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Impact of concept mapping on the development of clinical judgment skills in nursing students

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Abstract
Helping nursing students learn to use sound clinical judgment has become a primary goal of nursing programs. Concept mapping has been shown to promote meaningful learning and critical thinking. The purpose of this study was to explore how junior baccalaureate nursing students perceive the effect of a concept mapping educational strategy on the development of clinical judgment skills. Concept mapping was taught using an adaptation of Gerdeman, Lux, and Jacko's (2013) Clinical Judgment Self-Evaluation Rubric (CJSR) that uses simplified wording. One hundred six students developed concept maps and completed a CJSR rubric to evaluate their concept maps each week during their clinical experience in a medical–surgical nursing course. The CJSRs were reviewed and evaluated by the clinical instructors. Students also completed a clinical evaluation tool at the end of the course. First, students did a self-evaluation, and then, the clinical instructor evaluated them. A descriptive data analysis was performed after the course was completed. The findings revealed that the use of concept mapping provided an interactive way to foster the growth of clinical judgment skills in nursing students.

Introduction

Helping nurses and nursing students learn how to think critically and use sound clinical judgment has become a primary goal of nursing education programs, nationally and internationally (American Association of Colleges of Nursing (AACN), 2014; Institute of Medicine (IOM), 2011; National League of Nursing (NLN), 2011). Because of the complexities of patient care situations, student nurses need to develop the ability to respond appropriately to illness as experienced by the patient and family, to the burdens of caring for multiple patients with frequent interruptions, to information and privacy requirements, to changing levels of care, and to complex admission and discharge criteria (Lasater, 2007; Tanner, 2006). According to Boghossian (2012), critical thinking is purposeful conceptual thinking that includes the processes of interpretation, evidence-based analysis, contextualization, and self-correction and

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regulation. Applying critical thinking to care situations necessarily means utilizing the fundamental problem-solving skills of nursing, traditionally expressed in terms of assessment, diagnosis, intervention, and the evaluation of nursing intervention effectiveness (Tanner, 2006). Both critical thinking and clinical judgment involve active questioning of assumptions, dialog (in this case with teachers, patients, staff, and others), interaction, and continual reflection and self-evaluation (Benner, Sutphen, Leonard, & Day, 2010; Victor-Chmil, 2013).

Concept mapping has been found to be effective in promoting critical thinking and meaningful learning by enhancing the active engagement of students in the organization and interpretation of data, the comparison and correlation of relevant information, and the synthesis of ideas (Hussain & Shamsuar, 2013; Schuster, 2012). Concept maps provide a graphic or pictorial arrangement of a specific subject matter in terms of relevant concepts, shown as shapes, and the interrelationships of concepts, shown as linking lines (Novak, 1998). The mapping can also be used as a formative assessment tool that identifies relevant information about learners' depth of understanding (Daugherty, Custer, & Dixon, 2012; Lee et al., 2013). Concept maps have been found to enable students to recognize how factors are connected in patient care and to anticipate problems (Harrison & Gibbons, 2013).

Recognizing the close relationship between critical thinking and clinical judgment, recent research has focused on identifying better means of defining, measuring, and improving clinical judgment through teaching techniques that emphasize critical reasoning such as concept maps. In a survey of the literature on clinical reasoning, Tanner (2006) proposed that clinical judgment is the fundamental basis for nursing knowledge of the patient, the clinical context/culture, and their own capabilities and biases.

Based on these principles and Lasater's (2007) rubric for measuring clinical judgment, Tanner (2006) developed the Clinical Judgment Model (the TCJM), with four phases in clinical judgment: noticing, interpreting, responding, and reflection (Gerdeman, Lux, & Jacko, 2013). Clinical judgment can be developed by leveraging the learning advantages of interactive reflection and the guidance offered by a nursing domain-specific rubric like Tanner's. In fact, Lasater (2007) developed her Lasater Clinical Judgment Rubric after finding that the only previous instrument for measuring clinical judgment relied on self-report, with no rubric to guide the clinical thinking process.

Using a pretest–posttest design, Chen, Liang, Lee, and Liao (2011) conducted a systematic study on the effects of concept mapping on critical thinking and learning among nursing students. The 47 students in the experimental group were introduced to concept maps in the first week of class. They used concept maps to examine case studies and course content. The control group (n = 48) used traditional teaching methods. Critical thinking was measured based on Cheng et al.'s Critical Thinking Scale, which included five subscales: inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. In this study, using concept maps was found to significantly enhance critical thinking and learning. Chen et al. noted that incorporating reflection in the course often led to the difference between taking a "surface approach" to learning and taking a "deep approach" that looked for patterns, checked evidence against conclusions, and examined logic, although the positive correlation between critical thinking and reflection was relatively weak, and thus, the findings were inconclusive (p. 469).

Other researchers have assessed the effectiveness of concept mapping on both critical thinking and clinical judgment. Bridging these two areas has required integrating both critical thinking and clinical judgment. For example, Gerdeman et al. (2013) conducted a pilot study of an educational innovation that utilized concept mapping as a teaching strategy to develop the critical thinking and clinical judgment skills of junior undergraduate nursing students. A concept mapping rubric, the Clinical Judgment Self-Evaluation Rubric (CJSR), designed based on Tanner's (2006) TCJM, was used to guide a small sample of students (n = 8) in the construction of concept maps describing clinical cases involving chronic obstructive pulmonary disease (Fig. 1). Students, both individually and in groups, developed maps and evaluated the concept mapping exercise under the guidance of instructors. Students provided feedback on the rubric and its impact on their understanding of the clinical situation and their clinical judgment skills. They concluded that concept maps provide students with a tool to understand the relationship between client data, care delivery, and developing clinical judgment.

Although many of the students who completed the survey in the pilot expressed the view that the language used in the assessment tool was easy enough to understand, the authors did recommend that future use of this teaching strategy should shorten the wording and descriptions for each stage of evaluation to promote increased ease of use for the student in the growth of clinical judgment skills (Gerdeman et al., 2013).

Purpose

The purpose of this study was to explore how junior baccalaureate nursing students perceive the effect of concept mapping on the development of clinical judgment skills. This study utilized an adaptation and simplification of Gerdeman et al (2013) CJSR with a larger sample size (106 vs. 8).

Methods

Sample

Participants consisted of a convenience sample of third-year baccalaureate nursing students who were enrolled at a