Research

Implementation and evaluation of a student-led, online, longitudinal outpatient case elective

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Abstract

Background: Case-based learning (CBL) is one method used in schools and colleges of pharmacy to apply evidence-based medicine and clinical practice guidelines to individual patient care.
Purpose: To describe the implementation and evaluation of a student-led, longitudinal outpatient, case-based learning elective using a web-based communication tool.
Methods: Students from second through fifth (P2–P5) years in the "zero-six" PharmD curriculum assisted faculty members in the development of longitudinal patient cases. P5 PharmD students served as pharmacists to either communication arts or P1 PharmD students, who served as patients. Faculty members assessed communication strategies, accuracy of therapeutic recommendations, and the development of a patient chart.
Results/Discussion: At the end of the 10-week quarter, students reported greater confidence in understanding a variety of therapeutic topics, including diabetes, hypertension, and hyperlipidemia. Students reported that they were better prepared for patient counseling as well.
Conclusions: Involvement in the longitudinal outpatient case course improved student preparedness and confidence of clinical knowledge. Incorporation of longitudinal CBL elsewhere in the core pharmacy curriculum could be considered and may be beneficial for student learning.
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Introduction

It is well established that educators need to utilize teaching methods that encourage students to integrate pharmacy practice concepts with basic science foundations, communication opportunities, and problem-solving skills.[1,2] Case-based learning (CBL) allows students to apply evidence-based medicine/ guidelines to individual patient care, and is commonly used in both nursing and medicine education.[2–4] Furthermore, CBL prepares students for the rapidly changing health care environment by going beyond the passive acquisition of knowledge in the classroom and encouraging application.[5]

Some educators have modified CBL to provide a more longitudinal case approach to allow the students to follow a patient over a longer period of time.[6–9] Several of these longitudinal techniques resulted in improved learning outcomes as measured on standard assessment tools[8,9] or student assessed learning.[6,7] Additional attention has been given to how online resources can complement traditional course activities as online resources have been used to supplement or replace in-class case-based discussion in other health care disciplines, including both medicine and nursing.[10–15]

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The Accreditation Council for Pharmacy Education (ACPE) curricular guideline 11.2 emphasizes the need for critical thinking and problem-solving skills to be addressed through the application of computer technologies, case studies, and simulations, particularly those involving actual or simulated patients, pharmacists, and other health care professionals.[16] Additionally, the American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) outcomes emphasize that pharmaceutical care goes beyond the role of simple dispensing. These outcomes specifically state that students should be equipped to "formulate a patient-centered pharmaceutical care plan in collaboration with other health care professionals, patients, and/or their caregivers."[17]

At the Ohio Northern University (ONU) College of Pharmacy cases are taught in a modular course sequence during the fourth and fifth years of a "zero-six" pharmacy curriculum.[18] In an effort to meet both curricular guidelines and outcomes, as well as adapt cases to the changing climate of pharmacy practice where non-dispensing, clinical services are becoming more mainstream, an elective course was developed to introduce longitudinal outpatient cases. This article describes the implementation and evaluation of a student-led, longitudinal outpatient case elective using a web-based communication tool.

Course description

Students at the ONU College of Pharmacy complete their therapeutic module coursework by the spring of their fifth professional (P5) year. During this quarter, students take part in a capstone experience course and have the opportunity to take elective courses on specialty areas of therapeutics. The Ecivon elective course was developed, along with a corresponding website for patient/physician/pharmacist communication (www.ecivon.com) to reflect the changing nature of outpatient pharmacy practice from a product-centered to a patient-centered approach, and the increased emphasis on electronic medical records and health information technology. Specific course goals and objectives for the Ecivon elective course are listed in Table 1.

Figure 1 presents a schematic that describes the dynamics of the course. In preparation for the spring quarter elective, four independent study students (one each P2, P3, P4, and P5) were partnered with one of four faculty members to form an "Ecivon Project Group" (EPG). Four EPGs (total of 16 independent study students) worked in fall and winter quarters to develop patient cases that focused on common ambulatory care topics such as asthma, anticoagulation, diabetes, and hypertension. Basic science, specifically pharmacology, including drug interactions and pharmacogenetics, as well as clinical therapeutics were incorporated throughout the cases. The elective course was also paired with an ONU Communication Studies course, Health Communication,

largely consisting of underclassmen in a variety of majors who served as mock patients. As the second course goal was to develop students as patient educators (Table 1), the communication arts students were largely naïve to medical terminology and would be able to critically evaluate communication techniques of the P5 students. Communication Arts students enrolled in the courses were either pharmacy students early enough in the curriculum to have little medical knowledge (P1; freshman), or were non-pharmacy majors with little health care background, as this is a course offered outside the College of Pharmacy. When sufficient numbers of communication arts students were not available, P1 students, also medical-terminology naïve, were enrolled in an independent study course to help evaluate patient communication techniques.

Students participated in the course through one of three roles: patient, physician, and pharmacist. P5 students enrolled in the elective course played the role of the pharmacist, EPG students served as physicians to answer questions and evaluate clinical recommendations made by the P5 students, and communication arts and P1 students served as patients (Fig. 1). The initial case information (patient history, initial laboratory values, and a chief complaint) was given to the pharmacists on the first day of the course. The pharmacists prepared a SOAP (subjective, objective, assessment, and plan) note of their proposed interventions and created a patient chart for use during the course (electronic or hard-copy) that was later reviewed every two weeks by the faculty. At regular intervals, approximately two to three times each week, patients would upload to the website pre-determined objective values related to their disease states (e.g., weight, blood glucose, and blood pressure) as well as questions for the pharmacists. Scripted questions ranged from over-the-counter (OTC) medication recommendations to complicated disease-state therapy questions. When it became necessary for the pharmacist to contact the physician to help answer a question or to make a clinical recommendation, the pharmacists would use the website communication tool to initiate contact with the physician. The physician was responsible for prompt responses to the pharmacist to approve or modify treatment recommendations based upon the scripted case. All communication took place via the website communication tool; there was no face-to-face or telephonic communication. We hypothesized that a student-led longitudinal outpatient case course would better prepare students for patient counseling by improving their confidence in patient communication skills and of chronic disease states commonly managed in the outpatient setting.

Implementation and evaluation

Six total faculty members were involved in course delivery. One pharmacy faculty member served as the course coordinator and one communication arts faculty member oversaw the