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Development and evaluation of a clinical simulation for new graduate nurses: A multi-site pilot study

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ABSTRACT

Background: New nursing graduates have revealed that they perceive a gap between theory and practice with reference to their education and the real workplace setting. Additionally, many nurses experience a reality shock when they participate in clinical practice.
Purpose: The purpose of this study was to develop and test the effects of a scenario-based simulation training program on new graduate nurses' competency, critical thinking dispositions, and interpersonal communication skills.
Method: This pilot multi-site study used a pretest-posttest control group design. It was conducted at four sites of a university-affiliated simulation center in Korea. Participants were recruited utilizing a convenience sample from four tertiary hospitals in Korea. Twenty-four new graduate nurses participated in this study.
Results: At the three-month follow-up, the levels of communication skills used in practice among the intervention group were statistically significantly higher than those of the control group participants ($U = 151.50$, $p = .005$). However, there were no significant differences between the groups in changes in nursing competency ($U = 287.50$, $p = .992$) or critical thinking disposition scores ($U = 269.50$, $p = .702$). The participants' mean rating scores concerning the objectives, intentions, and recommendations for other nurses were positive and high.
Conclusion: The involvement of current practicing of nursing in certain scenarios and the implementation of simulation learning could enhance the readiness of new graduate nurses.

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1. Introduction

Both nationally and internationally, considerable attention is being focused on the nursing shortage within the health care arena. Despite the undesirable effects of this nursing shortage on the health care system, a registered nurse shortage is expected in the near future in Korea, the US, and even Canada (Korea Institute for Health and Social Affairs, 2015; American Nurses Association, 2016; Canadian Nurse, 2009). Various strategies have been considered to manage the nursing shortage, and one of the most effective ways was controlling attrition rates among existing and newly graduated nurses. The attrition rate in Korea has been reported as 16.9% for existing nurses and 31.2% for newly graduated nurses (Korea Health Industry Development Institute, 2014). These attrition rates can have significant negative financial impacts on the overall health care setting in terms of processes such as recruiting, hiring, orientating, and training new nurses (Rush et al., 2013). New nursing graduates have revealed that they perceive a gap between theory and practice with reference to their education and the real workplace setting. Additionally, many nurses experience a reality shock when they participate in clinical practice. Moreover, new graduate nurses experience problems related to complexity of care, heavy workloads, technological advances, and lack of communication skills. Thus, they experience a transition shock and increased work-related stress, as they lack the competency to tackle the challenges of continuing a nursing career (Bisholt, 2012; Rudman and Gustavsson, 2012; Wu et al., 2012). A meta-analysis revealed that many trials have been conducted to prevent nursing shortages and increase the retention of nurses. Furthermore, transition programs have been introduced to decrease the reality shock experienced by newly graduated nurses (Missen et al., 2014). Such transition programs focus on helping new nurses adjust to the real-life settings. Systematic review studies have reported that transition programs for new graduate nurses generally positively affect nurse retention and competence; however, the best transition program could not be identified due to the variability in program length and structure (Missen et al., 2014; Rush et al., 2013). In Korea, most hospitals have few resources to train novice nurses.

A simulation is a pedagogical tool of teaching/learning that is based on a real-life situation. It is designed to provide students with actual

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situations and allow them to practice and learn in a safe environment (Arthur et al., 2012). Clinical simulation plays an important role in helping students and professionals conduct clinical practice, as it provides opportunities to repeat clinical performance and integrate knowledge into the clinical setting without the risk of harm to real patients and professionals (Campbell and Daley, 2008). Additionally, simulation-based clinical practicums improve newly graduated nurses' abilities to collaborate with other health care providers. Furthermore, they help these new nurses implement communication skills and manage complex clinical situations. A meta-analysis study demonstrated that simulation programs were more effective than traditional learning methods (Shin et al., 2015). However, in spite of the advantages of simulation-based transition programs, most related studies have examined the educational effects on nursing students, while very few have been conducted with new graduate nurses.

The effects of simulation-based educational methods have been reported in various areas. For instance, simulation-based education has been found to increase students' empowerment and self-efficacy (Babenko-Mould et al., 2015), communication skills (Kameg et al., 2010), and thinking abilities (Norman, 2012). Additionally, significantly decreased anxiety levels have been reported when the students were taught in a simulated setting (Gore et al., 2011; Khadivzadeh and Erfanian, 2012; Megel et al., 2012). An integrated review study revealed simulation education outcomes in the following five areas: confidence/self-efficacy, satisfaction, anxiety/stress, skills/knowledge, and interdisciplinary experiences (Foronda et al., 2013). Despite the substantial amount of research on the impact of simulation, few studies have been conducted using newly graduated nurses as the subjects. However, the simulation-based learning method may be an effective way to improve newly graduated nurses' abilities to adjust, and may enhance their transition from student to clinical nurse. Therefore, the purpose of this study was to develop a scenario-based simulation training program (SSTP) for newly graduated nurses, and to test the effects of the SSTP on their nursing competency, critical thinking dispositions (CTDs), and interpersonal communication skills.

2. Methods

This study had two research phases. To develop an SSTP for new graduate clinical nurses, an analysis of focus group interviews among new graduate nurses and nurse managers was conducted in the first phase. For the second phase, a pre- to post-intervention control group design was implemented to investigate the effectiveness of SSTP on nursing competency, CTD, and interpersonal communication skills among new graduate clinical nurses.

2.1. Phase 1. Development of an SSTP for New Graduate Clinical Nurses

The SSTP development process comprised analysis, design, development, and evaluation (Waxman, 2010). We also used evidence-based guidelines for the development of clinical simulation scenarios. The critical elements included ensuring the learning objectives were defined, identifying the level of fidelity, defining the level of complexity, using evidence-based references, incorporating instructor prompts and cues, and allowing adequate time for debriefing or guided reflection.

Simulation-based educational scenarios were developed through data acquired from focus group interviews with new graduate nurses and nurse managers. Eight graduate nurses from hospitals in Seoul and Cheonan and 7 clinical educators, including head nurses and preceptors, from a hospital in Seoul participated in semi-structured interviews pertaining to which skills were most difficult to perform independently. All participants were conveniently recruited from among newly graduated nurses who were currently working on surgical medical wards or in emergency rooms, and who had cared for patients over the previous 1–3 months, and from among clinical educators in the tertiary hospital. Their clinical experiences were measured using self-report questionnaires.

Four focus groups were conducted, and each session lasted 1–2 h. Each group discussion was audio-recorded and was transcribed verbatim with the participants' permission. “What are essential nursing skills for new graduate nurses?” and “What are the skills found most ‘difficult’ to perform?” were the guiding interview questions. Qualitative data from the focus group interviews were analyzed using Patton's (2014) inductive qualitative content analysis process, and the following four themed difficulties were identified: (1) interpersonal skills, (2) decision making, (3) coping in crisis, and (4) reporting. In terms of nursing procedures, many graduate nurses felt ill prepared to administer medications and pre- and post-care diagnostic tests. Despite obtaining certification as registered nurses, new graduate nurses did not seem to be proficient in performing those skills and procedures. A detailed description of the study is reported elsewhere (Lee et al., in press, 2016).

After an analysis of the focus group data, goal setting and learner activities were established by scenario. Four core concepts—interpersonal skills, decision making, coping in crisis, and reporting—were designated as being integral to all scenarios. Concerning the procedural components, diagnostic test and medication care administration were integrated into each scenario. We defined each scenario's level of complexity as medium to high, as these subjects were graduate registered nurses. More repetition of these skills in certain scenarios would be necessary to provide mastery. The entire panel, which included four nursing professors who had experience in nursing simulation education and four clinical nurse preceptors with master's degrees who were working in a tertiary hospital, was involved in this development of scenarios.

The template included learning objectives; contents; algorithms; lab, prop, and supply preparations; medical records; cueing; and consistency relevant to standardized patient (SP) performance. After the scenario template was produced, the scenario contents were selected and categorized according to the four identified themes. The four simulation scenarios were titled medication errors, diagnostic tests for coronary angiography, hypoglycemia, and pain management after operation completion. Two scenarios depicted internal medicine clinical situations, while the others depicted surgical ward situations. The 1–2 day module features a combination of a high-fidelity human patient simulator and an SP of a family member lasting approximately 10–20 min. These situations were chosen to assess the critical thinking, interpersonal communication, and reporting skills of new graduate registered nurses in Korea.

For the validity and pilot testing, four written scenarios were validated through clinical expert reviews, and they were subsequently pilot tested by two graduate nurses before the experimental studies were conducted. Following the feasibility test, some scenarios were modified, and levels of difficulty were assessed by interviewing the participants.

2.2. Phase 2. Evaluation of an SSTP for New Graduate Clinical Nurses

2.2.1. Design

This study used a quasi-experimental design featuring a pre- and posttest control group to investigate the effectiveness of a simulation-based transition educational program on nursing competency, CTD, and interpersonal communication skills among new graduate clinical nurses. This multi-site pilot study was conducted at four locations of a university-affiliated simulation center in Korea between September and December 2015 by four research team members who are faculty members of their respective campuses. Evaluations of an SSTP were undertaken independently in the university-affiliated nursing simulation center of each university hospital. To ensure the multi-site consistency of the study procedures, a study protocol guidebook was provided to each center. However, other institutional, or instructor and learner, variations were permitted.

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