

Students' Attitudes About Service-Learning: A Longitudinal Study

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ABSTRACT. Mercer University Southern School of Pharmacy (MUSSP) incorporated service-learning into Patient Care Experiences (PCEs) in the Fall 2001. The service-learning program focuses on improvement of communication skills, understanding the communities served, and improvement of pharmaceutical care skills. This study is a longitudinal study, which examines students' attitudes and perceptions of community service before and after the course requirements. It was also conducted in order to determine students' perceptions of the influence of community service on improvement of basic pharmaceutical care skills. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2005 by The Haworth Press, Inc. All rights reserved.]*

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BACKGROUND

Schools of pharmacy have begun to incorporate service-learning into their curricula in response to the American Association of Colleges of Pharmacy's (AACP) Center for the Advancement of Pharmaceutical Education statement (CAPE) on educational outcomes developed in 1994, and AACP's Professional Affairs Committee's 2001 statement supporting the development of strong community-campus partnerships (1,2).

Peters et al. surveyed pharmacy schools to determine the number of schools that incorporate service-learning into their curricula. Approximately 75% of responders indicated some extent of volunteerism, but the requirements varied from program to program (3).

Incorporating critical thinking, caring for others, and improving communication skills tends to be the focus throughout many professional and undergraduate programs. It is also important to provide an avenue for reflection of the experience where students are able to look back and apply experiences to classroom education. This activity helps students understand the value in their efforts. The students and service-learning partners work in a reciprocal relationship where both benefit from the experience (4,5).

Several papers published in 2004 describe individual service-learning programs and the steps involved with incorporation of pharmaceutical care. Nemire et al. emphasized the importance of developing quality service-learning partners and benefits to the community, faculty, and students (6). Drab et al. looked at service-learning and documented student expectations throughout the four-year curriculum at the University of Pittsburgh. This program incorporated a 2-term required course, which involved 24 hours of community service per term. The Drab study assessed critical thinking, development of knowledge and skills, professional responsibility and ethics, social interactions, citizenship, leadership, professionalism, and life-long learning. The students were evaluated through portfolio entries, written assignments, direct observation by preceptors, attendance and participation, quizzes, and reflective journals. The students surveyed felt that their experiences helped enhance respect for others, promote awareness of needs, and improve confidence and communication skills (7). Other examples are programs that focus on specific needs or populations. Jarvis et al. outlined a 1-credit course where pharmacy students worked with elementary school students to educate on healthy eating habits. Upon completion of the course, the pharmacy students completed a course survey that assessed students' perceptions about enhancement of communication and leadership skills,

working with others, appreciation for cultural diversity, and the perceived value of their contributions (8). Schumann et al. outlined how pharmacy students were paired with social work professionals to outreach to senior citizens or Hispanic-Latino communities. This course included weekly visits to the communities being served, followed by electronic journals to reflect upon their experience as well as group reflections. The students then expanded their reflections in a summative paper, which allowed them to make connections between service and their learning (9). In all of the mentioned models, students perceived improvement on critical thinking skills, communication skills, professional responsibility, ethics, leadership, social interaction, and professionalism. All programs researched incorporated the recommendation of AACP's CAPE outcomes (6-9).

In 2000 there were two studies (10,11) that investigated pharmacy students' attitudes about volunteerism before requiring this component in their coursework. These studies then looked at changes in attitudes after completion of the service-learning requirement during that academic year. The studies indicated that students were impacted by the service-learning requirement in a positive way. The Barner study used a pre-test, post-test design to assess attitudes prior to completing service-learning requirements compared to attitudes post-completion of requirements. The results of the study concluded that students had increased their perceptions of the needs for community service and social support (10). The Piper study, through a survey administered to participants after completion of service-learning, found that students felt that service-learning helped them improve their communication skills and increased confidence in themselves. These students also felt that service-learning would prove beneficial when practicing pharmacy. In general, students felt that the time requirements were too much while contending with a pharmacy class schedule and that service-learning should not be a requirement in school. The attitudinal assessment markers used in these studies were the foundation for this study's pre-test and post-test survey designs (10,11).

In 2004 Kearney published a study that looked at perceptions and attitudes towards service-learning by administering a pre-course and post-course survey to students involved in a 2-credit required service-learning course in the first professional year. Kearney found that his students were favorable in their assessment of service-learning and even 52% of responders indicated that they would be interested in doing more service in the community. He also indicated an improvement in written and oral communication, critical thinking skills, and leadership (12).

This study conducted at Mercer University Southern School of Pharmacy (MUSSP) surveyed students' attitudes and perceptions about community service through pre-test and post-test surveys in each professional year. Furthermore, it contributes to the literature by examining these attitudes longitudinally over a two-year period.

INTRODUCTION

Mercer University Southern School of Pharmacy incorporated service-learning into its introductory courses called Patient Care Experiences (PCEs) in Fall 2001. The patient care experience courses help students transition from didactic instruction to the application phase of pharmacy to prepare the students as providers of pharmaceutical care. Service-learning at MUSSP is defined as the process of involving the student in community activities and then providing an academic environment in which to reflect upon the experience and grow as a person and as a professional. The goals of MUSSP's service-learning are to promote professional development of pharmacy students by providing real opportunities for students to utilize communication skills, caring, and basic pharmaceutical care skills to meet the needs in the community. Service-learning was required initially for first and second professional year pharmacy students. The program was expanded to incorporate the third professional year students in the fall of 2002.

This project was conducted in order to evaluate if service-learning had a positive association with attitudes toward community service. For the purpose of this study, the following definitions are utilized. Service-learning, as defined by the 2000-2001 AACP Professional Affairs Committee, is a form of experiential learning that meets the actual needs of the community, establishes a relationship between the community and the academic institution, helps foster civic responsibility and a sense of caring for others, is integrated into the required academic curriculum, provides structured reflection times, extends student learning beyond the classroom into the community, and attempts to balance the service that is provided and the learning that takes place (2). Community service is defined as services volunteered by individuals or an organization to benefit a community or its institutions. Volunteerism is the use of or reliance on volunteers, especially to perform social or educational work in communities (13).

During the first, second, and third professional years each student is required to complete 32 hours (16 hours each semester) of service-learning.

The 37 sites that MUSSP partners with provide activities related to direct patient care (disease state management camps, national and local agencies, clinics, and health screenings), patient education (public agencies and university-related organizations), and non-medically related services (public shelters, grade schools, and literacy education facilities). Service to the non-medically related agencies is limited to first professional year students. The students can choose from the list of approved sites or can identify an additional site for individual approval. Since MUSSP enrolls students from many surrounding states, students are given the option to complete their service-learning hours during weekends and school breaks at an approved location near their permanent residence. This allows students to serve their hometown communities.

To evaluate students who meet the requirements of the PCE courses, completion of three documents is necessary. The first is a time log, which is maintained by the student and turned in at the end of each semester for the first professional year students and at the end of each year for the second and third professional year students to ensure the 32-hour requirement is met. The second document is a summative evaluation of the student conducted by the service-learning preceptor at the particular site. The students also prepare a handout for presentation to a small (9-14 persons) reflection group, which meets four times a semester within the PCE course. This presentation, which is a requirement for a passing grade in each PCE course, serves as a way to reflect about the experience and discuss how the activity helped to bridge didactic courses and materials to communities being served. A faculty member or graduate student facilitates the presentations to help with guided reflections and to ensure the discussion points are well understood and align with the curricular goals. Students are given a handout detailing the presentation content criteria before beginning service-learning. The students in their first professional year present and reflect on their experience each semester. The students in their second and third professional years present and reflect on their experiences once a year. The formal reflection presentations are designed to describe the mission and goals of the community site and specific duties that the student focuses on while participating in service-learning. The students also include a reflection portion in their presentations. This allows them to recap their experience for their classmates and share portions of their interventions to allow others to understand the community being served. This is a time of learning and sharing of ideas about how others experienced similar situations and how events were handled. There is also a component where the presenter poses thought questions to the small group in order to promote more in-depth discussion. The presenta-

tions also aid in documenting the link between their academic knowledge and personal experiences.

OBJECTIVES

The purpose of this study was to assess the effect of a required service-learning component in the curriculum upon students' attitudes toward community service. Specific objectives were:

1. To measure students' attitudes toward community service before and after implementation of a required service-learning component in the curriculum.
2. To measure students' perceptions of the effect of community service upon improvement of basic pharmaceutical care skills before and after implementation of a required service-learning component in the curriculum.

METHODS

The universe and population for this study consisted of all doctor of pharmacy students enrolled in the first three professional years of the curriculum at MUSSP. The study population totaled 400 students, which included 130 students from the graduating class of 2004, 135 students from class of 2005, and 135 students from class of 2006. The pre-test survey was given to all students enrolled in the first three professional years of the curriculum. The post-test survey was given to all students at the end of each academic year after completing the required 32 hours of service-learning. The class of 2006 was followed for 1 year and the classes of 2004 and 2005 were followed for 2 years, receiving only a post-test survey in the second year. The terminology of community service was used, since the students were more familiar with that phrase versus service-learning. The students now accept the term service-learning as part of their academic culture.

The survey was developed to assess students' attitudes about community service and how service-learning enabled them to improve basic pharmaceutical care skills. Attitudes toward community service was measured using 15 items that presented favorable and unfavorable statements and a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree (Table 1). In addition, students' perceptions of how

community service enabled them to improve on basic of pharmaceutical care skills was evaluated using 7 items and a five-point response scale where 1 = not at all and 5 = very extensively (Table 3). Attitudes were compared for the pre-test service-learning survey and the post-test survey according to academic graduation year. Content domain was addressed by a review of the literature to ensure that the attitudinal items included those mentioned in the literature, as possibly important in affecting students' attitudes toward service-learning (1-2,4-5,10-11). Five MUSSP faculty members then reviewed items for clarity and completeness. Demographic characteristics measured included age, gender, race, and prior community service experience.

Analyses were conducted using the STATISTIX-8 (Analytical Software, Tallahassee, Florida) program and included simple descriptive statistics, t-tests and an analysis of variance. Significance was reported at $p < 0.05$.

RESULTS

Demographics

Complete data was returned by 354 participants on all measures, for a response rate of 88.5%. One hundred and twenty students responded from the class of 2004 (92.7%), 118 from the class of 2005 (87%), and 116 from the class of 2006 (85.9%). The sample was comprised of 29.3% men and 70.7% women. Mean age was 23.6 (SD = 4.04). The majority of the participants were caucasians comprising 72%. Over two-thirds of the students reported that they had prior community service experience (74%) with a mean of 19 hours per month and ranging from 2 to 288 hours per month.

Attitude Toward Community Service

Responses to the attitudinal items (Table 1) were first analyzed to assess reliability of the attitude scale. The results of t-tests revealed that each attitudinal item was discriminating between the upper and lower 25% of responses with the exception of one item, which was eliminated from the measure of overall attitude (Table 1). Corrected item-total correlations met the criteria of being significant at $p < 0.05$ and $r > 0.35$ (13). The split-half reliability with Spearman-Brown correction of the items was 0.99.

TABLE 1. Responses^a of Students to Attitudinal Statements

Statements	Class of 2004 (n = 120)						Class of 2005 (n = 118)						Class of 2006 (n = 116)					
	P2 Year			P3 Year			P1 Year			P2 Year			P1 Year			P2 Year		
	Pre	Mean	SD	Post	Mean	SD	Pre	Mean	SD	Post	Mean	SD	Pre	Mean	SD	Post	Mean	SD
1. There are people in the community who need help.	4.63	0.57	4.52	0.66	4.46	0.63	4.79	0.51	4.69	0.51	4.45	0.74	4.83	0.38	4.65	0.66		
2. Pharmacists do not have a responsibility to help people in need.	1.66	0.97	2.12	1.38	2.21	1.32	1.47	0.98	1.67	0.96	1.85	1.07	1.17	0.57	1.83	1.19		
3. It is critical that citizens become involved in helping their communities.	4.15	0.74	3.98	0.89	4.13	0.72	4.25	0.72	4.18	0.70	3.96	0.82	4.42	0.71	4.19	0.82		
4. It is not important for pharmacists to volunteer their time to help the community.	2.19	1.09	2.34	1.03	2.43	1.14	1.87	0.97	2.08	1.01	2.32	1.12	1.80	1.01	2.26	1.21		
5. I would experience personal satisfaction knowing that I am helping others.	4.34	0.67	4.20	0.74	4.29	0.69	4.60	0.60	4.47	0.63	4.10	0.82	4.72	0.54	4.45	0.72		
6. Community service does not help me understand cultural differences.	2.11	0.83	2.63	1.08	2.51	1.22	1.70	0.75	2.26	1.01	2.70	1.12	1.50	0.60	2.16	0.97		
7. I have an opportunity to enhance my critical thinking skills by helping in the community.	3.72	0.78	3.14	0.95	3.44	1.06	3.99	0.84	3.24	1.03	2.55	1.13	4.25	0.58	3.37	1.09		
8. I feel bad that some community members are suffering from a lack of resources.	4.12	0.77	3.87	1.01	3.97	0.96	4.26	0.67	4.14	0.69	3.87	1.03	4.46	0.57	4.16	0.80		

9. It is not my responsibility to take some real measures to help others in need.	2.01	0.86	2.16	1.00	2.21	1.11	1.82	0.76	1.96	0.86	2.16	0.93	1.62	0.74	1.95	0.91
10. Helping people enhances my understanding of what it means to care for people.	4.19	0.63	3.95	0.86	3.98	0.86	4.48	0.62	4.22	0.78	3.72	0.95	4.62	0.52	4.13	0.83
11. I do not want to do this service learning activity.	2.90	1.15	3.40	1.30	3.27	1.34	1.73	0.81	2.85	1.24	4.01	1.21	1.69	0.81	2.93	1.17
12. Contributing my skills will make the community a better place.	3.80	0.81	3.80	0.85	3.84	0.93	4.04	0.67	4.02	0.75	3.63	0.98	4.10	0.78	3.91	0.86
13. Volunteer work at community agencies does not help solve social problems.	2.35	0.85	2.65	1.05	2.46	1.07	2.04	0.87	2.24	0.93	2.65	1.07	1.96	0.86	2.39	0.98
14. It is important to help people in general.*	4.42	0.62	4.30	0.76	4.18	0.8	4.47	0.50	4.40	0.59	4.21	0.80	4.64	0.62	4.25	0.86
15. If I do community service I would not have enough time for my schoolwork.	3.47	1.05	3.52	1.08	3.25	1.12	2.41	0.81	3.16	1.23	3.88	1.16	2.31	0.83	2.82	1.09
Overall Attitude ^b	3.89	0.54	3.62	0.60	3.70	0.68	4.24	0.44	3.90	0.54	3.47	0.61	4.38	0.37	3.91	0.64

^a Measured on a five-point Likert-type scale: 1 = strongly disagree, 2 = disagree, 3 = do not disagree or agree, 4 = agree, 5 = strongly agree

^b Overall attitude was computed using the Method of Summated Rating.

* Item analyses resulted in the elimination of this item from the measure of Overall attitude.

SD = Standard deviation

Table 1 contains the mean responses of the students for each attitudinal item according to graduation year. Overall attitude toward service-learning was computed using the Method of Summated Rating (14). This method involved reversing the scoring for negatively worded items so that a high score would consistently reflect positive attitudes towards the variable being measured. Total scores were then determined by adding together individual item scores, and averages were calculated. The responses to each attitudinal item in the pre-test survey were extremely favorable for all three classes (Table 1). In general, after the completion of service-learning requirements, the students also felt positively toward service-learning (Table 1).

Some of the individual attitudinal items from the post-test survey elicited strong attitudes (Table 1). Students strongly agreed (mean of ≥ 3.5) with the items related to helping members of the community, experiencing satisfaction, awareness of need, caring for others, and improving the community. Students overall strongly disagreed (mean of ≤ 2.5) with statements such as pharmacists are not responsible for helping others and it is not important to volunteer. The Class of 2006 also strongly disagreed that community service does not promote understanding of other cultures or help solve social problems. They also disagreed with the statement that participating in community service will not leave enough time for schoolwork.

Analysis of variance followed by Scheffe's multiple comparison tests revealed significant changes in overall attitude toward community service within a class of students after fulfilling service-learning requirements (Table 2). The Class of 2004 showed a significant decline in overall attitude toward community service between the pre-test and post-test survey taken during their second year with a mean of 3.89 (SD = 0.54) and 3.62 (SD = 0.60), respectively. Comparison of three measurements for the Class of 2005 demonstrated a significant decrease in attitude toward community service from pre-test to post-test surveys. Significant differences occurred in the means of their first year pre-test survey 4.24 (SD = 0.44) and post-test survey 3.90 (SD = 0.54). The same class showed a significant difference between the initial post-test survey and the second year post-test survey 3.47 (SD = 0.61). Lastly, the mean of the first year pre-test survey and second year post-test survey indicated a statistically significant drop in attitude for the class of 2005. For the class of 2006, a t-test revealed a significant decline in attitude between the mean of the first year pre-test survey 4.38 (SD = 0.37) and first year post-test survey 3.91 (SD = 0.64).

TABLE 2. Changes in Attitude Toward Community Service

Statistical Test				
ANOVA				
Source	df	SS	MS	F
Class of 2004				
Between	2	5.28	2.64	6.23 ^{*a}
Within	361	153.93	0.42	
Class of 2005				
Between	2	30.57	15.29	49.4 ^{*b}
Within	365	112.98	0.31	

t-test				
Source	N	Mean	SD	T
Class of 2006				
Pre	135	4.38	0.37	7.00 ^{*c}
Post	115	3.91	0.64	

* Significant at $P < 0.05$

^a Scheffe test revealed a significant difference between the P2 pre survey 3.89 and P2 post survey 3.62.

^b Scheffe test revealed a significant difference between P1 pre survey 4.24 and P1 post survey 3.90, P1 post survey 3.90 and P2 post survey 3.47, and P1 pre survey 4.24 and P2 post survey 3.47.

^c t-test revealed a significant difference between P1 pre survey 4.38 and P1 post survey 3.91.

SD = standard deviation df = degrees of freedom

SS = sum of squares MS = mean square

F = variance ratio

Basic Pharmaceutical Care Skills

Table 3 illustrates the mean responses of students regarding their perception of improvement of basic pharmaceutical care skills through completion of community service. The graduating classes of 2004 and 2005 received one pre-test survey and two post-test surveys at the end of each year. The Class of 2006 was only followed for one year, yielding one post-test survey. Each item was analyzed independently and comparisons between all measures within a graduating class were made. The mean responses to each item in the pre-test survey were ≥ 3.00 (3 = improved somewhat). The mean responses in the post-test survey were between 2.00 (very little improvement) and 3.00 (improved somewhat). Overall, the majority of means in the post-test survey (s) demonstrate that the students agree that community service “somewhat” enables them to learn about cultural differences, reflect upon their own values and bias, improve oral communication skills, improve critical thinking/analytical skills, and help understand how communities and cities function. However, the majority of the mean responses in the post-test surveys demon-

strate the students felt the community service experience was associated with very little improvement in written communication and problem solving skills (Table 3).

Table 4 illustrates significant differences in students' perceptions of the influence of community service upon basic pharmaceutical care skills after participating in service-learning. The Class of 2004 showed a statistically significant decrease between the initial pre-test survey 3.65 (SD = 0.89) and post-test survey 2.98 (SD = 1.18), as well as the comparison between the pre-test survey and third year post-test survey 3.21 (SD = 1.17) in developing oral communication skills for that same graduation year. This class seemed to agree that community service "somewhat" enabled them to improve problem-solving skills with a significant difference between the initial pre-test survey 3.55 (SD = 0.87) and post-test survey 2.45 (SD = 1.11), also a significant difference was observed between the pre-test survey and the third year post-test survey 2.46 (SD = 1.22) for the same class for this item (Table 4).

The Class of 2005 showed a significant difference in how community service helped them to understand how communities and cities work or function. The difference was observed between the pre-test survey 3.18 (SD = 0.98) and the post-test survey 2.57 (SD = 1.15) taken during the second year of experience; additionally, this class revealed a significant difference between the first post-test survey 3.07 (SD = 1.25) and second post-test survey on the same statement (Table 4). The Class of 2005 seemed to agree that community service did not help them to improve written communication skills; there was a significant decrease in response between the initial pre-test survey 3.19 (SD = 0.93) and post-test survey 2.1 (SD = 1.00). Furthermore, the same class revealed a significant decrease between the pre-test survey and the second post-test survey 1.63 (SD = 0.92), as well as the comparison between first year post-test survey and second year post-test survey on how "very little" community service enabled them to improve written communication skills (Table 4).

When comparing the means of all the items measuring pharmaceutical care skills on the pre-test and post-test surveys for the Class of 2006 there were significant differences in all the items, except for one (Table 4). There was no statistically significant difference between initial pre-test survey 3.43 (SD = 0.96) and post-test survey 3.07 (SD = 1.14) on the item stating how community service helped them to understand how communities and cities work or function.

TABLE 3. Perceptions^a of Students to the Influence of Community Service Upon Basic Pharmaceutical Care Skills

Statements	Class of 2004 (n=120)						Class of 2005 (n=118)						Class of 2006 (n=116)					
	P2 Year		P3 Year		P1 Year		P1 Year		P2 Year		P1 Year		Pre		P1 Year		Post	
	Pre	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1. Learn about culture/cultures different from your own.	3.23	1.05	2.70	1.20	2.89	1.10	3.30	0.93	2.75	1.17	2.52	1.08	3.54	0.86	3.03	1.18		
2. Critically reflect upon your own values and bias.	3.53	0.92	2.78	1.05	2.96	1.07	3.59	0.79	2.98	1.16	2.48	1.07	3.76	0.80	3.05	1.12		
3. Improve your written communication skills.	3.10	0.95	2.00	1.04	2.29	1.06	3.19	0.93	2.10	1.00	1.63	0.92	3.36	0.90	2.01	1.04		
4. Improve your oral communication skills.	3.65	0.89	2.98	1.18	3.21	1.17	3.81	0.88	2.99	1.24	2.47	1.29	3.84	0.80	2.95	1.17		
5. Improve your critical thinking/analytical skills.	3.57	0.84	2.54	1.11	2.73	1.19	3.57	0.93	2.52	1.17	2.14	1.15	3.81	0.75	2.52	1.20		
6. Improve your problem solving skills.	3.55	0.87	2.45	1.06	2.66	1.22	3.61	0.87	2.39	1.17	2.07	1.17	3.77	0.75	2.47	1.18		
7. Understand how communities and cities work or function.	3.26	1.02	2.72	1.13	3.04	1.34	3.16	0.98	3.07	1.25	2.57	1.15	3.43	0.96	3.07	1.14		

^a Measured on a five-point Likert-type scale: 1 = not at all, 2 = very little, 3 = somewhat, 4 = extensively, 5 = very extensively

TABLE 4. Significant Changes in Students' Responses to Perceptions of Influence of Community Service Upon Basic Pharmaceutical Care Skills

Statistical Test

ANOVA

Source	df	SS	MS	F
Class of 2004				
Improve your oral communications skills.				
Between	2	28.4	14.2	12.0* ^a
Within	360	425.1	1.18	
Improve your problem solving skills.				
Between	2	85.2	42.6	38.5* ^b
Within	360	398.4	1.1	
Class of 2005				
Improve your written communications skill.				
Between	2	152.8	76.4	83.6* ^c
Within	365	333.4	0.91	
Understand how communities and cities work or function.				
Between	2	21.4	10.7	8.31* ^d
Within	365	470.3	1.29	

t-test

Source	N	Mean	SD	T
Class of 2006				
Understand how communities and cities work or function.				
Pre	135	3.43	0.96	2.68 ^e
Post	115	3.07	1.14	

* Significant at P < 0.05

^a Scheffe test revealed a significant difference between the P2 pre survey 3.65 and P2 post survey 2.97, and P2 pre survey 3.65 and P3 post survey 3.22.^b Scheffe test revealed a significant difference between P2 pre survey 3.55 and P2 post survey 2.68, and P2 pre survey 3.55 and P3 post survey 2.46.^c Scheffe test revealed a significant difference between P1 pre survey 3.19 and P1 post survey 2.10, P1 pre survey 3.19 and P2 post survey 2.48, and P1 post survey 2.98 and P3 post survey 2.48.^d Scheffe test revealed a significant difference between P1 pre survey 3.18 and P2 post survey 2.57, and P2 post survey 3.07 and P2 post survey 2.57.^e t-test revealed no significant difference between P1 pre survey 3.43 and P1 post survey 3.33.

SD = Standard deviation df= degrees of freedom

SS = sum of squares MS = mean squares

F = variance ratio

DISCUSSION

This study documented that students' attitudes toward community service are positive before engaging in service-learning. Their attitudes toward community service, while still favorable, are significantly lower after engaging in service-learning. A possible explanation includes new

implementation of service-learning experiences into their academic curriculum. This additional demand may have caused some students to have an unfavorable ideation about service-learning. In addition, students not only contend with a difficult academic curriculum, but the majority of students (80%) are also employed outside of school.

Overall, the Class of 2006 believed that service-learning was an important component of the pharmacy program. Upon entering pharmacy school, these students were informed about the service-learning requirement in the PCE courses. The service-learning coordinator works closely with the students and the site representatives to assure that the site maintains common goals that coincide with the mission of the school. The Barner study also found similar results in that the students understood the need for community service and social support (10).

Consideration must be given to the fact that many of the partnering sites did not operate on weekends and could not accommodate many volunteers at a given time, making scheduling difficult for students since they had to manage time for school, work, and study on weekdays. These reasons may have been the limiting factors for students who provided unfavorable responses in the surveys. It must also be noted that our students are not assigned to a particular site, but must choose a site that best fits their interests, which is similar to the University of Texas at Austin model (4,10). Many other models researched assigned the students to service-learning sites (6, 8, 9,12). To resolve this difficulty, the program coordinator is continually trying to carefully select and expand number of service-learning partners that share common goals and objectives with MUSSP. Students are also given the opportunity and encouraged to find and attend sites that are more fitting to their personal interests. This allows students to give back to an organization that may fit their interests more appropriately plus may be more convenient logistically. These changes have been made in attempt to improve students' attitudes about completing service-learning requirements.

Trends within each class indicated increased concerns about time constraints, which were also noted in the Barner study (10). This may have been due to the limited hours allowed for students to serve per visit at the sites making scheduling difficult for many students. Organizations value the time that students spend at their organization. Allowing students to complete their hours on academic breaks has helped resolve some of the scheduling conflicts and time constraints. This change has been made to hopefully improve the experience for the students. MUSSP developed a task force to look at the program and assess the quantity of hours for the program. The committee determined thirty-two hours is an adequate

amount of time to allow students to gain a better understanding of the organization's operating procedures and accomplish particular goals or projects for the organization that otherwise would not have been met or accomplished.

This study documented that after participating in service-learning, students perceived community service as having some positive association with many basic pharmaceutical care skills as defined by the response scale in Table 3. These findings are similar to the Kearney study, which found that students learned skills through service-learning related to pharmacy practice (12). With respect to learning about cultures different than their own, students were given the opportunity to participate at sites that serve minority clientele. Forty-three percent of the approved service-learning sites service the minority population. This enables the students to experience interactions with people who are different from them. Regarding critical reflection upon values and biases, the students participate in four reflection sessions each semester to fulfill this component. The reflection sessions help to engage students in discussion and promote critical thinking. With respect to oral communication, emphasis is placed on building communication skills through interactions at the service-learning sites and giving an oral reflection presentation to their peers. Improvement on critical thinking and analytical skills is achieved through direct patient contact, which is emphasized more during the second and third professional years. Requiring direct patient contact helps the students actually apply learned classroom material to "real life" situations. The students gain a better understanding of how communities and cities function by learning the mission and goals of the organization they serve, which is then incorporated into their reflection presentations.

Students perceive service-learning as providing little improvement in written communication skills, which refutes the Kearney study that found correlations between service-learning and improved written communication skills (12). This perception continues as students move between the professional years. This may be because there is not a strong emphasis on writing in the service-learning program at Mercer, unlike the Kearney requirements, which involved daily journals and reflection papers to help improve on this skill (12). Likewise, MUSSP students perceive little improvement in problem solving skills as a result of service-learning, which again is an opposite finding from the Kearney study. The Kearney model was a 2-credit service-learning course, which had several class periods devoted to discussing experiences. The discussions may have placed more of an emphasis on problem solving (12). The Mercer students work

with other healthcare providers, leaving the pressure to solve problems off of them and do not have the in-depth discussion periods.

As each class moved through the curriculum completing the service-learning requirements, the students' perceptions declined regarding the influence of service-learning upon some of the basic pharmaceutical care skills. Between the second and third professional years, the perception regarding community service's impact on oral communication skills and problem solving skills declined in spite of the fact that the students were working on these areas unbeknownst to them. Within the first professional year and between the first and second professional years of the curriculum, the perceptions regarding community service's impact on understanding how communities and cities work or function declined because approximately 70% of students continued at the same site therefore already having an understanding of the mission and goals.

LIMITATIONS

Readers should exercise caution in generalizing the results of the study because data were collected at only one school of pharmacy. Social desirability bias might have prompted students to inflate their ratings of socially correct attitudes toward community service.

CONCLUSION

This study found that service-learning requirements for pharmacy students are associated with positive attitudes toward community service. It should be noted that there was no cause and effect relationship established between service-learning and the improvement of pharmaceutical care skills and alternative influences may exist. Those implementing such requirements should be mindful that declines in attitudes as students move through the curriculum seem to be associated with fulfilling course requirements associated with service-learning. It is our hope that students continue to address the needs of the community long after the requirements of school. Pharmacy graduates involvement in continued community service post-graduation warrants future investigation.

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