

Nursing Education Research Conference 2020

The Influence of Low- and High-Fidelity Simulations on Nursing Students' Self-Confidence, Knowledge, and Satisfaction

Teena M. Milligan, MSN, RN

Kaynabess R. Freda, EdD, RN, CMSRN

Lisa A. Seldomridge, PhD, RN, CNE

School of Nursing, Salisbury University, Salisbury, MD, USA

Purpose: Simulated patient care experiences are increasingly important in undergraduate nursing education as they provide a safe environment where students can learn from their mistakes. They are highly controlled, assuring that all students can engage in the same experiences without the unpredictability that is seen in a “live” clinical environment and the variability that is inherent in working with human beings. “Educators can replicate many patient situations, and students can develop and practice their nursing skills (cognitive, motor, and critical thinking) in an environment that does not endanger patients (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014, p. 3). Finally, simulations help reduce student anxiety and lead to improved performance when moving into a “live” setting (Cant & Cooper, 2017; Foronda, Liu, & Bauman, 2013). Simulations can be low to high fidelity. Low fidelity simulations are those conducted with plastic manikins who are unable to exhibit any human physiologic functions and do not speak, whereas high fidelity simulations use sophisticated computerized manikins who can manifest nearly all aspects of human physiology and are able to speak. The purpose of this study was to seek understanding of how simulation experiences influenced student perceived self-confidence, knowledge about how to care for a patient with a particular condition, and satisfaction with learning using this pedagogy.

Methods: Following University Committee on Human Research approval, students enrolled in their first required clinical course in an undergraduate nursing curriculum (n=92) engaged in two weeks of simulated patient experiences; week one with a low fidelity manikin and week two with a high fidelity simulator. Students completed the 13-item online NLN Student Satisfaction and Self-Confidence in Learning Survey (2015) post-simulations, as well as a 10-item knowledge inventory pre and post-high fidelity simulation.

Results: Greater than 70% of students reported confidence (eight questions) and satisfaction (five questions) when completing the NLN Student Satisfaction and Confidence Learning Survey (2015) post low and high fidelity simulation, with the exception of confidence with “mastering content” in the simulations, ~ 55%. A paired-samples t-test indicated that the difference in the post-assessment mean of the 10-item knowledge inventory (M = 80.20, SD = 20.84) and the pre-assessment mean (M = 70.00, SD = 25.81) was statistically significant, $t(9) = -3.17$, $p = .011$. Therefore, the post-simulation knowledge inventory revealed that the high fidelity simulation was effective in raising students' scores.

Conclusion: Simulation appears to improve knowledge in the short term, therefore, it would be important to track knowledge retention and use in “live” patient experiences at multiple points in the future (Victor, Ruppert, & Ballasy, 2017). Additionally, confidence levels were high after both low and high fidelity simulations. Future research may

include measuring baseline confidence levels to ascertain whether novices are generally overconfident (Partin, Payne, & Slemmons, 2011). Lastly, students reported high satisfaction with low and high fidelity simulation, further supporting the need for simulation and the importance of allowing faculty to maximize teaching effectiveness with what is available (Hayden et al., 2014).

Title:

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Keywords:

high-fidelity simulation, low-fidelity simulation and self-confidence

Abstract Summary:

A single-site study to seek understanding of how low and high-fidelity simulation experiences for first-year baccalaureate nursing students influenced student perceived self-confidence, knowledge about how to care for a patient with a particular condition, and satisfaction with learning using this pedagogy.

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First Primary Presenting Author

Primary Presenting Author

Teena M. Milligan, MSN, RN

Salisbury University

School of Nursing

Instructor
Salisbury MD
USA

Author Summary: Teena Milligan is an Instructor of Nursing at Salisbury University and a PhD Candidate in Nursing with a focus in Nursing Education. She has also served as the Coordinator of Learning Resources within the School of Nursing at Salisbury University.

Second Author

Kaynabess R. Freda, EdD, RN, CMSRN
Salisbury University
School of Nursing
Assistant Professor
Salisbury MD
USA

Author Summary: Dr. Freda is an Assistant Professor of Nursing at Salisbury University. She is a Certified Medical Surgical Registered Nurse and received her Doctorate in Education from the University of Maryland Eastern Shore. Her current areas of research include simulation use, interprofessional collaboration amongst health care disciplines, implementing lactation services on university campuses, and writing preparation for nursing students. She currently serves as the Brand and Marketing Liaison for the Nurse Educator Career Portal Grant.

Third Author

Lisa A. Seldomridge, PhD, RN, CNE
Salisbury University
School of Nursing
Professor of Nursing; Director of the Henson Medical Simulation Center
Salisbury MD
USA

Author Summary: Dr. Seldomridge has taught undergraduate and graduate nursing students for over 30 years. She is co-founder of the Eastern Shore Faculty Academy and Mentorship Initiative, a multi-faceted approach to prepare expert nurses as clinical faculty, now in its 6th year of operation. Dr. Seldomridge is co-PI for the Maryland Nurse Educator Career Portal grant, aimed at connecting aspiring nurses with resources needed to be successful in becoming nurse educators in academia or healthcare organizations.