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Research Article

Evaluation of focused teaching compared to usual teaching on Advanced Pharmacy Practice Experiences

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Abstract

Objective: To determine the impact of focused teaching (FT) methods during an Advanced Pharmacy Practice Experience (APPE) on student pharmacist knowledge compared to usual teaching (UT).
Methods: Student pharmacists completing a five-week Ambulatory Care or Acute Care/General Medicine APPE from January 2011 to December 2012 were randomized to receive either UT or FT. Each student pharmacist completed a pre-rotation and post-rotation assessment. The absolute change in assessment scores between the groups was evaluated.
Results: A total of 34 and 44 student pharmacists were included in the UT and FT arms, respectively. Overall, the mean pre-rotation assessment score was 42/75 (56%) and mean post-rotation assessment score of 46/75 (61%) ($p \leq 0.001$). The absolute change in assessment score was 4.03 ± 6.30 and 4.84 ± 6.65 ($p = 0.586$) for the UT and FT groups, respectively.
Conclusion: During a five-week APPE, FT had a similar influence on student pharmacist knowledge as UT when evaluating pre- and post-rotations assessments.

Keywords: Advanced Pharmacy Practice Experience (APPE); Rotation; Assessment; Focused teaching

Introduction

The Accreditation Council for Pharmacy Education (ACPE) requires Advanced Pharmacy Practice Experiences (APPE) as a component of any Doctor of Pharmacy program.[1] Within the curriculum at St. Louis College of Pharmacy (STLCOP), student pharmacists must complete eight five-week APPEs to fulfill this requirement. A common method for estimating student pharmacist knowledge, learning, and experience gained during an APPE is to administer a rotation assessment before the start of and after the completion of the rotation.[2,3] Significant improvement in student pharmacist scores on the assessments from baseline may provide the preceptor with objective evidence that student pharmacist learning occurred. A search of the Education Resources Information Center and the MEDLINE database using search terms such as experiential, rotation, quiz, and assessment revealed that some medical schools may use a similar assessment method for clerkship training as well.[4]

In a pilot program at the previous site of one of the investigators of the current study, a pre- and post-assessment, consisting of questions related to major diseases/

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conditions that student pharmacists are expected to encounter over the course of the APPE, was administered to 40 students on a five-week Acute Care/General Medicine APPE. Mean scores on the pre- and post-assessments were 58% and 71%, respectively, with an absolute difference of 13% (95% confidence interval, 9–17% ($p < 0.001$)). Although this change in score may indicate student pharmacist learning, there were several limitations to consider. One limitation was the fact that the assessment was written by one person, the faculty investigator who precepted the student pharmacists on the APPE. This is significant because the faculty investigator may subconsciously teach toward the assessment items and the faculty investigator was not necessarily a content expert in all disease states assessed on the quiz. Another limitation was the lack of structure in the design of the assessment; that is, there was no systematic distribution of assessment items across different Bloom's taxonomy levels, practitioner roles, and it was only written for an Acute Care/General Medicine experience.[5] These limitations may decrease the validity and generalizability of the findings. Student pharmacists on APPEs are exposed to learning opportunities on a daily basis. Some of these activities that can be classified as usual teaching (UT) include: participating in patient care, either on rounds or in a clinic setting; providing education to patients or health care providers; and formal or informal topic discussions. Additional learning opportunities happen throughout the APPE as well, but may not happen on a daily basis. When a student pharmacist begins an APPE with a preceptor, the preceptor often is unaware of the extent of exposure that a student pharmacist has had to a particular topic or area of pharmacy. Many times, the first couple of days are filled with discussions and/or assessments of the students' baseline knowledge.

A potential method to facilitate the orientation process during APPEs could be to identify skills and knowledge not previously experienced by the student pharmacist and then tailor the APPE to fill this void. A validated pre-assessment could be used either prior to or at the beginning of the APPE to identify areas for improvement for a specific student. The preceptor could then focus rotational experiences to facilitate student pharmacist learning in specific content areas in need of most improvement, focused teaching (FT). Ideally, this would be in addition to UT. Performance on the pre-rotation assessment could be reviewed at the start of the APPE with areas for improvement identified and addressed using various FT methods during the APPE. The objective of this study was to determine the impact of FT methods during a five-week APPE on student pharmacist performance as measured via the use of pre- and post-rotation assessments.

Methods

Oversight/development

This randomized controlled trial was performed at four clinical practice sites located within one health care institution over the course of three academic years. There were no changes to academic standards, as required by the College of Pharmacy, over the course of the three years. The study was approved by the Institutional Review Board prior to commencement and was conducted in accordance with the Declaration of Helsinki and current regulatory requirements.

The trial was designed by the study investigators and was supported by a grant from the St. Louis College of Pharmacy Faculty Research Incentive Fund. A psychometrician was consulted to assist with assessment development. The psychometrician provided input into the study design, but had no role in implementation, data collection/analysis, or manuscript development. The authors attest for the accuracy and completeness of data presented and the analyses of the data presented herein.

Study Population

Student pharmacists in the fourth professional year at STLCOP completing an Acute Care/General Medicine or Ambulatory Care APPE with one of the study investigators were eligible for inclusion. The Acute Care/General Medicine experiences were inpatient Internal or Family Medicine practices, while the Ambulatory Care experiences were in Internal or Family Medicine primary care practice settings. All four practices were associated with the same community teaching hospital. Student pharmacists were excluded if they had previously completed an APPE with any of the study investigators, regardless of the type of experience. All student pharmacists provided electronic informed consent prior to inclusion in the study.

Assessment development

Two assessments were developed for use in this study and have been discussed previously in detail.[6] The STLCOP curriculum, at the time of study development and implementation, was reviewed and fifteen patient-care problem areas were identified that are commonly experienced by APPE student pharmacists on an Ambulatory Care or Acute Care/General Medicine APPE. Ten multiple choice questions were written for each problem area. Questions were equally distributed with inpatient and outpatient emphasis and ranged from pathophysiology to clinical therapeutics. Each set of ten questions included two questions from each of the five roles of a clinical pharmacist practitioner: assessing disease states, evaluating current drug therapy, recommending new drug therapy, monitoring drug therapy, and educating patients and healthcare providers. These ten multiple choice questions for each problem area were distributed between Bloom's application and analysis levels at a ratio of 7:3.[5] Each question contained one correct answer and three incorrect distracters according to guidelines from Professional Examination Services.[7]

Ten questions for each of the patient-care problem areas resulted in a total of 150 questions. The 150 questions were