

The Impact of High-Fidelity Simulation in Enhancing Critical Thinking in Senior Maternity Nursing Students

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Abstract

Aim: This study examined the effects of the combination of high-fidelity simulation and hospital-based clinical instruction on maternity students' clinical judgment/critical thinking skills. **Background:** Several researchers have explored the use of high-fidelity simulation to improve students' critical thinking skills. However, no studies have examined the effects on senior maternity nursing students of hospital clinical experience and high-fidelity simulation. **Method:** A retrospective, comparative study design was used to examine data from the ATI content mastery series test (maternal newborn), focusing on clinical judgment/critical thinking scores. **Results:** The data indicated that senior nursing students who received instruction through high-fidelity simulation in addition to hospital-based instruction demonstrated greater critical thinking skills, as indicated than students who received taught hospital-based clinical instruction alone measured by higher clinical judgment/critical thinking in nursing scores on the ATI content mastery series test (maternal newborn). **Conclusion:** As indicated in the literature and suggested by the findings in this study suggest that high-fidelity simulation may be an effective vehicle for enhancing critical thinking skills in the maternity high-risk unit.

Keywords. Critical Thinking- Senior Nursing Students-Maternity

A major problem in nursing education is the lack of opportunities in the clinical area for students to gain high-order thinking skills. In particular, hospital clinical experiences do not always provide senior nursing students the opportunity to use critical thinking in providing care to high-risk maternity clients. It is crucial that students learn to think quickly when a crisis occurs.

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However, hospital clinical experiences may not include high-risk situations in which the student is challenged to think critically to perform the appropriate task; thus are concerns about whether nursing students are learning the essential for skills for safe nursing practice(Kaddoura, 2010; Nehring, 2008; Shoemaker & Perkins, 2009).

High-fidelity simulation(HFS)isnow widely used to enhance real-life situations. In a recent study, Lewis and Clark (2011) examined the effects of simulation on use of the nursing process in clinical decisions making and problem solving. The Assessment Technologies Institute (ATI) content mastery series test (maternal newborn module) was used to measure critical thinking. The authors decided that “no definitive conclusions could be drawn as it relates to critical thinking in high-fidelity simulation and more research is needed to explore ways to assess critical thinking and how it relates to simulation” (p.258). Shoemaker, Riermersma, and Perkins (2009) explored the use of high-fidelity simulation to teach cardiopulmonary and intensive care concepts to physical therapy students, a qualitative study (n= 14). The students participated in a 6-week acute care setting clinical experience. The researchers found that simulation helped improve students’ critical thinking skills, especially with regard to patient safety procedure such as physiological changes in vital signs/oxygen saturation and both basic and complex heart related conditions (Shoemaker et al., 2009, p. 16). Other researchers used two different tools, Critical Thinking Disposition Inventory (CCTDI) and California Critical Thinking Skills Test (CCTST), to measure critical thinking on topics such as legal and education issues within the nursing work place. Researchers compared critical thinking dispositions and skills in associate (n=137), baccalaureate (n=102), and RN-BSN programs (n=66). This study found statistically significant positive correlation between CCTDI and CCTST scores (Shin K., Jung, D., Shin, S. & Kim, M. (2006, p. 236). The researchers concluded “that the variations in teaching methods used throughout the curriculum, academic year and educational institutions supported the findings” (Shin et al., 2006, p. 236).

The literature thus points out the need to explore more research to better understand how to implement instructional strategies to enhance critical thinking. There has been no published study that measure critical thinking using didactic material taught in the classroom alone with hospital-based clinical experience or senior nursing students taught by hospital-based clinical instruction alone.

When using a teaching method that incorporates greater understanding allows students to make relevant connections. The purpose of this study was to explore this research question: Do senior maternity nursing students who receive instruction through high-fidelity simulation in addition to traditional hospital-based clinical instruction demonstrate greater critical thinking skills, as measured by higher clinical judgment/critical thinking in nursing scores on the ATI content mastery series test (maternal newborn), than students who are taught by traditional hospital-based clinical instruction alone.

Method/Sample and Instrument

The study represented a convenience sample (N=279) of senior maternity nursing students. A non-experimental, retrospective, causal comparative quantitative approach was used. The setting represented a historically black university which majority of the student's in-state. The students completed the required maternity nursing course, and also taken the ATI content mastery series test (maternal newborn module). This instrument was designed to measure students' content knowledge as it is applied to clinical judgment/critical thinking in nursing (interpretation, analysis, evaluation, inference, and explanation) regarding maternity content in the clinical setting. This instrument consists of 60 multiple choice questions which was proctored.

The treatment included three scenarios that represented pregnancy-induced hypertension, post-partum hemorrhage and abruption. The students interact with the human patient simulator. The content mirrored information taught in the classroom. Lastly, after each session, conducted a debriefing session to support student learning and higher-order thinking. Prior to beginning research, I obtained permission to collect deidentified data from Winston Salem State University (WSSU) dean of nursing as well as the IRBs at Walden University (#01-06-12-0061131) and WSSU (#2986-12-0029).

Data Analysis/Results

The data was analyzed. An independent samples *t* test was conducted to determine if there was a significant difference between the simulation students and nonsimulation students on ATI clinical judgment/critical thinking scores.

First, the data revealed two outliers and removed from further analysis. Second, Levene test was not significant, suggesting that the two groups had equal variance. The simulation group ($M=71.40$, $SD=5.86$) scored significantly higher than the nonsimulation group ($M=66.45$, $SD=6.83$) on ATI clinical judgment/critical thinking (See Table 1). The t test revealed a significance difference between the simulation and the nonsimulation students, $t(275) = -6.51$, $p < .01$; 95% CI (lower bound = 3.46; upper bound = 6.46). (See Figure 1).

Discussion/Recommendation for Research

The result of this study was similar to Shoemaker et al. (2009). Researchers found that the use of high-fidelity in addition to hospital-based clinical experiences had a significant positive effect on students' critical thinking skills. Additional factors may have affected the results of this study. Students may have had prior experience with simulation before experiencing in maternity. The results of this study suggest further exploration. Future research exploring student's perceptions of high-fidelity simulation and examine additional variables, including ethnicity, age, gender socioeconomic status, and faulty level of training. Replication of the study with other content or larger samples is warranted. The knowledge gained from these additional studies could be used to most effectively apply high-fidelity simulation as an instructional tool.

References

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Figure 1: Distribution of ATI Critical Thinking Scores for non – Simulation/Simulation Group

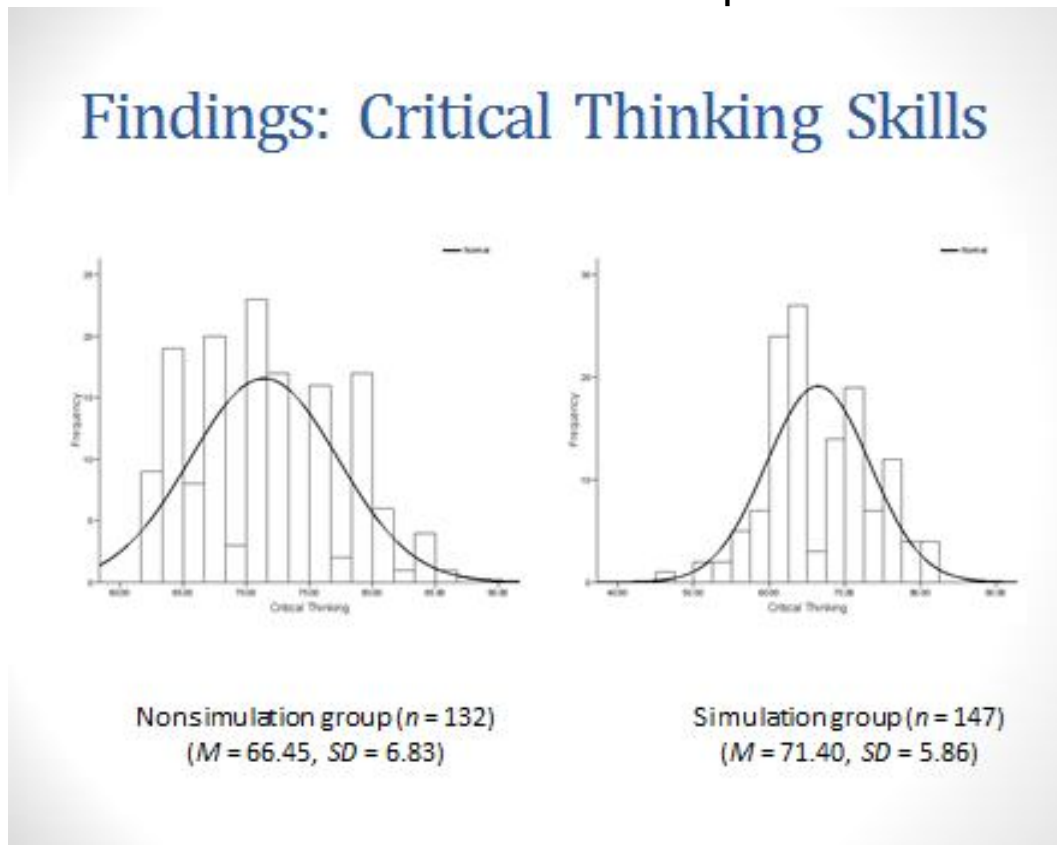


Table 1: Means and Standard Deviations of ATI Critical Thinking by Instructional Group

Group	n	M	SD
Simulation	146	71.40	5.86
Nonsimulation	131	66.45	6.83