INSTRUCTIONAL DESIGN AND ASSESSMENT
Comparison of Outcomes Between Two Laboratory Techniques in a Pharmacy Communications Course

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Objectives. This study evaluates the impact of two different methods of conducting laboratory sessions on pharmacy students' communication achievement, perceived self-efficacy, and communication apprehension.

Methods. Sixty-eight pharmacy students were randomly assigned to either a traditional, instructor-directed laboratory section or a videotaped, self-directed laboratory section. Students' achievement outcomes as well as self-efficacy and communication apprehension scores were compared as were scores between the beginning and the end of the semester.

Results. No differences in pharmacy students' achievement scores, self-efficacy scores, or communication apprehension scores were found between the two laboratory sections. Overall, individual scores on perceived self-efficacy improved between the beginning and the end of the course.

Conclusion. Self-directed patient counseling sessions were as effective as instructor-directed sessions in helping students improve their communication skills.

Keywords: Communication, Laboratory, Self-directed learning

INTRODUCTION
The role of pharmacists has evolved over the last several years from one tied very closely to dispensing to one that is much more patient centered. When pharmacists are involved in patient care, cost-effective medication use is more likely to be achieved and patients have improved clinical outcomes and quality of life. To provide optimal patient care, pharmacists must be able to communicate effectively with patients and physicians.

Effective communication requires that pharmacists have the knowledge needed to communicate, the willingness to communicate, and adequate opportunity for communication to take place. It is important for pharmacists to have communication skills and the willingness to communicate. Two variables related to a pharmacists’ willingness to communicate are communication self-efficacy (SE) and communication apprehension (CA).

Communication self-efficacy has been defined as a person’s perception regarding their capability of communicating with others. Pharmacists who do not believe they have the skills to communicate may be unwilling to counsel patients. Communication apprehension, on the other hand, is defined as “an individual’s level of fear or anxiety associated with real or anticipated communication with another person or persons.” Previous studies have looked at the effect of CA on communication habits, as well as ways in which to decrease CA. Berger and colleagues found that desensitization training is one method to decrease CA in pharmacy students. The desensitization training consisted of identifying students with high CA who were then taught relaxation methods and engaged in role playing for about 2.5 hours per week.

Pharmacists who avoid communicating with patients may be at a disadvantage legally, professionally, and emotionally. First, the Omnibus Budget Reconciliation Act of 1990 and many state Pharmacy Practice Acts legally mandate that pharmacists counsel patients. Second, as disease state management activities evolve in each state, pharmacists will be expected to spend more of their time in direct patient care activities. Pharmacists who lack the ability to communicate or are apprehensive...
about communicating with patients might not provide extensive patient education. Pharmacists who are not comfortable communicating will often avoid or resist taking active patient care roles beyond the traditional duties of dispensing prescriptions. This avoidance of communication may be attributed to the person’s lack of communication skills or the lack of confidence in his/her ability to communicate.

Considering these issues, communication is a key ability that pharmacy students should learn during their professional years. Thus, most colleges of pharmacy include a communications course in their professional curriculum. These communication courses vary in structure and format; however, a majority of them include interactive exercises. According to Beardsley, a majority (96%) of pharmacy communication instructors use role-playing as a teaching method in their communication courses, and 87% use videotaping in some form to facilitate the development of communication skills. One study suggested that communication instruction methods that allow for interaction between students and “patients” are likely to improve communication self-efficacy. Although interactive communication laboratories are considered beneficial and therefore used in communication courses, these laboratories require much faculty time and effort. With a limited number of faculty members and space, it is sometimes challenging to offer a course that includes interactive laboratory sessions.

One potential solution to this problem is to create self-directed learning episodes that require minimal instruction and can be implemented in place of specific laboratory time. In addition to the benefit of reducing instructional resource needs, developing self-directed learning mechanisms is important to colleges of pharmacy from an accreditation standpoint. In their Accreditation Manual for Professional Programs, the American Council on Pharmaceutical Education (ACPE) lists “promotion of life-long learning skills through self-directed learning” as one of the guidelines for the teaching and learning process. These self-directed learning activities allow the students to experience “learning on their own” while in school.

On the other hand, it has yet to be decided whether self-directed communication sessions can replace instructor-directed laboratories for teaching patient counseling techniques. Moreover, it is not known whether the laboratory method will affect perceived self-efficacy and/or communication apprehension. Thus, the purpose of this study was to evaluate whether student-directed videotaped role-plays are as effective as instructor-directed laboratory role-plays in teaching patient counseling and can be accomplished without causing a negative effect on any outcome measure.

METHODS

Sample
Sixty-eight students enrolled in their third professional year of pharmacy school at the beginning of the fall 2001 semester were asked to participate in the study as part of their communications curriculum. Students were given a memorandum explaining the study and could decline to participate at any time. Using a computer randomization program, we assigned students who elected to participate in the study to either a traditional, instructor-directed laboratory section or a videotaped, self-directed laboratory section.

Study Setting
Third-year pharmacy students at the University of Arkansas for Medical Sciences (UAMS) College of Pharmacy are required to participate in a communication course. The 6-week communication course was divided into two components: (1) didactic lectures, and (2) laboratory role-play sessions. The didactic lecture topics included verbal communication, nonverbal communication, listening and empathy, patient counseling, conflict management, and self-regulation in conflict. The lectures included examples of how each topic affects patient counseling and stressed each topic’s role in improving patient compliance. The laboratory role-play sessions consisted of prescription counseling scenarios that ranged from uncomplicated (e.g., dispensing a new prescription where no communication barriers were present) to complex (e.g., dispensing a new prescription where a patient had some type of communication barrier which had to be overcome). Students used the techniques discussed in the didactic lectures in the patient-counseling role-play sessions. The objectives of the lab sessions were (1) to improve the students’ counseling technique, and (2) to increase the students’ comfort level in patient-counseling situations. At the end of the 6 weeks, the students’ final exam consisted of managing a standardized patient (SP) counseling scenario.

Procedure
Student participants were randomized into either the traditional, instructor-driven laboratory group or the videotaped, self-directed laboratory group. Students in both groups were partnered into two-person teams. All students took part in 2 other laboratory sessions not related to this study.
In the traditional laboratory group, faculty gave the student teams specific patient scenarios during each laboratory period and guided them through the counseling scenarios. The partners then practiced the patient counseling scenarios using role-play methods. Grading and feedback on the student’s communication performance came from assessment by his partner on a standardized assessment form. A total of 6 cases were practiced.

The student teams in the videotaped laboratory group did not participate in the instructor-led laboratory sessions. This group of students conducted 6 videotaped counseling sessions. Each session was self-directed, meaning that the students were given a few required parameters for the session, but each student team was given the responsibility for developing, scripting, and acting out the scenarios. Each student portrayed the patient 3 times and acted as the pharmacist 3 times. Students in the videotaped laboratory group recorded their best efforts to turn in at the end of the course. Like the traditional laboratory group, grading and feedback on the student’s communication performance came from assessment by their partner on a standardized assessment form.

The assessment forms from both the traditional and videotaped laboratory sections counted towards the final course grade. At the end of the course, all students were graded by a standardized patient (SP) on a final patient-counseling scenario. UAMS developed the Pharmaceutical Care Encounters Program (PCEP) in 1996 to measure clinical pharmacy practice competencies in a therapeutics course utilizing SPs. The students in the communication course have been assessed using SPs in a similar manner since 1997. The SPs interacted with students on cases designed to test the students’ communication skills, independent of their therapeutic knowledge, because at this point in the curriculum, students had only completed 6 weeks of the therapeutics course.

**Summary of Measures**

Differences between laboratory groups were determined by using the following variables: student achievement, communication apprehension, and self-efficacy. Student achievement measures collected from the didactic portion of the course included the following:

- Two multiple-choice exams, each containing 25 questions, were developed by the faculty based on lecture material and administered to the class.
- One in-class assignment where students answered 2 questions regarding a ‘mock trial’ case involving an ethical situation was completed.
- Achievement measures for the laboratory portion of the course included the following.
- SP (Standardized Patient): At the end of the course, each student was asked to conduct a one-on-one live communication exercise with a trained actor (ie, the standardized patient). The SP evaluated each student. Effectiveness of communication in this setting was measured by whether the student asked the SP to repeat back the directions on how to take the medicine. This verification was included as one measure in the overall SP grade for the student. Standardized patient exercises have been studied and have been found to be reliable and valid, both in this setting and as a broad assessment measure.17-19
- Partner Assessments: Scores were obtained from the standardized assessment form completed by each team member regarding his partner’s performance.

Communication apprehension and self-efficacy were measured using a self-administered questionnaire, referred to as the Pharmacist Communication Skills Inventory (PCS1) in this study. All students completed the questionnaire during the first lecture period of the course and again at the end of the course. The questionnaire contained demographic questions and scales to measure communication apprehension and perceived self-efficacy.

The PRCA (Personal Report of Communication Apprehension) scale was included in the questionnaire to measure communication apprehension. This scale has varying forms in the literature; however, its primary purpose is to measure individuals’ attitudes regarding interpersonal communications. In its various forms, this instrument has reported reliabilities averaging 0.90.5,10,20 Students were asked to rate their level of agreement with 26 items using a 5-point Likert-type scale. Then item ratings were summed to provide an overall communication apprehension score for each student.

The questionnaire also included an efficacy scale and an outcome scale. The efficacy scale contained 28 efficacy statements, and the outcome scale contained 28 outcomes statements. These statements specifically relate to communication scenarios that measure efficacy and outcomes expectations as described by Bandura’s theory of self-efficacy.21 Individuals with low-efficacy expectations do not believe they can accomplish the...
task, while individuals with low outcome expectations believe that even if the task is performed, the outcome will not be achieved. In a previous study, the efficacy and outcomes scales generated alphas of 0.88 and 0.93, respectively. For this study, students rated their level of agreement with each item on a 5-point, Likert-type scale. The ratings on the efficacy statements were summed to provide an efficacy score, and the ratings on the outcome statements were summed to provide an outcome score. High scores on the efficacy scale and outcome scale indicated low perceived self-efficacy.

**Statistical Analysis**

Descriptive statistics were conducted for the demographics, student achievement scores, and the scale scores. Independent sample t-tests were used to compare the achievement scores and PCSI scale scores between the traditional, instructor-directed laboratory group and the videotaped, self-directed laboratory group. Dependent sample t-tests were used to compare the PCSI scores from the beginning of the course to the end of the course. An a priori alpha was set at 0.05.

**RESULTS**

Sixty-eight students participated in the study. Both the traditional laboratory group and the videotaped laboratory group each had 34 students. The two study groups were similar demographically, as shown in Table 1. Reliability analyses yielded Cronbach’s alphas of 0.94 and 0.93 for the efficacy and outcome scales, respectively, that were administered at the end of the course.

The study findings suggest that the two laboratory methods are equally effective. Student achievement scores were similar between the two groups as displayed in Table 2. There did not appear to be a difference in mean scores between the control group and the intervention group on the SP final exam or the final course grade \((P=0.267, P=0.619\) respectively). Likewise, it appears that students in both laboratory groups performed similarly on the PCSI at the end of the course, as shown in Table 3. The results indicated that there are no differ-
Table 3. Comparison of PCSI Scores at the End of the Course Between Laboratory Sections

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Instructor-directed Mean (SD)</th>
<th>Self-directed Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprehension scale</td>
<td>74.03 (3.41)</td>
<td>74.23 (3.69)</td>
<td>0.829</td>
</tr>
<tr>
<td>Efficacy scale</td>
<td>52.25 (11.36)</td>
<td>51.69 (11.25)</td>
<td>0.844</td>
</tr>
<tr>
<td>Outcome scale</td>
<td>64.38 (12.82)</td>
<td>65.78 (10.46)</td>
<td>0.633</td>
</tr>
</tbody>
</table>

SD=standard deviation

Table 4. Comparison of PCSI Scores from Beginning to End of Course

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Beginning of course (N=68) Mean (SD)</th>
<th>End of course (N=68) Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprehension scale</td>
<td>74.86 (4.27)</td>
<td>74.20 (3.63)</td>
<td>0.243</td>
</tr>
<tr>
<td>Efficacy scale</td>
<td>56.65 (9.35)</td>
<td>51.78 (10.92)</td>
<td>0.006*</td>
</tr>
<tr>
<td>Outcome scale</td>
<td>67.72 (11.26)</td>
<td>65.02 (11.98)</td>
<td>0.049*</td>
</tr>
</tbody>
</table>

*Higher scores mean lower perceived self-efficacy

The results of this study suggest that self-directed learning is as effective as an instructor-directed experience. Students in both laboratory groups performed equally well in the course. Since each student’s partner evaluated communication achievement during the labs, it was expected that those grades would be generously high. The inclusion of this measure instead of a more discriminating tool may have prevented the authors from finding a difference between the two groups. However, both groups performed equally well on the written exams and the standardized patient exam. Communication achievement appears to be the same, regardless of which laboratory session the student participated.

Additionally, both groups had improved self-efficacy after completing the course. It appears that the self-directed, videotaped method may be used effectively. This method requires fewer resources, freeing up faculty time and space. Pharmacy faculty may want to consider using a self-directed laboratory experience instead of traditional faculty-driven laboratory method in their communications course.

As use of this method is adopted, faculty should continue to evaluate the advantages and disadvantages of a videotaped, self-directed laboratory. This study demonstrates that it is as effective as the traditional communications laboratory, but it did not address all issues associated with changing laboratory methods. Clearly, the students may acquire other communication
and social skills by attending the traditional laboratory and interacting with faculty. This was not addressed in the study.

It would be interesting to investigate further the use of the PCEP in the communications course. Having students counsel a standardized patient at the beginning of the course and at the end would provide insight into the overall effectiveness of the course. It would also provide a valuable learning tool for the students. Students would be able to see the progress they made from the beginning of the course to the end.

It is also important to mention that neither laboratory method influenced communication apprehension. Although this is disappointing from an educational perspective, this result is similar to the results of previous studies.5,9 Traditional communication courses do not seem to decrease communication apprehension. As previously stated, desensitization training is one method that has potential benefit in decreasing communication apprehension.12 This method was not used in this course because it is resource-intensive. However, as self-directed laboratory methods are incorporated into the course, it may be possible to include other communication exercises. Further exploration into the ability to incorporate desensitization training into the course, and more specifically into self-directed learning activities, needs to be completed.

CONCLUSIONS

Because there is a shortage of pharmacy faculty, it is necessary to look at educational techniques that use resources efficiently and effectively. The results of this study demonstrate that a videotaped, self-directed communications laboratory is as effective as a traditional, faculty-instructed communications laboratory. Educators should consider adopting the use of more self-directed communication activities. They appear to be as effective and may also facilitate the development of life-long learning skills.

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REFERENCES


