. | Independents N=13 Mean | S.D. | df | t-value | |
|---|---|---|---|---|---|---|---|
| Finanacial Analysis | 3.5 | 0.707 | 3.46 | 1.45 | 2 | 0.060 | (NS) |
| OTC Pricing Analysis | 4.0 | 0.000 | 2.76 | 1.48 | 0 | * | |
| Personnel Management | 4.0 | 1.41 | 2.84 | 1.52 | 2 | 1.063 | (NS) |
| Prescription Inventory Efficiency | 4.5 | 0.707 | 3.85 | 1.34 | 2 | 1.040 | (NS) |
| Prescription Pricing Analysis | 3.5 | 0.707 | 3.53 | 1.51 | 2 | -0.059 | (NS) |
| Space Management | 4.5 | 0.707 | 3.31 | 1.38 | 2 | 1.895 | (NS) |
| Traffic Flow Analysis | 3.5 | 0.707 | 2.31 | 1.38 | 2 | 1.895 | (NS) |

* All of the numbers are identical - therefore computatation is impossible

Table 15

Comparison of Small Chain and Independent Pharmacists in the Control Group and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Small Chains N=3 Mean | S.D. | Independents N=13 Mean | S.D. | df | t-value | |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 3.00 | 1.73 | 3.46 | 1.45 | 2 | -0.428 | (NS) |
| OTC Pricing Analysis | 3.00 | 1.73 | 2.76 | 1.48 | 2 | 0.213 | (NS) |
| Personnel Management | 4.66 | 0.577 | 2.84 | 1.52 | 9 | 3.389 | SIG. |
| Prescription Inventory Efficiency | 4.33 | 0.577 | 3.84 | 1.34 | 8 | 0.974 | (NS) |
| Prescription Pricing Analysis | 3.33 | 2.08 | 3.53 | 1.51 | 2 | -0.161 | (NS) |
| Space Management | 2.66 | 2.08 | 3.07 | 1.38 | 2 | -0.508 | (NS) |
| Traffic Flow Analysis | 3.66 | 1.15 | 2.30 | 1.38 | 3 | 1.769 | (NS) |

Table 16

Comparison Between Experimental Group Pharmacies and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Large Chain N=2 Mean | S.D. | Small Chain N=5 Mean | S.D. | Independents N=13 Mean | S.D. | F-Ratio |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 4.0 | 1.41 | 3.8 | 1.30 | 4.30 | 0.75 | 0.54 (NS) |
| OTC Pricing Analysis | 4.0 | 0.00 | 4.8 | 0.45 | 3.69 | 1.38 | 1.60 (NS) |
| Personnel Management | 4.0 | 1.41 | 3.8 | 1.64 | 3.38 | 1.12 | 0.33 (NS) |
| Prescription Inventory Efficiency | 4.5 | 0.71 | 3.6 | 1.34 | 4.23 | 0.93 | 0.85 (NS) |
| Prescription Pricing Analysis | 4.5 | 0.71 | 3.8 | 1.64 | 4.23 | 0.93 | 0.37 (NS) |
| Space Management | 4.0 | 1.41 | 4.4 | 0.89 | 4.00 | 1.08 | 0.21 (NS) |
| Traffic Flow Analysis | 3.5 | 2.12 | 3.4 | 1.52 | 3.31 | 1.18 | 0.12 (NS) |

Table 17

Comparison of Large and Small Chain Pharmacists in the Experimental Group and Their Level of Interest on Specific Pharmacy Administration Topics

| Topic | Large Chains N=2 Mean | S.D. | Small Chains N=5 Mean | S.D. | df | t-value | |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 4.0 | 1.41 | 3.8 | 1.3 | 1 | 0.173 | (NS) |
| OTC Pricing Analysis | 4.0 | 0.00 | 4.8 | 0.477 | 0 | * | |
| Personnel Management | 4.0 | 1.41 | 3.8 | 1.64 | 2 | 0.161 | (NS) |
| Prescription Inventory Efficiency | 4.5 | 0.707 | 3.6 | 1.34 | 3 | 1.152 | (NS) |
| Prescription Pricing Analysis | 4.5 | 0.707 | 3.8 | 1.64 | 4 | 0.788 | (NS) |
| Space Management | 4.0 | 1.41 | 4.4 | 0.894 | 1 | -0.371 | (NS) |
| Traffic Flow Analysis | 3.5 | 2.12 | 3.4 | 1.52 | 1 | 0.061 | (NS) |

* All of the numbers are identical - therefore computation is impossible

Table 18

Comparison of Large Chain and Independent Pharmacists in the Experimental Group and Their Level of Interest on Specific Pharmacy Administration Topics

| Topic | Large Chains N=2 Mean | S.D. | Independents N=13 Mean | S.D. | df | t-value | |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 4.0 | 1.41 | 4.30 | .751 | 1 | -.301 | (NS) |
| OTC Pricing Analysis | 4.0 | .000 | 3.69 | 1.38 | 0 | * | |
| Personnel Management | 4.0 | 1.41 | 3.38 | 1.12 | 2 | .588 | (NS) |
| Prescription Inventory Efficiency | 4.5 | .707 | 4.23 | .927 | 3 | .479 | (NS) |
| Prescription Pricing Analysis | 4.5 | .707 | 4.23 | .927 | 4 | .471 | (NS) |
| Space Management | 4.0 | 1.41 | 4.00 | 1.08 | 1 | .000 | (NS) |
| Traffic Flow Analysis | 3.5 | 2.12 | 3.30 | 1.18 | 1 | .121 | (NS) |

*All of the numbers are identical - therefore computation is impossible.

Table 19

Comparison of Small Chain and Independent Pharmacists in the Experimental Group and Their Levels of Interest in Specific Pharmacy Administration Topics

| Topic | Small Chains N=5 Mean | S.D. | Independents N=13 Mean | S.D. | df | t-value |
|---|---|---|---|---|---|---|
| Financial Analysis | 3.8 | 1.30 | 4.30 | .751 | 5 | -.820 (NS) |
| OTC Pricing Analysis | 4.8 | .447 | 3.69 | 1.38 | 5 | 2.569 SIG. |
| Personnel Management | 3.8 | 1.64 | 3.38 | 1.12 | 5 | .521 (NS) |
| Prescription Inventory Efficiency | 3.6 | 1.34 | 4.23 | .927 | 5 | -.996 (NS) |
| Prescription Pricing Analysis | 3.8 | 1.64 | 4.23 | .927 | 5 | -.553 (NS) |
| Space Management | 4.40 | .894 | 4.00 | 1.08 | 8 | .800 (NS) |
| Traffic Flow Analysis | 3.4 | 1.52 | 3.30 | 1.18 | 5 | .123 (NS) |

Position

Pharmacists' positions vary from workplace to workplace. Four positions will be analyzed for this study. They include: owner/managers, assistant managers, fulltime staff and parttime staff.

> Hypothesis III: Within pharmacists' positions the levels of interest are equivalent with regard to specific Pharmacy Administration and Pharmacy Management topics.

Analysis of the hypothesis is to determine if levels of interest are equivalent regardless of the pharmacist's position. Table 20 shows the results of analysis of variance for three of the four groups. No significant differences were determined since all pharmacists expressed concerns for the topics.

The parttime staff pharmacists interviewed expressed their concerns as being similar to those of the managers/owners because better management efficiency allowed them more free time to try new services. Their quantitative results are not included in Table 20 as many of the responses were equal (see note in Table 20).

Fulltime staff pharmacists and assistant manager pharmacists were interested in the topics for job promotional reasons and for increases in the responsibility of decisions at the pharmacy.

Table 20

Comparison Between Pharmacist Position and Their Level of Interest in Specific Pharmacy Administration Topics

| Topic | Manager N=29 Mean | S.D. | Assistant Manager N=3 Mean | S.D. | Full time Staff N=4 Mean | S.D. | F Value |
|---|---|---|---|---|---|---|---|
| Financial Analysis | 3.79 | 1.26 | 3.00 | * | 3.75 | 1.26 (NS) | .64 |
| OTC Pricing Analysis | 3.41 | 1.418 | 4.00 | 1.0 | 3.25 | 1.50 (NS) | .62 |
| Personnel Management | 3.48 | 1.40 | 3.00 | 2.0 | 3.25 | .50 (NS) | .41 |
| Prescription Inventory Efficiency | 3.93 | 1.16 | 4.33 | 1.15 | 4.25 | .50 (NS) | .37 |
| Prescription Pricing Analysis | 4.00 | 1.22 | 2.33 | 1.15 | 3.50 | 1.75 (NS) | 1.18 |
| Space Management | 3.66 | 1.32 | 4.67 | .577 | 3.00 | 1.15 (NS) | 1.03 |
| Traffic Flow Analysis | 2.79 | 1.29 | 4.33 | .577 | 2.75 | 1.26 (NS) | 1.24 |

Part time staff information was not used here as most of the results could not be computated.

*All numbers are identical - therefore computation is impossible.

The hypothesis holds true for all pharmacists with regard to these Pharmacy Administration topics.

Analysis of Pharmacy Administration 621

This section is concerned with the pharmacists' interest in CPE programs similar to this pilot study. Explanation was given to the control group indicating how the Pharmacy Administration course was conducted. The control group was then asked the identical questions as the experimental group to determine if their interests would be equivalent.

> Hypothesis IV: The levels of interest between experimental and control groups are equivalent with regard to future programs in a similar CPE approach and their value.

This hypothesis examines the idea that pharmacists' interests are equivalent regardless of group orientation. Table 21 supports the hypothesis as no significant differences exist between the groups. Pharmacists in both groups did show an interest in future courses like this pilot study. Their recommendations were to expand the topic choices to include: advertising budgets and cost determination of special services.

Table 21

Comparison of Experimental and Control Group Pharmacists With Regard to the Value of Pharmacy Administration 621 and Future Program Interest

| Topic | Experimental Group N=20 Mean | S.D. | Control Group N=18 Mean | S.D. | df | t-value |
|---|---|---|---|---|---|---|
| Educational Value of 621 | 3.45 | 1.32 | 3.38 | 1.24 | 32 | .147 (NS) |
| Financial Value of 621 | 1.90 | 1.01 | 2.11 | 0.832 | 35 | -.701 (NS) |
| Future Interest in 621 | 4.30 | 1.13 | 3.90 | 1.30 | 33 | .894 (NS) |

Table 21 also indicates that the program did have beneficial educational value. This was more pronounced in the follow-up questions since pharmacists were interested in the results obtained even if the results reinforced what they perceived was occurring. Very little, if any, financial benefit resulted from the program because of the short time elapsed from the end of the course to the final interviews (three months). The four pharmacies mentioned earlier who changed store layouts indicated that the financial value was low at this time as money was spent to accomplish the change.

Pharmacists have an interest in future programs similar to this pilot study. Recommendations from the pharmacists to improve and expand the course have been reviewed and will be discussed in Chapter Four.

> Hypothesis V: The levels of interest between experimental and control group pharmacists are equivalent with regard to students as data collectors and analysts.

Table 22 shows that student access to financial statements for analysis is approved by a majority of the pharmacists. However, a few pharmacists would allow only limited access to the records and were recorded as not being open to review of these statements.

Table 22

Comparison of Experimental and Control Group Pharmacists With Regard to Possible Fee Payment for Pharmacy Administration 621 and Financial Statement Access

| Topic | Experimental Group N=20 Mean* | S.D. | Control Group N=18 Mean* | S.D. | df | t-value |
|---|---|---|---|---|---|---|
| Financial Statement Access | 1.60 | .833 | 2.00 | .978 | 34 | -1.324(NS) |
| Other business courses taken | 1.65 | .489 | 1.77 | .428 | 35 | -.859(NS) |
| Payment of a Fee for 621 | 1.85 | .366 | 1.94 | .236 | 32 | -.954(NS) |

*Dichotomous scale 1-NO, 2-YES.

Pharmacists responses were overwhelming for the students getting this type of an experience. Some of their views expressed during the interview are as follows.

Pharmacists views agree with those of others that have been previously expressed as they felt that this training is beneficial and that failures of pharmacists in some of the management areas can be traced to the lack of adequate education in the schools.[4-7] The blending of theory and practice (as seen in this study) helps to reinforce the concept that students will be able to take on the managerial roles.

At the same time, the pharmacists expressed the ability to apply the knowledge that is being presented to their actual practice environment. This is one way that CPE and the schools of Pharmacy can start a type of new approach to CPE. Pharmacists also stressed that it would be helpful to determine their needs first, and then adapt programming (or school courses) into that area. This is of concern since it must be remembered that students have limited knowledge to work with at this point in their education sequence.

The hypothesis for students as data collectors and analysts is supported by both the quantitative and qualitative data.

Hypothesis VI: The levels of interest for participants in computerized and non-computerized pharmacies are equivalent with regard to specific Pharmacy Administration and Pharmacy Management data collection.

Analysis could not be performed in this area since only four pharmacies in the entire study were presently using computers. This small number did not lend itself to further investigation of questions 3-17 in the interview guide (see Appendix A) since three of these pharmacists had only had one month of actual usage and were unable to fully evaluate the system.

## Footnotes

1. William L. Hays, Statistics for the Social Sciences, (Chicago, Illinois: Holt, Rinehart and Winston, Inc., 1973), p. 565.

2. Gouri K. Bhattacharyya and Richard A. Johnson, Statistical Concepts and Methods, (New York: John Wiley & Sons, Inc., 1977), p. 257.

3. Hays, p. 610.

4. Kenneth Kirk, "Helping Pharmacy Graduates be Effective Managers, A Joint Venture for Practitioners and Educators," Pharmacy Management Vol. 152, No. 4 (July - August, 1980), p. 152.

5. Kirk, P. 152.

6. Michael C. Shannon, "Curriculum and Evaluation on Pharmacy Continuing Education," American Journal of Pharmaceutical Education Vol. 45 (Feb. 1981): p. 68.

7. Harry A. Smith, Jennifer M. Guerrant and Donald D. Vogt, "Assessment of Continuing Education Needs for Pharmacists," American Journal of Pharmaceutical Education Vol. 45 (May 1981): p. 139.

# Chapter Four

## Summary and Recommendations

The purpose of this chapter is to summarize and discuss the findings of this pilot study. In addition, a number of recommendations are made based on these findings and the pharmacists' views on possible improvements for future programs like this study.

A questionnaire was developed containing 53 items pertaining to a course (Pharmacy Administration 621) offered at the University of Wisconsin, School of Pharmacy. This questionnaire was designed to be used in an interview of 38 pharmacists for their responses to specific topics in Pharmacy Administration/Management and Continuing Professional Education (CPE). These topics include: financial analysis, over the counter pricing analysis, personnel management, prescription inventory efficiency, prescription pricing analysis, space management, and traffic flow analysis.

The pharmacists interviewed were divided into two matched sample groups: control and experimental. The experimental group pharmacists were involved with Pharmacy Administration 621. The control group pharmacists were matched to this experimental group using

a modification of a randomized block design.[1] These two matched groups were then compared on a variety of the questions for their levels of interest on the topics mentioned above. The comparisons were based on variables including the pharmacist's workplace and position.

An equally important purpose of the questionnaire was the collection of data regarding pharmacist's responses to a different approach to CPE. To accomplish this, questions were asked about the pharmacist's future interest in programming similar to this pilot study. Questions were also asked on the educational and financial benefit of the course.

Summary

Of the 38 pharmacists that participated in this pilot study, 20 were in the experimental group and 18 were in the control group. Twenty-nine (76%) of the pharmacists interviewed were pharmacy owners and/or managers. The other pharmacists were assistant managers (8%), fulltime staff pharmacists (10%) and parttime staff pharmacists (6%). Twenty-six (68%) of the participating pharmacists were employed in independent pharmacies while eight (21%) worked in small chain pharmacies and four (11%) were employed by the

large chain pharmacies. The majority of the pharmacists (66%) were employed in a community of 100,000 to 200,000 population. The pharmacists' years of experience ranged from two to forty-two years.

The overall sample distribution described above included all independent pharmacies in the Madison metropolitan area as well as a majority of the independent pharmacies in the surrounding communities. At least one pharmacy from each chain was represented in the population sample.

Experimental group pharmacists had a significantly higher level of interest in the area of over-the-counter pricing analysis than the control group pharmacists. This higher level of interest was true for all seven topic areas presented, although it is only significant for OTC pricing analysis. The experimental group had both an increased awareness and interest in the topics because of their participation in Pharmacy Administration 621.

The significant difference in OTC pricing analysis was most evident in the responses of the small chain pharmacists since they were concerned with the competitive pricing policies of the large chains. These small chain pharmacists' level of interest was also significantly

higher for personnel management when compared to the independents. This was found to be of importance to the small chains because of the service image that they would like to portray.

No significant differences were found between experimental and control groups when compared by pharmacists' position. Most of the pharmacists indicated that they were interested in the financial well being of the pharmacy since this would be returned to them through job promotion, increased responsibilities and/or increased compensation.

A secondary purpose of this pilot study was to acquire an understanding of the pharmacists' views on a course like Pharmacy Administration 621. Pharmacists in the experimental group expressed the view that the course was of educational value to themselves and the students. Recommendations were made by some of the pharmacists on improvements for the course, and these recommendations will be presented below. The control group participants indicated that they also felt that there would be some educational value from the course; however, these comments were only an estimation of what they perceived as a possible outcome from their future participation.

It would be difficult to relate thse findings to anything other than this pilot study. Future investigation of pharmacists' interests in the area of Pharmacy Administration and Continuing Professional Education would be beneficial to determine the significance of these results.[2,3]

Recommendations

As a result of the data presented in this pilot study and its interpretation, it is recommended:

1. Further continuing professional education programming in the area of Pharmacy Administration and Pharmacy Management should include information that pharmacists can utilize with their own pharmacy data. This would allow pharmacists to apply the acquired information in their own practice setting motivating them to focus on learning that will be rewarding.
2. Continuing Professional Education and Schools of Pharmacy together should explore the possibilities of developing programming to establish courses in the areas of Pharmacy Administration for both pharmacist and

student interest. Together, continuing professional educators and pharmacy faculty could establish courses in which pharmacists receive CEU's upon completion. Students who were also involved would gain management experience.

3. Pharmacy Administration and Pharmacy Management CPE programs should develop toward the professional needs of the pharmacists as well as the economic rewards. With this in mind, courses should be able to help direct the participants to quality services that become available with economic security. The services that a pharmacy would like to offer will be available to the consumer with this security.
4. Pharmacists that participated in the pilot study recommended that more topics be available for data collection and analysis. They recommended topics in the areas of cost determination and advertising budgets. Along with this recommendation, a more structured approach for the reports

that were presented would be beneficial. For example, an outline of steps for a follow-up analysis would aid in future managerial decisions.

5. Further studies should be done in this area with the pharmacists becoming more involved in the actual data analysis. Comparisons should then be made to determine which of the two methods is more beneficial for the pharmacists, student analysis or student/pharmacist analysis.

## Footnotes

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2. Michael C. Shannon, "Curriculum and Evaluation on Pharmacy Continuing Education," American Journal of Pharmaceutical Education. Vol. 45 (Feb. 1981):p. 68.

3. E.M. Smith and M.A. Chambers, "The Role of Pharmacy Administration In Continuing Education," National Association of Boards of Pharmacy and American Association of Colleges of Pharmacy 1960 Proceedings of Annual Meeting (Columbia, South Carolina District 3, 1960), p. 13.

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# APPENDICES

# APPENDIX A

## PHARMACY ADMINISTRATION 621

## PROJECT DESCRIPTIONS

# OTC PRICING

The purposes of this project are:

To familiarize the student with the factors involved in establishing an OTC price policy.

To learn the impact on gross profit by varying purchasing methods.

To develop a knowledge of the techniques available in measuring product elasticity and its impact on pricing.

1. Select 3 product groups (i.e. analgesics, acne preps, antacids, vitamins, eye care, cough, etc.)

2. Establish, through interview and examination, the price policy for each of the groups selected.

3. Note variation in actual gross profit created by quantity purchase, direct purchase and volume discount.

4. With the approval of management, select products suitable for "in-department" and "check-out" displays. Use price and non-price promotion. Price promotion suitable for evaluation should be at least 10% less than regular selling price.

5. Establish a system to record beginning inventory, purchases and ending inventory (to establish units sold) during various promotional circumstances of 1 week duration.

6. Calculate elasticity of the products tested.

7. Calculate variation in total gross profit through:
   a. Price promotion
   b. Non-price (professional) promotion

OTC Pricing (continued)

Report:

State the overall price/professional image of the pharmacy.
Describe each product group selected, including number of facings and average selling price. Note locations.
Describe promotional methods used and include all data.
Note difficulty in retrieving data and suggest solutions.
Observations and conclusions.

Guidelines:

As with all projects in P.A. 621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in learning the techniques of OTC price evaluation. Record the data and evaluate it; do not anticipate the results and do not be a victim of seeking results to meet your prior estimates.

Before you have completed your tests on elasticity, you will become aware of the difficulty of predicting sales, as well as the value of promotional evaluation. Management is constantly faced with this problem.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is scheduled.

# PERSONNEL MEASUREMENT

The purposes of this project are:

To familiarize the student with the process of developing an organizational structure.

To apply knowledge of jobs analysis, job description and job specification in actual practice.

To experience the development of the interview process.

1. In cooperation with management, select two specific employee positions that have these characteristics:
   a. Functions are not identical.
   b. Functions are adjacent (probably overlap), such as pharmacist-intern; clerk-stockboy. Exclude management.

2. By observation, develop a jobs analysis for this area of the pharmacy.

3. By interview with management, record the specific duties of positions to be studied.

4. By interview with employee, record their interpretation of specific duties.

5. Write job description for each position.

6. Develop job specification for each position.

7. Through observation and <u>casual</u> interview, present the pharmacy's:
   a. Philosophy (to the patient)
   b. Atmosphere (employee to employee)
   c. Integrity (employee)

8. Write an interview check-list for each position studied.

Personnel Measurement (continued)

Report:

Describe the staff components of the pharmacy. Briefly describe the area serviced by the positions studied. Discuss the process used to meet the project objectives, identifying the importance and limitations of each step. Include the jobs analysis, job descriptions, job specifications and interview check-lists.

Guidelines:

As with all projects in P.A. 621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in learning the techniques, as well as protocol, in developing an organizational structure.

Pharmacy, like most small business, tends to avoid recording organizational structure. Lack of time and other factors lead to informal personnel practices. You may wish to comment on this as part of your conclusions.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is scheduled.

# PRESCRIPTION INVENTORY EFFICIENCY

The purposes of this project are:

To introduce the student to the procedures of prescription inventory control.

To learn the relationship of Rx inventory management (efficiency) to pharmacy profitability.

To compare efficiencies of direct-purchase and wholesaler supply of pharmaceuticals.

To develop an awareness of the record-keeping procedures needed to provide inventory evaluations.

1. With the assistance of management, select 3 pharmaceutical groups (lines) having the following characteristics:
   a. Two direct-purchase groups; One purchased wholesaler only.
   b. Inventory (by $) is retrievable.
   c. Purchase information is retrievable.
   d. Inventories are not affected by large specialty groups. (e.g. generics or injectables)
   e. Inventories are not affected by large "inventory as investment" programs.

2. Arrange a $ inventory procedure that includes the following:
   a. List the names of the pharmaceuticals.
   b. Indicate the package size (100's; 1000's).
   c. Record the package cost, using catalog, container pricing, microfiche and invoices.

3. Tabulate inventories using a partial package estimate.

4. Extend tabulations to provide a total dollar beginning inventory.

5. Enter purchases from invoices for a month period.

6. Tabulate inventory at the end of the month.

7. Determine cost-of-goods sold.

8. Calculate efficiency for each pharmaceutical group.

Prescription Inventory Efficiency (continued)

Report:

Discuss what factors are used to decide which pharmaceutical lines are purchased direct. Include the actual cost difference (percent) between direct and wholesaler purchase of the groups evaluated. Include all tabulations and show calculations.
Describe difficulties in retrieving data and indicate procedures you would suggest if management decided to use periodic evaluations. Observations and conclusions.

Guidelines:

As with all projects in P.A. 621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in learning variations in inventory performance and the impact on procedures.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is scheduled.

# PRESCRIPTION PRICING

The purposes of this project are:

To familiarize the student with the factors involved in establishing an overall Rx price policy.

To learn the impact on gross profit of various purchasing methods.

To develop a knowledge of "sample pricing" to estimate overall price policy.

1. Select a random sample of 50 recently filled Rx.
   a. Do not include third-party Rx.
   b. Include new and refill Rx as appropriate.

2. Record the sample Rx on a work sheet, including only:
   a. Date filled and Rx number
   b. Pharmaceutical
   c. Quantity
   d. Price after any discounts

3. Determine actual acquisition cost of each Rx, considering:
   a. Source of supply
   b. Size purchased
   c. Quantity (but not cash) discount

4. Calculate gross profit for the sample, expressed in $ and %.

5. Consider possible "table of ranges" of gross profit by grouping into cost ranges.

6. Select two third-party billings that will each provide a recent sample of 20-25 Rx.

7. Using the same procedures outlined in 2-3-4, calculate the gross profit for each program.

Prescription Pricing (continued)

Report:

Include all tabulations, including sample lists.
Discuss methods used (sources of information in establishing actual acquisition costs.
Note difficulties in retrieving information.
Suggest solutions to these difficulties if management requested a pricing update every six months.
Observations and conclusions.

Guidelines:

As with all projects in P.A. 621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in learning the techniques of Rx price policy evaluation.

Before you have finished your tabulations, you will be aware of the difficulty of estimating results. Management is faced with this problem, along with the frustrations associated with lack of time to do evaluations.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is scheduled.

# SPACE MANAGEMENT

The purposes of this project are:

To familiarize the student with the process of developing merchandise profitability analysis.

To recognize the need for retrievable records to facilitate this analysis.

To evaluate the relationship of inventory management and price policy in measuring department profitability.

To learn the need for space considerations in planning overall profitability.

1. With the assistance of management, select 3 merchandise groups with the following characteristics:
   a. Inventory is readily identifiable.
   b. Inventory is confined to a specific area.
   c. Tabulation of actual beginning and ending inventory can be accomplished with reasonable effort.
   d. Purchase records for one month can be retrieved without disrupting pharmacy bookkeeping.
   e. Uniform price policy within each group.

   Examples: Magazines, Box Candy, Cosmetic Line, Gift Line, Vitamin display.

2. Calculate the area (sq.ft.) of each merchandise group. Apply uniform methods discussed in class relating to wall space and aisle measurement.

3. Determine price policy for each group.

4. Calculate inventory at beginning of month (any convenient 30 day period) at cost.

5. Tabulate purchases for the period.

6. Calculate ending inventories.

7. Determine profitability of each group expressed as a factor of space and inventory investment.

Space Management (continued)

Report:

Describe the pharmacy's overall merchandising and then identify each of the groups used in the report. Be certain to locate each group in the traffic flow. Discuss difficulties in making tabulations and suggest modifications to facilitate future analysis. Present evaluation of each merchandise group.

Guidelines:

As with all projects in P.A.621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in observing variations in inventory profitability and the factors they contribute to the differences.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is scheduled.

# TRAFFIC FLOW ANALYSIS

The purposes of this project are:

To introduce the student to the concept of departmental location and observe the factors that determine the flow of patients through a pharmacy.

To develop some skills in measuring quality, as well as quantity of traffic in the pharmacy.

To compare departments by their magnetism and translate this into pharmacy design.

To recognize the value of personnel as a factor in creating traffic flow.

To develop an increased awareness of merchandise location relative to traffic flow.

1. Develop a diagram of the pharmacy using graph paper (or similar methods) to insure reasonable proportion. Shade the fixtures or departments so the isles are easily identified.

2. Learn from management the various times during the week when higher patient traffic is anticipated.

3. Tabulations should be divided evenly between at least two different time periods (i.e. weekday afternoon and Saturday morning).

4. Using tracing paper overlays, record individual routes taken by patients during their visit to the pharmacy.

5. Mark each route when the patient stops to examine products (such as letter "S" for shopping).

6. Mark each route when patient selects products (such as letter "P" for purchase).

7. It is not necessary to chart exit patterns unless patient shops or purchases along the way.

8. Note whether patient is male or female.

Traffice Flow Analysis (continued)

9. Chart only a few patients on one tracing page.

10. Tabulate (50) traffic patterns.

Report:

Summarize your tabulations to express effectiveness of departments in the pharmacy. You may wish to speculate on preplanned vs. impulse purchases; more involved analysis often includes interviews with patients to determine groups creating traffic flow. If you wish to attempt some interviews, consult management as well as instructor in advance. Identify "impulse" areas and comment on their location. Relate traffic flow to pharmacy image.

Guidelines:

As with all projects in P.A. 621, the data and results are confidential. The name of the pharmacy should not be included in the report. The value of the report for the students is in measuring one factor in departmental planning.

A. Copy of report to management.

B. Solicit management comments.

C. Invite management to attend seminar when report is schedule.

# APPENDIX B

# QUESTIONNAIRE

INTERVIEW OUTLINE FOR

PHARMACY ADMINISTRATION CONCERNS IN

CONTINUING EDUCATION

This interview questionnaire is primarily concerned with pharmacy continuing education in the areas of pharmacy administration. Feel free to comment on any of the questions that I ask you. Please respond to the following questions with the utmost frankness as I <u>am</u> interested in your answers. Some of the questions will require numerical responses where 1 is of no importance, no benefit, etc. and 5 is extremely beneficial, etc. Do you have any questions?

Q1. On a scale of 1 (low) to 5 (high) how beneficial are the following areas to you in your practice at this time?

| | |
|---|---|
| Financial analysis___ | Rx pricing analysis___ |
| Rx inventory efficiency___ | Personnel management___ |
| Space management___ | Traffic flow analysis___ |
| OTC pricing___ | ___ |

---

Q2. Does your pharmacy presently have a computer? (i.e. hardware in house)

YES___ (Go to Q3) NO___ (Go to Q15)

Q3. Which of the following functions are performed by the computer? (check first line provided after function list)

Billing___ ___
Inventory control___ ___
Patient profiles___ ___
Drug interactions (computer indicates interaction)___ ___
Drug interactions (Pharmacist must use profile information)___ ___
Allergies (computer)___ ___
Allergies (Pharmacist check)___ ___
Control substance use___ ___
Pricing updates___ ___
Accounts receivable___ ___
Rx label is typed___ ___
Other (please specify) _____

Q4. On a scale of 1 to 5, how valuable is _____? (fill in blank with those answers checked in Q1 above and place response in next line).

Q5. Have you done any analysis on the effectiveness of the pharmacy computer system you presently use?

YES___ (Go to Q6) NO___ (Go to Q7)

---

Space for additional comments on above questions

Q6. Who did the analysis and data collection? (wholesaler, computer company, pharmacist, etc.)

_____

Q7. On a scale of 1 to 5 (high) how beneficial is the present computer system that you use?

_____

Q8. Are there any specific problems that you have with the computer system? _____

_____

Q9-10. Do you feel that you use the computer to its fullest potential as presented (advertised) to you?

YES___ NO___ DO NOT KNOW___

Please explain your answer: _____

_____

Q11. Does your computer system have the capability of expanding to include functions that you would like it to perform?

YES___ NO___ DO NOT KNOW___

Q12-13. Do you feel that you have purchased the appropriate system for your use?

YES___(Go to Q16) NO___ (Go to Q14)

DO NOT KNOW___ (Go to Q16)

Q14. Are you considering replacing your present system with another model?

YES___ NO___ DO NOT KNOW___

(ALL Go to Q16)

Q15. Are you at all thinking of purchasing a computer system in the next year?

YES___ NO___

Q16. Who do you get your information about computers from? _____

_____

Q17. Did you attend the recent spring ETN program on administration and jurisprudence?

YES___ NO___

Q18. Did your pharmacy participate in the Pharmacy Administration course (621) offered by the school of pharmacy last fall?

YES... (Go to Q19) NO___ (Go to Q35)

---

Space for additional comments on above questions

Q19-24.
For the next few questions please answer using the 1 to 5 scale along with personal comments you have.

Q19. How beneficial was the course for you? _____

_____

Q20. How beneficial was the course in increasing the efficiency of your pharmacy? _____

_____

Q21. How beneficial was the course in changing any policies at the pharmacy? _____

_____

Q22. How beneficial was the course in changing your thoughts about management areas? _____

_____

Q23. How beneficial do you feel the course was for the pharmacy student? _____

_____

Q24. Were the learning methods used (written reports to you) beneficial for you? _____

_____

Q25. Why did you participate in this type of course?

_____

_____

Q26. After participating in the program did you notice any change in your attitude toward the usefulness of analysis?

YES___ NO___

Q27. On a 1 to 5 scale, how valuable was the course to you financially? ___

Q28. On a 1 to 5 scale, how valuable was the course to you educationally? ___

Q29. Would you be willing to pay a fee for this type of service?

YES___ NO___ If yes, how much? (in dollars)

Less than 51___ 51 to 100 ___ 101 to 200 ___

Over 200 ___

Q30. Have you had any other course in the business area?

YES___ NO___

If yes, where and what type of course _____

_____

Q31. On a scale of 1 to 5, how interested would you be in participating in future programs of this nature?

_____

_____

Space for additional comments on above questions

Q32. What is your feeling about students having access to your financial records? _____

_____

Q33. Do you have any comments on the course? _____

_____

Q34. What areas would you suggest for change in the course? _____

_____

(Go to Q42)

Q35-40.

The objective of this course was to have students collect data on various pharmacy administration areas and analyze the data. The students then gave written reports to the pharmacy on their findings. All information is strictly confidential and there is no mention of the pharmacy site.

Q35. On a scale of 1 to 5, how valuable would a course be to you financially? ____

Q36. On a scale of 1 to 5, how valuable would a course be to you educationally? ___

Q37. Do you feel you would be willing to pay a fee for this type of service?

YES___ NO___ If yes, how much? (in dollars)

Less than 51 ___ 51 to 100 ___ 101 to 200 ___

Over 200 ___

Q38. Have you had any programs or courses in this area?

YES___ NO___ If yes, where and what type?

_____

_____

Q39. On a scale of 1 to 5, how interested would you be in participating in courses of this nature? ___

Q40. What is your feeling about students having access to your financial records? _____
_____

Q41. Do you have any questions or comments on this type of course? _____
_____

---

Space for additional comments on above questions

Q42-49.
Demographic and general information

Q42. What is your position at this pharmacy?

Manager/Owner R.Ph. ___
Assistant Manager R.Ph. ___
Intern ___
Staff R.Ph. ___
Part time/relief R.Ph. ___
Other ___

Q43. What state(s) are you licensed in? WI___
OTHERS_____

Q44. What year did you receive your original license?

_____

Q45. What is the approximate size of the pharmacy (Rx and front) in square feet? _____ Sq. Ft.

Q46. What is the approximate prescription volume on the pharmacy?

Less than 51___ 51 to 75 ___ 76 to 100 ___

101 to 125 ___ 126 to 150 ___ 151 to 200 ___
Greater than 201 ___

Q47-48.
What is the approximate total sales (volume) for the pharmacy? (ranges are in thousands)

Less than 101___ 101 to 150___ 151 to 200___

201 to 250___ 250 to 300___ 301 to 350___

351 to 400___ 401 to 500___ 501 to 600___

601 to 750___ Greater than 750___

(the above two questions have the same ranges as those presented in the Lilly Digest)

Q49. Do you have any questions or comments about the areas we have just covered? _____

_____

THANK YOU FOR YOUR COOPERATION

Information gathered after the interview:

Q50. Community size:

Less than 1,001___ 1,001 to 10,000___

10,001 to 50,000___ 50,001 to 100,000___

100,001 to 200,000___ Greater than 200,000___

Q51. Work place:

Clinic-community___

Clinic-hospital___

Community-Chain___

Community-independent___

Hospital-inpatient___

Q52. Sex: Male___ Female___

_____

Space for additional comments on above questions