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Title: Assessment of Nursing Students' Knowledge Acquisition and Knowledge Retention Regarding Blood Administration Using High-Fidelity Simulation

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Abstract Describes: Ongoing Work/Project

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Keywords: High-fidelity Simulation, Knowledge Acquisition and Retention and Nursing Students

Abstract Summary:
The purpose of this study was to measure knowledge acquisition and retention among nursing students participating in a blood administration simulation. Knowledge acquisition was measured with a pre-test prior to the simulation and with a post-test following the simulation. Knowledge retention was measured the following semester with a case study.

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Abstract Text:

The use of simulation in nursing education is quickly becoming the new norm and has become an important element in nursing education, specifically in teaching the necessary skills and knowledge to prepare competent nurses (Aqel and Ahmad, 2014). Simulation ensures that all students have the necessary learning experiences to better care for the complex patients encountered in today's healthcare environment (Gore and Thomson, 2016).

Nursing students must learn how to safely administer blood, but it is often difficult to provide each student with an actual patient transfusion experience in the clinical setting (Flood and Higbie, 2016). In addition, many clinical settings do not allow nursing students to perform this skill, yet nurse educators need to ensure that students are equipped with the skills and knowledge to perform the procedure upon graduation (Tan et al., 2017). Simulation can be used to replicate different clinical situations and serve as a way to complement these restrictive clinical experiences, like blood administration (Eun and Young, 2017). A review of the literature found an increasing number of studies that examined the use of innovative teaching and learning strategies to improve nursing students' competency in blood administration, including the use of simulation.
A blood transfusion simulation was designed using the National League for Nursing (NLN)/Jeffries Simulation Framework (Jeffries, 2012). The Framework's five major components include: facilitator, participant, educational practices, design characteristics, and outcomes were considered during development.

Purpose: The purpose of this study was to measure knowledge acquisition and retention among nursing students who participated in a high-fidelity simulation involving blood administration.

Methods: Using a quasi-experimental design, knowledge acquisition was measured with a pre-test prior to the simulation and with a post-test following the simulation. Knowledge retention was measured the following semester when students completed a case study involving a patient with a gastrointestinal bleed that included the same pre- and post-test questions regarding blood administration.

Results: This study received IRB approval in June 2017. The first participants were enrolled in August 2017 and the last participants were enrolled in February 2019. Currently, 267 baccalaureate senior level nursing students have, or are currently, participating in this study. Data collection will be completed in July 2019 with statistical analysis completed during fall 2019. The specific

Conclusion: Administration of blood can be high-risk yet depending on the unit a nurse works on after graduation a low volume skill. Human error in blood administration leading to adverse events was recognized as the highest risk of transfusion error (Tan

et al., 2017). In addition, the deficiencies in nurses' knowledge and skills were reported as barriers for the safe administration of blood therefore education and training are essential to ensure blood administration safety (Tan et al., 2107). The knowledge gained and lessons learned from this study will influence simulation strategies used in the future and help to design future studies to ensure that student nurses are equipped with the skills and knowledge to perform safe blood administration after graduation.