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Clinical reasoning in pre-licensure nursing students

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Abstract
The purpose of the study was to determine if collaborative activities were effective in improving clinical reasoning skills. Seventeen second-year nursing students in their second medical/surgical clinical rotation participated in the study. Results indicated that students' overall scores for clinical reasoning increased significantly with collaboration. Given the evidence that students can improve their reasoning skills when exposed to collaborative learning, nursing education should consider restructuring their programs to include such teaching strategies.

1. Introduction

New nurse graduates who are able to make the transition from student to professional nurse are said to be "practice ready" (Wolff, Pesut, & Regan, 2010). Romyn et al. (2009) asserted that the definition of practice readiness is having skill proficiency and competencies to be able to assume responsibilities of a professional nurse following graduation and passing the NCLEX. The practice readiness of new nursing graduates who are entering complex healthcare systems are the focus of discussion among nursing administrators and educators. A survey conducted by The Advisory Board Company revealed that 90% of hospital and nursing executives did not believe their new graduates were fully prepared to practice safely as nurses (Dyess & Sherman, 2009). Although nursing graduates have fulfilled the minimum legal and professional requirements for obtaining licensure, they may lack sufficient critical thinking and clinical reasoning skills, which are fundamentally necessary for providing patient care safely and competently (Romyn et al., 2009).

According to Benner, Sutphen, Leonard, and Day (2010), nursing education programs need to change "from an emphasis on critical thinking to an emphasis on clinical reasoning and multiple ways of thinking that include critical thinking" (p. 89). Fonteyn and Ritter (2000) defined clinical reasoning as "cognitive processes and strategies that nurses use to understand the significance of patient data, to identify and diagnose actual or potential patient problems, to make clinical decisions to assist in problem resolution, and to achieve positive patient outcomes" (p. 107). Literature indicates that fostering the development of clinical reasoning skills is essential to deliver safe and effective nursing care (Kuiper & Pesut, 2004; Kuiper, Pesut, & Kautz, 2009; Murphy, 2004). The challenge to nurse educators is to design learning strategies and experiences that can promote development of clinical reasoning skills in nursing students. The literature suggests that the use of active learning strategies, such as collaborative learning, may enhance students' critical thinking and clinical reasoning skills (Khosravani, Manoochehri, & Memarian, 2005). However, there is a dearth of empirical evidence to support the effectiveness of these strategies in enhancing student-learning outcomes.

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2. Clinical Reasoning in Pre-licensure Nursing Students

Though critical thinking and clinical reasoning have been used interchangeably at times in nursing, there is a difference. Critical thinking is a broad term that has been defined in the literature as the ability to use skillful thinking to analyze, assess, and apply information to make purposeful, logical judgments in and out of the clinical setting (Alfaro-Lefevre, 2011). In contrast, clinical reasoning is a specific term that is defined as the combination of theoretical knowledge and technical skills by using the nursing process to provide effective patient care (Alfaro-Lefevre, 2011; Paul & Elder, 2006). While critical thinking and clinical reasoning are not the same, nurses use both skills to make sound clinical judgments.

Clinical reasoning skills initially were incorporated in nursing education in the 1960s, with the introduction of the nursing process (Corcoran-Perry & Narayan, 2000). The nursing process is the framework for nursing practice that consists of assessing the patient, planning and implementing care based on identified patient needs, and then evaluating outcomes of that care (Corcoran-Perry & Narayan, 2000). Similarly, Pesut and Herman (1999) proposed, "clinical reasoning includes the activities of diagnosis, problem-solving, outcome specification, and independent thinking" (p. 8), all of which occur when nurses incorporate the nursing process in their daily practice.

Fonteyn and Ritter (2000) attested that nurses needed reasoning skills to be able to understand and determine patients' multifaceted health issues. Evidence has shown that some nursing students do not feel prepared to care for these patients (Heslop, McIntyre, & Ives, 2001). A study by Heslop et al. found that almost half of graduating nursing students perceived that they were not adequately prepared and more than half perceived they were just satisfactorily prepared with decision-making skills. Heslop et al. concluded that participants thought their clinical experiences were too limited and they lacked sufficient time to practice skills needed for practice.

Establishing effective teaching strategies to enhance nursing students' clinical reasoning skills is important in improving the quality of care. Studies have been conducted on strategies to develop and successfully measure clinical reasoning skills in nursing (Banning, 2008; Bland et al., 2009; Kautz, Kuiper, Knight-Brown, & Daneker, 2005; Murphy, 2004). Corcoran-Perry and Narayan (2000) discussed several instructional strategies for teaching clinical reasoning in nursing education. These strategies include analogy, iterative hypothesis testing, interactive model, thinking aloud, and reflection-about-action. According to Corcoran-Perry and Narayan (2000), "Analogies promote both creative and critical thinking, two processes central to clinical reasoning" (p. 250). Iterative hypothesis testing was found to enhance clinical reasoning because it encouraged questions, justified any data attained, and required data interpretation to describe the development of new information (Corcoran-Perry & Narayan, 2000). Interactive modeling is a process that encourages "deep learning" where the learner acquires knowledge and understanding as opposed to memorizing facts and principles (Corcoran-Perry & Narayan, 2000). The "thinking aloud" approach was useful in assisting nurses to develop their clinical reasoning skills, requiring them to verbalize their decision-making processes regarding the plan of care (Banning, 2008). Reflection-about-action is an approach that encourages nurses to consider previous clinical situations along with feelings they experienced, decisions they made, and actions they took to develop new and different types of knowledge (Corcoran-Perry & Narayan, 2000).

Murphy (2004) contended, "Clinical reasoning is expected to be a better measure of skills nurses must possess in the health care setting" (p.227). Challenges have been identified in measuring nursing students' clinical reasoning skills (Kuiper & Pesut, 2004; Kuiper et al., 2009). As a result, substantial work has been conducted to develop the Outcome Present State Test Model (OPT) to measure clinical reasoning effectively in the context of nursing practice (Kautz et al., 2009). Kuiper et al. (2009) stated "the OPT Model is a structure or blueprint that helps students organize the thinking involved in clinical reasoning" (p. 79). The OPT is considered a third generation of the nursing process model that provides a framework for nurses to assess and analyze patient data and identify the current clinical problem and the outcome that is desired.

According to Bartlett et al. (2008), the goal of the OPT model is to have nurses focus on outcomes and use backward thinking to change patients from their present state to the desired health status or outcome state. The OPT model is comprised of two components: OPT worksheet and clinical reasoning web. The OPT worksheet consists of eight components: (a) client story, (b) cue logic, (c) keystone issue, (d) reflective journaling, (e) framing, (f) testing, (g) decision-making, and (h) judgments. In addition, a clinical reasoning web is completed with the OPT worksheet (Pesut & Herman, 1999).

Bland et al. (2009) investigated clinical reasoning skills of undergraduate nursing students who were enrolled in a psychiatric nursing course. The participants reviewed two psychiatric case studies, completing the clinical reasoning web, and OPT worksheets for each case study. The first case study from their textbook was used to practice completing the OPT worksheets. A second case study, developed by a panel of psychiatric nurses, was used as both the pretest and posttest. While some students were not able to frame the case study at pretest, all students were able to frame the client's story at posttest, which was considered an important step in demonstrating clinical reasoning abilities. The researchers suggested that using clinical reasoning webs and the OPT worksheets as a teaching strategy enhanced nursing students' clinical reasoning skills.

The OPT model is useful in a collaborative learning environment. Completing the clinical reasoning webs and OPT worksheets without input from peers could be