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Teaching and Learning Matters

Experience with the script concordance test to develop clinical reasoning skills in pharmacy students

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ABSTRACT

Background: The script concordance test (SCT) is used to assess clinical reasoning and was originally developed for medical learners. The Accreditation Council for Pharmacy Education (ACPE) endorses the need for pharmacy students to develop clinical reasoning skills, but there is little documentation of use of the SCT for pharmacy learners.
Educational activity: A script concordance test activity was designed for a diabetes and metabolic syndrome pharmacotherapy course. Twenty-five cases were created and evaluated by an expert panel of 20 practicing pharmacists. Ten cases were presented as a formative activity in class. The students, design team, teaching team, and expert panel evaluated the activity.
Critical analysis of the educational activity: The SCT was received positively from the students, design team, teaching team, and expert panel. The design team noted that case writing was different for this approach and that the inclusion of various perspectives from panelists was beneficial. Although the activity was formative in nature, the teaching team scored the students and this provided insight into areas where the students may struggle.
Summary: This report provides information on the formative use of the SCT in the classroom, as well as categories of items suitable for pharmacy. The SCT provides an approach to illustrate clinical reasoning and clinical decision making among content experts and can be used to stimulate clinical discussions among student learners and content experts. The SCT could help incorporate clinical reasoning skills in a pharmacy curriculum to meet ACPE standards.

Background

Clinical reasoning is a skill that practitioners in many health professions must develop. The Accreditation Council for Pharmacy Education (ACPE)[1] comments on the need for these skills in Standards 2016. Specifically, Key Element 25.7 states: “Evidence-based

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clinical reasoning skills, the ability to apply these skills across the patient's lifespan, and the retention of knowledge that underpins these skills, are regularly assessed throughout the curriculum."[1] Beyond the need to address ACPE standards, the clinical reasoning skill set was deemed important to teach to learners at an early stage of their education. The authors have found that students struggle with the fact that there may be sound rationales for multiple solutions to medication therapy problems. This concept can be especially difficult if students are first confronted with it during their advanced practice experiential education. Student feedback from the prior year of a diabetes and metabolic syndrome pharmacotherapy course included a desire for more casework. Student requests for more cases, along with the instructors' desires to incorporate clinical reasoning into the curriculum, led to the implementation of a script concordance test (SCT) activity in a second-year pharmacotherapy course.

The SCT follows a very specific structure.[2] First, a short clinical case is described followed by an initial plan. New information is then presented that might affect the initial plan. The cases are designed to include some clinical ambiguity and an expert panel is recruited to rate the influence the new information has on their approach to the case. After responses have been tabulated for the expert panel, the learner is presented with the same case, potential plan, and new information about the case. The learner rates the effect of the new information on the initial plan that was provided. The responses of the learners are then compared to those of the experts and the difference can be evaluated in a formative or summative manner.[2]

The SCT was originally developed in medicine to assess students' clinical reasoning ability and its use in this field is well-documented.[3] In the medical literature, SCT cases fall into categories, such as diagnosis, treatment, and investigation.[2] It has been argued that the SCT is particularly helpful to address students' skill in interpreting information when uncertainty exists.[4] Due to these attributes, the SCT was an ideal tool to introduce students to decision making in situations of clinical ambiguity, but needed to be adapted to fit a pharmacy course.

There are few documented uses of the SCT in pharmacy education. Khonputsa and colleagues[5] describe a pilot where the SCT helped to differentiate pharmacy student knowledge from that of practitioners in the care of patients with diabetes. The authors used the SCT as a summative assessment and found that clinical pharmacists, new graduates, and students obtained significantly different scores. However, the type of cases developed and students or instructional staff response is not reported.[5] Boulouffe et al.[6] reported on the use of the SCT to evaluate pharmacy students' response to emergency situations and used an expert panel of emergency room physicians.[6] They found students were satisfied with this evaluation technique and that the SCT had good reliability.[6] While these two examples demonstrate potential uses of the SCT in pharmacy, the aims of this work were to: 1) examine the use of the SCT early in the pharmacy curriculum, as part of a course; 2) adapt the SCT to pharmacy, including development of pharmacy-specific categories for cases; 3) examine the technique's utility in creating conversation around "gray areas"; and 4) evaluate the technique's usefulness in providing formative assessment of clinical reasoning abilities. To evaluate its use, responses from pharmacist experts, instructional team members and students are analyzed, along with student performance.

Educational activity

An SCT activity was created as a formative activity for a diabetes and metabolic syndrome pharmacotherapy course, during the second semester of the second year of professional school in a four-year college of pharmacy program. This is a required course with an enrollment of 170 students across two campuses. The classrooms on each campus are connected through technology, allowing students on both campuses to see and hear the presenter and interact and ask questions. Prior to the SCT session, nine two-hour diabetes class sessions were presented, which covered pathophysiology, pharmacology, clinical use of diabetes agents, application of guidelines, and drug literature evaluation. Approximately 90 min were allocated for this session, which was conducted before a section exam. The University of Minnesota institutional review board determined that this project did not require review.

To generate the SCT activity, a design team consulted several sources[2–7] and created 25 diabetes and metabolic syndrome cases. The amount of instructional time that would be needed for completion and discussion of each case was not known. As a result, the team chose to develop many cases, which also allowed for cases to be discarded if the expert panel noted specific problems. The design team was composed of three pharmacy practitioners in ambulatory care with teaching experience in both didactic and experiential pharmacy education. The cases were developed based on the practitioners' clinical experience and focused on common situations where clinical ambiguity was present. Additionally, the cases were developed to demonstrate course learning objectives. A categorization system for pharmacy specific questions was designed to describe the various skill sets required to approach each case. The design team found that the cases that were created fit into three categories. Table 1 outlines these categories, the types of items/questions within each category and an example item within each category. Each member of the design team reviewed all cases and then met together to refine the cases prior to distributing to the expert panel. The design team also rated the difficulty of the cases based upon the level of experience of potential respondents: 1-novice (first through third year professional pharmacy student), 2-advanced beginner (student completing advanced pharmacy practice experience), 3-competent (new pharmacy graduate), 4-proficient (pharmacy resident), and 5-expert (experienced pharmacist in practice).

Expert panel

Clinical ambulatory care pharmacists were recruited by the members of the design team to function as the expert panel. Criteria for inclusion included having at least two years of clinical experience in the ambulatory care pharmacy practice setting. Literature indicated that use of at least 15 experts is ideal and that more than 20 experts did not improve reliability of scores.[4,7] Given this information, 22 experts were recruited with an effort to identify pharmacists with different training backgrounds, who are currently practicing in many different locations. It was the design teams' expectation that not all would volunteer or carry through on