

Research

Influences of experiential year and web-based learning module on student pharmacists' confidence and competence in pain management[☆]

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Abstract

Objectives: Compare the confidence and competence in pain management skills between student pharmacists at the end of their didactic and experiential years. Examine the potential influence of general medicine faculty preceptors, and a web-based experiential learning module on students' confidence and competence skills.

Methods: Two cohorts of students were surveyed at the end of the third (P3) and fourth (P4) professional years to assess their self-reported confidence and competence on four pain management skills. During the second year of the study, students were asked to complete a web-based learning module aimed at improving competency in pain management. Confidence and competence measures were compared for each cohort with a Fisher's exact test.

Results: Students were more confident than competent on all four pain management skills evaluated, and overall competence between both class years was suboptimal. Competence in pain management declined among P4 students who did not complete the learning module.

Conclusion: Pharmacy students overestimate their pain management skills, particularly prior to their final experiential year. During the experiential year, pain management skills decline without an educational intervention, but having students complete learning modules can improve their competence.

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Introduction

Doctor of Pharmacy graduates are expected to demonstrate lifelong learning and practice competence through annual continuing education and professional development requirements.^{1,2} Prior to graduation, colleges of pharmacy serve a vital role in providing students with the foundational knowledge and skills necessary to practice as a pharmacist. As student pharmacists' matriculate through the PharmD curriculum, their academic success is measured by the ability to retain these core skills through classroom and clinical assessment methods.

One may assume that continuous assessment strategies would be expected to refine and strengthen these skills; however, several studies have demonstrated that pharmacy students' knowledge and skill retention decline over time.^{3,4} Eley et al.³ found an 82% reduction in the number of students who were competent in performing a drug compounding exercise only one year after completing a compounding course. The authors concluded that this decrease in competence was largely due to the students' lack of exposure to compounding in the year following the completion of their course. The results of this study further illustrate a need for continuous practice as a means of maintaining competency, particularly with regard to specialized pharmacy skills. Additionally, Valdez et al.⁴ showed a decline in student pharmacists' knowledge retention over time, and a discrepancy between their confidence and competence with hypertension and dyslipidemia management. Regardless of the high levels of perceived confidence, the study reported a decline in knowledge retention across a variety of disciplines over a four-month period.

Despite the common prevalence of acute and chronic pain in the United States, effective management can be a challenge for health care providers due to the complex underlying etiology of pain syndromes. Chronic persistent pain leads to almost 40 million physician visits every year, which places a large strain on the health care system, at a cost of approximately \$100 billion annually.⁵ Patients with unrelieved pain can also suffer from more frequent and extended hospital stays, recurrent clinic visits, and overall poor quality of life.⁶ Accordingly, there is an apparent need to better evaluate and improve the practice of pain management. Although several effective methods for the management of pain exist, successful treatment outcomes can be compromised by multiple factors, including disparities between health care providers' pain management knowledge and skills.⁶

The objectives of this study were (1) to perform a baseline comparison of third professional year (P3) student pharmacists vs. their fourth professional year (P4) student pharmacists counterparts in their confidence and competence of selected pain management skills and (2) to assess the influence of a general medicine faculty or adjunct preceptor and the impact of a web-based learning module on P4 students' perceived confidence and pain management skills competence.

Methods

This was a cross-sectional educational research study that was reviewed and approved by the Northeastern University Institutional Review Board. At the school of Pharmacy, pain management curricular content is primarily delivered in the pharmacology/medicinal chemistry first professional year (P1) and comprehensive disease management (P3 year) courses. The comprehensive disease management course at our institution is a culmination of pathophysiology, therapeutics, and self-care therapeutics

courses. Advanced pharmacy practice experience (APPE) rotations occur during the P4 year of the program and are devoid of any formal, system-wide competency lectures. All students are required to complete four six-week experiences in the areas of general medicine, ambulatory care, community practice, and health-system pharmacy, as well as two elective rotations.

This study was completed in two phases over the course of two years (2010–2011). Student pharmacists were asked to complete a two-part questionnaire to assess their confidence and competence regarding effective pain management practices at specific intervals over this time period. Part one of the questionnaire assessed students' self-reported comfort level with managing four core pain skills (managing chronic continuous pain, equianalgesic dose conversion, breakthrough pain, and opioid side effects) by rating their degree of confidence using a Likert scale (1 = uncomfortable, 2 = somewhat uncomfortable, 3 = somewhat comfortable, and 4 = comfortable). Part two of the questionnaire included four case vignette exercises that were previously tested for validity and reliability and were used to objectively assess students' knowledge (competence) with the same pain skills.⁷ The case vignettes and questions assessing pain management skill competencies were previously validated, and each skill was assessed by one question. The student's self-reported comfort level for each skill was then compared to the corresponding exercise vignette. The administration of questionnaires for both student groups was timed to coincide with the conclusion of a pain management therapeutics lecture for P3 students and the completion of APPE clinical rotations for the P4 students. The first phase of the study was initiated in the spring of 2010, when students in the P3 (Class of 2011) and P4 (Class of 2010) were surveyed. The second phase took place in the spring of 2011, when students in the Class of 2011 were re-surveyed at the end of their P4 year. These P4 students were given the opportunity to complete a web-based self-study learning module on pain management. A demographic question asking students to indicate whether their general medicine preceptor was a university employed faculty member or an adjunct preceptor was added to the P4 Class of 2011 survey.

The web-based learning module content was developed by a group of general medicine faculty with expertise in pain management, included the World Health Organization guidelines and dosing protocols from the Dana Farber Cancer Institute and Brigham and Women's Hospital, and was focused on the questionnaire's four core pain management skills. The learning module was formatted as a didactic lecture with associated, case-based assessments addressing each of the four pain management skills outlined above. Students were able to access the 12-minute flash-based program via an online learning management system supported by the university.

The anonymous questionnaires that were used in both phases of the study were distributed to each group during

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