Available online at www.sciencedirect.com

ScienceDirect

Currents in Pharmacy Teaching and Learning 8 (2016) 640–645

Currents in Pharmacy Teaching & Learning

http://www.pharmacyteaching.com

Research Article

Impact of team-based learning on perceived and actual retention of over-the-counter pharmacotherapy

Jennifer A. Wilson, PharmD, BCACP*, Rashi C. Waghel, PharmD, BCACP, Nicole R. Free, PharmD Candidate, Alaina Borries, PharmD, BCACP[1]

Wingate University School of Pharmacy, Wingate, NC

Abstract

Background: Team-based learning is becoming more common in pharmacy education. The objective of the study is to evaluate the impact of the transition from traditional didactic lecture to team-based learning (TBL) in an over-the-counter (OTC) pharmacotherapy course regarding long- and short-term retention.

Methods: A questionnaire was distributed to students enrolled in an OTC pharmacotherapy course during fall 2012 (traditional didactic lecture) and fall 2013 (TBL). The questionnaire was designed to assess student perceptions of retention and preparedness for advanced pharmacy practice experience (APPE) rotations, as well as measure long-term retention through a quiz. Short-term retention was evaluated by comparing performance on course exams between the two cohorts.

Results: Email requests were sent to 189 students (87 from the traditional cohort and 102 from the TBL cohort). The usable response rate, after exclusion of incomplete questionnaires, was 41%. Though not statistically significant, student perceptions favored TBL over traditional didactic lecture. No statistical differences were noted between cohorts for long-term retention. Mean exam scores from the traditional cohort ($n = 95$) were compared with those from the TBL cohort ($n = 102$), showing that the TBL cohort performed significantly better on all three course exams ($p < 0.001$).

Conclusion: While student perceptions and long-term retention did not differ significantly between cohorts, short-term retention through exam performance favored TBL over traditional didactic lecture. This result is promising, showing some benefits to teaching OTC pharmacotherapy in a team-based learning environment. A study involving larger cohorts may be able to detect a greater number of significant results.

Keywords: Nonprescription medication; Self-care; Pharmacy education; Team-based learning

Introduction/Background

Self-care is a required element of the didactic pharmacy curriculum as stated in the 2016 Accreditation Council for Pharmacy Education (ACPE) Standards ("Standards 2016").[1] These Standards state that students should be able to assess and triage patients, and if appropriate, provide recommendations and counseling regarding self-care. In pharmacy education, students must be able to apply what is learned in the classroom to pharmacy practice. Increasingly, different methods aimed at helping students apply information are being incorporated into pharmacy education. One method gaining popularity is team-based learning (TBL). This method emphasizes active, self-directed learning

* Corresponding author: Jennifer A. Wilson, PharmD, BCACP, Wingate University School of Pharmacy, 515 North Main Street, Wingate, NC 28174.

E-mail: j.wilson@wingate.edu

[1]Current position and affiliation: Care Team Clinical Ambulatory Care Pharmacist at Carolinas HealthCare System in Charlotte, NC.

http://dx.doi.org/10.1016/j.cptl.2016.06.008

1877-1297/

instead of lecture-based teaching. Nearly one-third of US schools and colleges of pharmacy have already successfully initiated the TBL approach to education in some format.[2]

TBL requires students to prepare in advance for upcoming classes to maximize the learning experience. The outside preparation aspect is similar to a "flipped classroom" approach, where students are also asked to do some type of preparation activity before coming to class (e.g., watch a video and read a book chapter or article).[3] In TBL, students are held accountable for outside preparation through the use of individual and team readiness assurance processes (RAP), or readiness assurance tests (RAT).[3] For the purposes of this article, RAP will be used synonymously with RAT.

In TBL courses, students are grouped into semester-long teams for a majority of class activities. This style of learning is intended to better prepare students for working in a collaborative team after graduation,[2] and has been shown to improve student engagement, communication, team building, and knowledge retention.[4] All of these skills repeatedly prove to be valuable assets for pharmacists involved in counseling patients on OTC products and self-care.[4]

TBL has been discussed within pharmacy education literature in relation to a variety of courses. Haber and Boomershine[5] noted that structuring a new elective course using TBL resulted in overall favorable responses on course evaluations. Frame et al.[6] noted that when students started with TBL in their first semester of pharmacy school, there was preference for this style of learning compared to non-TBL formats.[6] However, Elmore et al.[7] noted that the transition to an adapted TBL structure in a self-care course negatively impacted aspects of course evaluations.

In addition to overall perceptions, specific aspects of TBL have also been studied including perceived impact on communication skills and working as a team, as well as impact on exam performance and overall course grades. Several studies using TBL have shown students perceive improvements with regards to communication and team building skills.[7–9] There have been mixed findings related to exam performance when comparing TBL to other course instruction. Persky and Pollack[8] noted improved performance on foundational and application assessment questions after incorporating TBL into a physiology course. Farland et al.[10] reported no significant differences in mean course exam scores after incorporating TBL into a therapeutics course. Orr et al.[9] when examining TBL in a self-care course, found that some exam scores were significantly improved in the TBL cohort, whereas others were not statistically different, and overall course grades did not show a significant difference. In another analysis of TBL in a pharmacotherapeutics course, aggregate course grades were similar between TBL and non-TBL groups over multiple years.[11] However, Zingone et al.[12] showed higher overall grades with an ambulatory care elective taught using TBL versus another ambulatory care elective taught using mixed active learning methods. One study looked at longer term retention, by administering a post-exam five months after completion of a therapeutics course taught using didactic lecture and TBL to determine if there was a difference in retention between the two teaching methods. The authors found mixed results with regards to retention. They noted that students started their Advanced Pharmacy Practice Experiences (APPEs) during the five-month interim period, which may have impacted the assessment performance.[10]

Integration of TBL into a self-care course

Wingate University School of Pharmacy implemented TBL in the fall of 2013 in the self-care/OTC pharmacotherapy course. The course was originally taught using a traditional didactic format. The purpose of the transition was to enhance the learning experience for the students through the incorporation of more active learning strategies and team-based activities. The ultimate goal was to improve student engagement, communication, team building, and knowledge retention related to OTC pharmacotherapy.

Prior to fall 2013, the OTC pharmacotherapy course was a two credit hour semester-long course taught in the second year in a traditional didactic lecture format. The class met for 50 minutes twice weekly. Students received suggested (but not required) pre-class reading assignments, primarily from the course textbook *Handbook of Nonprescription Drugs*.[13] Some active learning was included (e.g., student pharmacist-patient role play, case vignettes during lectures, and SCHOLAR-MAC activities). Students were also asked to do occasional homework assignments and self-study quizzes. Graded assignments included a group project (product or device demonstration video with patient handout), two exams, and a final cumulative exam.

Beginning in fall 2013, the OTC pharmacotherapy course was transitioned to incorporate TBL. The course remained a two credit hour semester-long course taught in the second year. An additional 50 minutes was added for discussion and activities, such that the class met for 75 minutes twice weekly. Students were given required pre-class reading assignments (e.g., textbook readings from the *Handbook of Nonprescription* Drugs,[13] *The Practitioner's Quick Reference to Nonprescription* Drugs, and[14] review articles).

On 12 occasions at the beginning of class, students were given a RAP, both individual (iRAP) and team (tRAP) to hold students accountable for pre-class required readings. The iRAPs were done online using the course learning management system. The tRAPs were done using Epstein's Immediate Feedback Assessment Technique (IF-AT) forms.[15] IF-AT forms are multiple-choice scratch-offs, which immediately reveal whether or not the answer is correct. If students do not get the right answer on the first try, they are able to scratch off additional answers for partial credit.