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Short communication

Design of a problem-based learning pain and palliative care elective course

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Abstract

Objective: To implement and evaluate a problem-based learning (PBL) pain and palliative care elective course to develop students' pain and symptom management pharmacotherapy knowledge, clinical reasoning process, and self-directed learning skills.

Methods: Each week students received a patient case to independently develop an assessment and plan for each pain and symptom management problem. During class the students discussed their findings within small groups in preparation for a large-group discussion with the instructor. Students' course grades were based on weekly pre-class case preparation, individual case studies, and self-reflection questions. To assess knowledge gained over the semester a free-response pre- and post-course test was given.

Results: Twenty-five students enrolled in this course. A *t*-test comparison of the pre- and post-tests yielded a significant difference between the pre- and post-test scores ($p < 0.001$), with the mean score for the tests increasing from 9.6 (out of 20 points) on the pre-test to 14.1 on the post-test. Pearson's correlation coefficient between the pre- and post-test was 0.45, indicating increased scores were not a result of improvement only among the strong students. The normalized gain $<g>$ was 0.43. The average score for each individual case study was slightly more than 80%. Four themes were noted in the students' self-reflections including patient/family goals of care, individualization of patient care and contrast to curative treatment, improved comfort with "gray therapeutic areas," and advantages and disadvantages of problem-based learning.

Conclusions: Students demonstrated improved pain and symptom management pharmacotherapy knowledge, clinical reasoning process, and self-directed learning skills after course completion. The skills developed by students will benefit them in future clinical practice. Additional studies are needed to assess the long-term impact of the skills developed in this course.

Keywords: Problem-based learning; Pain; Palliative care; Pharmacy; Elective

Introduction/background

There is increased awareness in the need to improve pain and palliative care content within the current Doctor of Pharmacy curriculum as evidenced by its inclusion in Appendix B of the Accreditation Council for Pharmaceutical Education (ACPE) Standards 2.0.[1] Pharmacists interact with pain and palliative care patients and caregivers across care settings such as community pharmacies, hospitals, ambulatory care clinics, and long-term care. They frequently have the opportunity to participate in the care of patients requiring pain and symptom management. However, pharmacists report a lack of confidence and inadequate

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therapeutics knowledge to effectively contribute to community palliative care services and do not want to become a barrier to quality care.[2,3] A survey of Pharmacy Practice Chairs in 2001 revealed that the didactic curriculum in pharmacy schools averaged 3.89 ± 1.91 lecture hours for end-of-life care (EOLC).[4]

Preclinical years are an ideal time to introduce EOLC concepts to students as they begin to form their professional identities. The knowledge, skills, and attitudes they cultivate at this stage of their training will positively or negatively impact their future EOLC perceptions.[5] Similar foundations in basic sciences, interpersonal skills, empathy, technical competence, and inter-workings of the health care system are needed to provide quality care in EOLC as well as other areas of medicine. Trainees are also introduced to EOLC's hidden curriculum. They are challenged to consider their visions and expectations, medicine's emphasis on curing disease versus symptom palliation for patients with incurable conditions, and how technical competency is more valued than relational competency.

The Pain and Palliative Care Strategic Planning Summit recommendations advocate for research and innovation in pain and palliative care teaching methods and curricular design including case study development and pedagogical models that encourage interprofessional pain and palliative care learning.[6] Problem-based learning fits these criteria. The ACPE Standards 2.0 Guideline 11 discusses the need for students to develop critical thinking and problem-solving skills and encourage use of active learning methods, such as case studies with the goal to develop self-directed, lifelong learners.[1] This guideline implies that lecture is not optimal to develop critical thinking skills.

Problem-based learning (PBL) is an active learning strategy described within the medical, pharmacy, nursing, and science education literature that appears to be effective for developing case-based reasoning (CBR) in students who will translate it into their future professional practice. The CBR process includes retrieving the most similar case or cases from a clinician's memory, reusing information and knowledge from similar cases, determining a solution, and retaining the experience and outcome for future problem solving, as well as the ability to modify a solution to fit new cases. Experience gained from successfully solved problems is retained for future situations, while the reason for failure is identified and avoided in the future.[7] This process is beneficial in the development of practice expertise by combining textbook knowledge with experiences and can be applied to therapeutics and diagnostics.

Skills developed using PBL in preclinical years translate into clinical training. PBL develops higher level learning skills, such as clinical reasoning, self-directed learning, and independent and critical thinking skills.[8] Students learn to determine whether additional knowledge or skills are needed to provide better patient care and the process to most effectively and efficiently obtain information from the available resources. Development of self-directed learning skills is emphasized to provide the foundation for trainees to modify and expand their knowledge and skills to keep up with changes in practice and evidence-based medicine. Students are encouraged to challenge each others' observations, thoughts, and defend their viewpoints during small-group sessions.

PBL fits with the multidimensional and longitudinal nature of EOLC.[5] A patient case may evolve to reflect changing goals of care as a patient transitions from curative and disease-modifying treatment to palliation and may include management of physical symptoms, psychosocial issues, as well as spiritual and ethical concerns. Small-group discussions can emphasize the clinical, scientific, and personal aspects of hospice and palliative care. PBL is also able to stimulate challenges and different goals of care for acute, chronic, and cancer pain management within patient cases.[9] PBL problems often have multiple potential answers and available resources to derive the solution that fits well with pain and symptom management pharmacotherapy. Descriptive examples utilizing PBL for pain and palliative care education include pharmacy student participation within an interprofessional palliative care elective course.[9–11] However, there is a lack of available evidence that describes the use of PBL for teaching pain and palliative care pharmacotherapy to pharmacy students. A PBL pain and palliative care elective course offers greater material depth and breadth than normally possible within the required didactic curriculum and strives to develop students' clinical reasoning process and self-directed learning skills.

Rationale and objectives

The pain and palliative care elective course was first offered to second- (P2) and third-year (P3) pharmacy students during the fall 2010 semester. The two credit elective met weekly for 1 hour and 50 minutes. One clinical faculty member who specializes in pain and palliative care coordinated the class and taught drug information and pharmacotherapy topics for 13 of the 15 weeks. The remaining two classes on ethics and palliative sedation were team taught with another pharmacy faculty member who teaches law and ethics. Course materials including the syllabus, supplemental readings, in-class case studies, and assignments were posted on the St. John Fisher College (SJFC) web-based course delivery system. The course textbook was the *American Academy of Hospice and Palliative Medicine (AAHPM) Primer of Palliative Care 5th Edition* (2010).

The problem-based learning (PBL) method utilized for the pain and palliative care elective class was a modified case-based method as defined by Barrow's problem-based learning methods taxonomy.[12] The modified case-based method differs from traditional PBL in that there is less free inquiry. Fewer opportunities for clinical reasoning process and self-directed learning skill development exist