

Examining the Impact of Prior Clinical Experience and Learning Outcomes During High-Fidelity Simulation in Nursing Education

Jacqueline Hamlin Bensfield, MPH
DePaul University

Introduction & Background

High-fidelity nursing simulations (HFS) are risk-free, realistic situations that provide learners the opportunity to develop skills in an environment that mimics the clinical setting (Yan, Williams, Fang, & Ye, 2012). HFS is defined as the use of “computer controlled mannequins” that can simulate real-life scenarios (Flood & Thompson, 2011; Roberts & Greene, 2011). There has been an increase in popularity of HFS use in nursing programs, prompting an increase in guidelines and design of HFS as a supplement to traditional clinical time. However, there is still need to research learning outcomes of HFS, as well as the standardization of practice (Doolen, 2016).

Purpose & Research Question

The purpose of this study was to conduct a secondary analysis of data to determine if previous healthcare experience impacts learning outcomes during HFS simulation.

Is there a difference in learning outcomes (i.e. knowledge, critical thinking and skills, and clinical judgment) during HFS among student nurses with prior healthcare experience?

Methods

The study design used secondary analysis of a study entitled, “Simulation and Curriculum Integration: Does Simulation Improve Clinical Competence” conducted by Dr. Tamara Poole (2017).

The sample used in this study was a convenience sample of thirty students enrolled in DePaul University’s master of science in nursing program. Knowledge, critical thinking and skills, and clinical judgment were measured using pre- and post-tests, the Creighton Competency Evaluation Instrument and the Lassater Clinical Judgment Rubric, respectively.

Results

Data was analyzed using Statistical Package for the Social Sciences (SPSS). A one-way MANOVA analysis was conducted to determine if there was a difference among with prior health care experience and the following learning outcomes: knowledge, skills and critical thinking, and clinical judgment. Post hoc tests are not performed for the “more than 5 years.”

Using **Pillai’s statistic** there was a significant difference in learning outcomes among students with prior healthcare experience, $V=2.03$, $F(21,21) = 2.1$, $p < .05$.

Healthcare Experience and Knowledge

There were no statistically significant differences among knowledge and years of prior healthcare experience.

Healthcare Experience and Critical Thinking and Skills

There were no statistically significant differences among critical thinking and skills, and years of prior healthcare experience for the baseline or intervention simulation. There was however, a statistically significant difference in years of healthcare experience among and critical thinking and skills among students who completed the repeat baseline simulation, $F(3,11)=3.96$, $p<0.05$, partial $\eta^2=.52$. There was also, a statistically significant difference in years of healthcare experience among and critical thinking and skills among students who completed the advanced simulation, $F(3,11)=3.96$, $p<0.05$, partial $\eta^2=.52$ (Table 1).

Healthcare Experience and Clinical Judgment

There were no statistically significant differences among clinical judgment and years of prior healthcare experience.

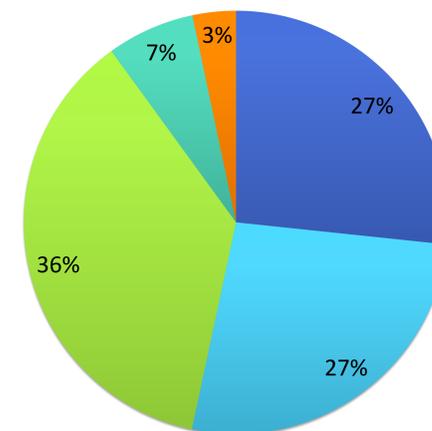
Table 1. Effect of Healthcare Experience on Dependent Variables

Dependent Variable	df	F	η^2	p
Knowledge (Posttest 1)	3	.32	.08	.09
Knowledge (Posttest 2)	3	1.46	.28	.28
Critical Thinking and Skills (Baseline Simulation)	3	3.38	.48	.58
Critical Thinking and Skills (Intervention Simulation)	3	3.31	.47	.67
Critical Thinking and Skills (Repeat Baseline Simulation)	3	3.96*	.52	.67
Critical Thinking and Skills (Advanced Simulation)	3	3.96*	.52	.67
Clinical Judgment (Baseline Simulation)	3	1.01	.22	.21
Clinical Judgment (Intervention Simulation)	3	.76	.17	.16
Clinical Judgment (Repeat Baseline Simulation)	3	.86	.19	.18
Clinical Judgment (Advanced Simulation)	3	3.31	.47	.59

Note: * Indicate a significant F ratio at the $p<0.05$ level.

Chart 1. Percent of Healthcare Experience Among Study Participants

■ None
■ 1-3 years
■ 3-5 years
■ More than 5 years



Discussion

The findings of this secondary analysis do suggest there is a difference in learning outcomes among student with prior healthcare experience. Further, the descriptive data suggest that students with healthcare experience earned higher scores in all three competencies of this study. The non-statistically significant values could be attributed to the study participants themselves. It is assumed that because all of the study participants were admitted to a mastery program, they likely had advanced critical thinking skills despite prior clinical experience.

The statistically significant factors in this study – critical thinking and skills – indicate that prior clinical experience has an impact on learning outcomes. This finding can be explained by assuming that students with prior healthcare experience had more opportunities to practice the skills; thus, performing better than study participants who had less or no prior healthcare experience.

Conclusion

Findings suggest there is a difference between students with prior healthcare experience and learning outcomes during HFS. There is a need further research that focuses the impact of student characteristics and learning outcomes to refine design and implementation of HFS.

Implication for Nursing

The results of this study can be used as a platform to for further research on the impact of student characteristics on learning outcomes during HFS. This type of research should be used to improve design and implementation of HFS in nursing program. Continued quality improvement will ultimately improve learning outcome and improved clinical performance among student nurses students.

Contact

Jacqueline Hamlin Bensfield, MPH
DePaul University
jhamlin@depaul.edu
847-420-9346

References

- Doolen, J., et al. High-fidelity simulation in undergraduate nursing education: a review of simulation review. *Clinical Simulation In Nursing*, 12(7), 290 – 302.
- Flood, J.L. and Thompson, A.N. (2011). High-fidelity patient simulations: A classroom learning tool. *American Nurse Today*, 6 (5). Retrieved from <https://www.americannursetoday.com/high-fidelity-patient-simulations-a-classroom-learning-tool/>
- Poole, T. (2017). *Simulation and curriculum integration: does simulation improve clinical competence* (Unpublished doctoral dissertation, DePaul University, Chicago, IL.
- Roberts, D. & Greene, L. (2011). The theater of high-fidelity simulation education. *Nurse Education today*, 31(7), 694-698. <http://dx.doi.org/10.1016/j.nedt.2010.06.003>.
- Yang, H. & Thompson, C. (2011). The effects of clinical experience on nurses’ critical event risk assessment judgments in paper based and high fidelity simulated conditions: A comparative judgment analysis. *International Journal of Nursing Studies*, 48(4), 429-437. <http://dx.doi.org/10.1016/j.ijnurstu.2010.09.010>

Acknowledgements

Dr. Tamara Poole, DNP, APN, FNP-BC