Featured Article

Longitudinal Impact of a Targeted Simulation Experience on High-Stakes Examination Outcomes

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Abstract
Background: This study provides a longitudinal vantage point to demonstrate how a research-based approach to human patient simulation (HPS) utilization may affect didactic learning in nursing education.
Methods: The study used a quantitative, experimental, longitudinal, repeated measures design with baccalaureate nursing students (n = 94) who were enrolled in an adult health course.
Results: The data revealed an increase in Health Education Systems Incorporated© examination scores for students who participated in a content specific HPS versus those who did not.
Conclusion: The findings from this study provide quantitative evidence that HPS may be an effective teaching method for undergraduate nurse education.

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Problem Statement and Background

It is essential for nurse educators to prepare graduates to be competent when entering a constantly changing and fast-paced work environment. The shortage of registered nurses in the United States today puts new graduates with minimal experience on the front lines of emergent and critical care situations (Hauber, Cormier, & Whyte, 2010). In response, nursing programs have incorporated human patient simulation (HPS) into the curriculum in an attempt to produce graduates who are fully ready to provide safe patient care. To assess didactic knowledge, high-stakes testing is also instituted as part of the evaluation process.

The Institute of Medicine's (IOM, 2010) report entitled, *The Future of Nursing*, noted that high-fidelity simulated experiences develop the problem-solving and critical thinking skills required of competent and well-educated nurses. The use of HPS is an innovative and effective teaching strategy to address the educational needs of nursing students. This interactive learning method provides an opportunity to focus on specific content areas, teaches multiple learning objectives at one time, and may help students connect the dots by reinforcing didactic learning. Yet, minimal longitudinal research demonstrates the lasting effectiveness of HPS as demonstrated by high-stakes standardized examination scores. This study suggested that

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scores on Health Education Systems Incorporated© (HESI) examinations may be one tool to evaluate students' knowledge of cardiac content gained through the utilization of HPS educational technology.

One method that nursing programs utilize to evaluate student learning is to access knowledge via standardized examinations. The HESI examinations are one example of a widely used approach to standardized testing in nursing programs across the United States. Three types of examinations exist as follows: (a) specialty examinations (completed at the end of a course), (b) exit examinations (completed at the end of nursing program), and (c) customized HESI examinations. HESI examinations measure student achievement, benchmark program outcomes, and are a highly reliable predictor of performance on the National Council Licensure Examination-Registered Nurse (NCLEX-RN®) (Young & Wilson, 2012). Attaining a passing score on a specialty HESI may be a requirement for matriculation through the curriculum. Additionally, many nursing programs require a predetermined score on the exit examination as a condition for graduation from the program. This secures the right to take the NCLEX-RN®; thus, these tests are considered high-stakes (Spurlock & Hunt, 2008).

Maintaining high passing rates on the NCLEX-RN® is an important concern of nursing programs, as this affects multiple factors including continued accreditation, enrollment of excellent students, eligibility for federal loans and scholarships, and the ability to attract donors (Shultz, 2010). Empirical evidence exists which supports the accurate prediction of passing the NCLEX-RN® on the first try based on standardized testing scores (Langford & Young, 2013; Young & Wilson, 2012). Undergraduate nursing programs provide a unique opportunity to study student issues surrounding both HPS and high-stakes testing.

Recently, increasing emphasis has been placed on high-stakes test scores (Spurlock & Hunt, 2008). Nursing students may be particularly attuned to the nuances of progression and thus understand the importance of and potential for grave consequences if required scores are not obtained (Shultz, 2010). It is possible that HPS reinforces didactic learning, thus assisting students in the quest to succeed on high-stakes testing and progress through the program in an expeditious

Key Points
- Health Education Systems Incorporated© examination scores increase for students who participated in a content specific human patient simulation (HPS) versus students who did not participate in HPS.
- HPS is an effective teaching method for undergraduate nurse education.
- Offering a content-specific HPS may increase knowledge, help retention, and be used as an effective tool for remediation processes.

manner. This study provides a longitudinal vantage point to demonstrate how a research-based approach to HPS utilization may affect didactic learning in nursing education.

Purpose of Study

To address the gap in the literature related to the longitudinal effectiveness of HPS on learning, the research question was twofold. First, at the initial postintervention time, how did students who experience a content-specific HPS clinical experience perform on a content-specific HESI versus those who did not receive a content specific HPS clinical experience? Second, how did scores within groups and between groups change over time? To answer those questions, this longitudinal experimental study compared students' scores on cardiac specific measures using the following examinations: (a) customized HESI nursing examination before HPS (T1), (b) customized HESI examination 1 to 2 weeks after HPS (T2), (c) scores related to cardiac content in the end of course specialty examination (T3), and (d) scores related to cardiac content in the program completion exit examination (T4).

Review of the Literature

The Carnegie Report (Benner, Sutphen, Leonard, & Day, 2010) discussed four essential shifts in nursing education to tackle the practice—education gap. One essential shift addressed the sharp separation of clinical and classroom teaching to promote integration of classroom and clinical teaching. This separation does not support the integrated use of knowledge and skills that nursing practice demands. Utilizing integrative teaching helps the student incorporate knowledge, skills, and attitudes to adequately prepare the student to function in critical clinical situations. Utilizing experiential learning through the use of HPS technology as an integrative teaching strategy effectively integrates nursing students' knowledge, skills, and attitudes by bridging the practice—education gap.

Simulation in Nursing Education

Experiential learning directly involves students in an experience with an intended outcome of obtaining new knowledge and increased retention of information. Simulation, as an educational learning technology, is aligned with Kolb's cyclical experiential learning theory (ELT) model by requiring the student to be an active participant in a simulated scenario, reflect back on the simulated experience, think about strengths and weaknesses recognized during the experience, and plan for future experiences (Kolb, 1984; Kolb & Kolb, 2012). The experience a student gains during simulation helps connect classroom teaching to actual nursing practice (Benner et al., 2010; Dillard, et al., 2009).