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Experiences in Teaching and Learning

Comparison of a medication adherence simulation in professional pharmacy students versus undergraduate students



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ABSTRACT

Background and purpose: Previous research at colleges and schools of pharmacy showed that simulation learning is an effective method to teach pharmacy students about the issues patients face when prescribed complicated medication regimens. The purpose of this analysis was to compare reported medication adherence rates, perceived barriers, and methods used to increase adherence between undergraduate students and pharmacy students based on a medication-taking simulation course activity.

Educational activity and setting: In spring semesters 2014 and 2015, students in both a pharmacy course and an undergraduate seminar course participated in a short simulation involving a complicated medication regimen. Within one week of participating in the simulation activity, the students answered survey questions about the assignment through an online course sharing platform.

Findings: Almost all students enrolled in the courses (237/246 pharmacy students and 34/36 undergraduate students) completed the assignment (> 96% response rate). A large percentage of each group reported some non-adherence; 95% (225/237) of first-year pharmacy students and 82% (28/34) of undergraduate students. The top two barriers reported were 1) simply forgetting and 2) difficulty following the food- and/or alcohol-related restrictions associated with some of the simulated medications. The top two methods used to increase adherence were phone/electronic reminders and paper/spreadsheet reminders.

Discussion: A limitation to this study was the small sample size of undergraduate students. Even though the response rate was over 96%, the course was a small seminar-type course. Although it might be expected that pharmacy students would be more adherent since they may have had experience with non-adherence issues while working in a pharmacy, opposite results were found. Since the students were relatively young, most had not personally dealt with a complicated medication regimen.

Summary: Pharmacy students reported lower adherence to a complicated medication regimen than undergraduate students. The most common reasons for non-adherence and most common methods used to increase adherence were similar between the two cohorts. The use of electronic reminders was common for both groups of students, and should be included in discussions about methods to improve adherence rates.

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Background and purpose

Simulated medication adherence exercises are one tool that may be used to increase students' awareness of the difficulties with medication adherence that their patients may encounter. There have been previous articles relating to simulation learning in pharmacy schools on the topic of medication adherence.^{1–4} Darbishire et al.¹ tested a simulation that involved pharmacy students using an automated medication dispenser and then counseling on the use of the dispenser. After this simulation exercise, over 90% 'agreed' or 'strongly agreed' that they were more empathetic toward patients with multiple medications. Divine and Cain² used a simulation medication adherence exercise in a geriatric pharmacy elective course with the aim of increasing awareness of adherence issues for older adults who take multiple medications. Open-ended comments from students indicated that the common 'take away' points from the exercise were enhanced empathy and better understanding of the difficulty of adherence to complex regimens. Ulbrich et al.³ collected data from pharmacy students before and after a medication adherence simulation assignment to compare their anticipated difficulty (pretest) to actual difficulty (posttest) with adherence and changes in empathy toward patients. As expected, adhering to the complex medication regimen was more difficult than students had anticipated. Eighty-nine percent of students "agreed" or "strongly agreed" the project was valuable in developing empathy towards patients taking complex medication regimens. Chen et al.⁴ had students participate in a Patient Empathy Modeling (PEM) simulation. Students kept journals for the time when they acted as patients with multiple chronic diseases who were coping with economic, cultural, or communication barriers to receiving healthcare. Students noted a greater appreciation of the difficulties with adherence, increased empathy for the underserved, and improved ability to apply the knowledge gained from the exercise. These articles concluded that simulation learning is an effective method to teach pharmacy students about the issues patients face when taking complicated drug regimens. Empathy is a main component of the learning objectives associated with these studies because health care providers need to better understand the difficulties patients face on a day-to-day basis to provide appropriate care.

This study introduces an unstudied population, undergraduate college students, to explore trends in non-adherence in both pharmacy students and undergraduate students. Since pharmacy students are more likely to have been exposed to adherence issues, through their work or coursework, this may lead to different behaviors related to the simulated medication exercise compared with a more general population, represented here by a group of similarly aged college students from a variety of majors. The objective of this study was to compare reported medication adherence rates, perceived barriers, and methods used to increase adherence between undergraduate and pharmacy students based on a complicated medication-taking simulation course activity.

Educational activity and setting

This simulation study was conducted in the spring 2014 and spring 2015 semesters for both first-year pharmacy students enrolled in a required *Introduction to Patient Care* course and undergraduate students enrolled in an undergraduate seminar course titled *Caring for the Elderly*, which are taught by the same professor. Although the undergraduate course may have attracted students interested in healthcare issues, they had a variety of majors, including: economics, public relations, government, psychology, business, and education. Students were instructed to take eight simulated medications for five days and answer questions about their medication-taking behavior. [Appendix A](#) contains the directions for the simulation activity, the survey questions, and a list of 'medications' in the regimen. Students were given 'participation' points for completing the survey, but their responses were not graded. Class discussions about adherence issues were conducted after students completed the simulation and submitted their survey responses. After receiving de-identified survey results from the course professor, the responses from the undergraduate and pharmacy students were collated, compared, and summarized. The Office of Research Support (ORS) at the university deemed that the research was Institutional Review Board exempt (e-mail dated August 2, 2016). Data were collated and analyzed using Microsoft Excel® 2010.

Findings

The number of pharmacy students completing the surveys was 237 of the 246 students enrolled (response rate = 96.3%), and the number of undergraduate students was 34 of the 36 students enrolled (response rate = 94.4%). The percent who reported non-adherence ('Did you miss any doses?') was 94.9% (225/237) in first-year pharmacy students and 82.3% (28/34) in undergraduate students. [Table 1](#) summarizes the reasons given for non-adherence. The top two reasons for both groups were 1) simply forgetting and

Table 1
Reasons for non-adherence for those that reported being non-adherent.

Reason	P1 Respondents, No (%) N = 225 non-adherent	UG Respondents, No (%) N = 28 non-adherent
Just forgot	80 (35.6)	10 (35.7)
Food/alcohol related	61 (27.1)	11 (39.3)
Not with them	35 (15.6)	3 (10.7)
Bedtime related	19 (8.4)	2 (7.1)
Conscious choice not to adhere	18 (8.0)	1 (3.6)
Confused by appearance	12 (5.3)	1 (3.6)

P1 = first-year pharmacy students and UG = undergraduate students.

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