



Effect of Simulation on Nursing Students' Medication Administration Competence

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KEYWORDS

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individual simulation
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Abstract

Background: Medication errors may be prevented by improving medication administration education and nurse competence. Medication administration is a significant responsibility of nurses; yet, it remains one of the most difficult skills for nursing students to master. The purpose of this experimental two-group pre–post test study was to examine the effect of an individual simulation experience on nursing student medication administration competence.

Sample: Eighty-five baccalaureate nursing students enrolled in their first semester of nursing courses participated in the study.

Methods: Nursing students were randomly assigned to an individual simulation experience or a traditional practice session. Medication administration competence was assessed using the Medication Administration Safety Assessment Tool. The NLN Jeffries Simulation Theory guided the study and simulation intervention.

Results: The individual simulation experience improved nursing student medication administration competence.

Conclusion: Nurse educators may consider simulation as a useful strategy in preparing nurses for safe medication administration practice.

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Background

Medication errors may be prevented by improving medication administration education and nurse competence.

Inclusion of medication safety as a Hospital National Patient Safety Goal (The Joint Commission, 2017) confirms error prevention is a priority in health care and in health care education. Medication administration is a significant responsibility of nurses; yet, nurse leaders are not satisfied with new graduate nurse competence in this skill, thereby

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identifying an area for improvement in nursing education (Berkow, Virkstis, Stewart, & Conway, 2009). Education on medication administration begins early in nursing programs and is incorporated throughout the curriculum (Bourbonnais & Caswell, 2014; Reid-Searl, Moxham, Walker, & Happell, 2010) but remains one of the most difficult skills for nursing students to master (Zahara-Such, 2013). As nursing students work to gain independence and acclimate to clinical practice, they are particularly vulnerable to committing medication errors (Schneidereith, 2014).

Medication administration competence is complex and develops from integration of pathophysiology, pharmacology, and medication calculations learned in the classroom (Coyne, Needham, & Rands, 2013), skills learned and practiced in the clinical skills laboratory, and experiences in the clinical setting (Reid-Searl et al., 2010). However, students must first master performing the medication administration process before they are able to develop competence beyond the rights. The use of simulation can provide nursing students multiple, realistic opportunities to safely administer medications (Schneidereith, 2014; Vaismoradi, Jordan, Turunen, & Bondas, 2014).

Nurse scholars have reported positive findings supporting the use of simulation

as an intervention to strengthen nursing student medication administration competence. All nursing students ($n = 16$) in a single-group pre–post test study by Sparacino and Della Vecchia (2013) demonstrated competence during a medication administration skills evaluation after participating in a multimethod teaching plan that included simulation experiences. This finding indicates using multiple methodologies of teaching medication administration enhances student success, but the impact of simulation alone is unknown. Bowling (2015) found nursing students who participated in a simulation intervention demonstrated greater medication administration competence than students who participated in a

paper case study, although the results were not significant in this nonequivalent control group pre–post test study. In a randomized control group posttest-only study, nursing students ($n = 54$) who participated in a simulation experience committed significantly fewer medication errors in the clinical setting than students in the control group (Sears, Goldsworthy, & Goodman, 2010). Clinical instructors completed a researcher developed medication error report after each error or near miss in the clinical setting (Sears et al., 2010). In a single-group observational study ($n = 30$), Pauly-O'Neill (2009) also found competence improved after the introduction of a simulation intervention into the nursing curriculum. Literature regarding the effect of simulation on nursing student medication administration competence is emerging; however, there is a lack of randomized controlled trials using validated instruments and integrating simulation as an intervention.

The NLN Jeffries Simulation Theory is valuable to nurse educators in designing, implementing, and evaluating simulation experiences and to nurse researchers in guiding research in a systematic manner (Jeffries, 2016). The theory includes the following concepts: context, background, design, simulation experience, facilitator and educational strategies, participant, and outcomes (Jeffries, 2016). The concepts of interest and the development and implementation of the simulation intervention were guided by the theory.

The purpose of this study was to examine the effect of an individual simulation experience (ISE) on nursing student medication administration competence. The ISE was unique because there was a one to one student to facilitator ratio, rather than the traditional simulation model which occurs with groups of students. The specific aims were to determine (a) if participation in an ISE significantly improved medication administration performance compared with participation in a traditional practice session, (b) if there was an association between group assignment and demonstration of the six rights of medication administration, and (c) if previous health care experience impacted medication administration performance.

Sample

A convenience sample ($n = 85$) of baccalaureate nursing students enrolled in their first semester of nursing courses were recruited from a Psychomotor Skills for Nursing course at a large Midwestern public university. These nursing students were selected because they learn the medication administration process in this course. All students enrolled in the course consented to use of their data in the study.

Method

The university institutional review board approved the study, and the authors of the Medication Administration

Key points

- The individual simulation experience was unique because there was a one to one student to facilitator ratio, rather than the traditional simulation model which occurs with groups of students.
- Nursing students who participated in the individual simulation experience scored significantly higher than students who participated in a traditional practice session on a medication administration competence assessment.
- This study addresses the gap in the literature to assess the impact of simulation alone on medication administration competence of nursing students using a validated instrument.

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