Title:
Simulation Roles and Clinical Decision Making Accuracy in an Acute Care Scenario

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Clinical Decision Making Skills
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References:
Elstein, A.S., Shulman, L.S. & Sprafka, S.A. (1978). Medical problem solving: An analysis of clinical reasoning. Cambridge, MA: Harvard University Press. Harder, B. N., Ross, C. & Paul, P. (2013). Instructor comfort level in high-fidelity simulation, Nursing Education Today, 33, 1242-1245. Jeffries, P. R. & Rogers, K. J. (2007). Theoretical framework for simulation design. In P. Jeffries (Ed.), Simulation in nursing education (pp. 21-33). New York: National League for Nursing. Kaplan, B., Abraham, C., & Gary, R. (2012). Effects of participation vs. observation of a simulation experience on testing outcomes: Implication for logistical planning for a school of nursing, International Journal of Nursing Education Scholarship, 9(1), 1-15. Newberry, B. (2014). Satisfaction and self-confidence: Difference between undergraduate nursing students participating in and observing simulation training (Doctoral dissertation). Northcentral University, Minnesota. (Accession No. 2013007061). White, K.A. (2014). Development and validation of a tool to measure self-confidence and anxiety in nursing students during clinical decision making. Journal of Nursing Education, 53(1), 14-22.

Abstract Summary:
Research about clinical decision making accuracy (CDM) among simulation roles is limited. An acute care scenario was used to assess accuracy of cue acquisition, diagnosis, and action across roles in ASN students. Accuracy varied among roles in some cases. The goal of the scenario should be considered when determining roles.
Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
(1) The learner will be able to discuss the importance of clinical decision making within schools of nursing	I. Opening remarks, introduction of speakers, and topic. A. Purpose of research study B. Design and methodology II. Introduce concept and importance of clinical decision making (CDM) and influence on patient outcomes. A. Cornerstone of professional nursing practice

	B. Positive patient outcomes C. Negative patient outcomes
(1) The learner will be able to differentiate between active and passive roles within the simulation setting.	III. Simulation assists with student learning of the process of CDM A. Active roles in simulation (primary or medication nurse) B. Passive roles in simulation (observer) IV. The acute care scenario (post open heart surgery patient) and decision stopping points. A. Stopping point #1 – shortness of breath B. Stopping point #2 – new onset Atrial Fibrillation
(3) The learner will be able to articulate the three phases of clinical decision making accuracy addressed in the study.	V. CDM accuracy forms and questions asked of all participants A. Cue acquisition B. Diagnosis C. Action VI. CDM forms scoring A. Two independent scorers (PhD prepared and CNE certified) B. Four-point scale C. Rubric utilization
(4) The learner will be able to discuss two key findings which resulted from the study	VIII. Findings A. Sample demographics B. Correlations C. Within subjects – CDM accuracy questions point #1 and point #2 D. Between subjects – CDM accuracy between roles IX. Implications for nursing education and practice globally A. Assignment to roles in simulation should be done with caution and be based upon the goal of the simulation exercise. B. Consider pausing the scenario for collaboration among all students C. Consider giving observers a CDM-related worksheet to keep on-task D. Use auxiliary roles cautiously (i.e. medication nurse) as may they may become distracted with tasks

Abstract Text:

Background: Clinical decision making (CDM) is essential for nurses in clinical practice. The accuracy with which one makes clinical decisions impacts positive and negative patient outcomes (White, 2014). The simulation environment is one means of practicing and learning the process of CDM. Within the simulation laboratory experience there are active and passive roles students may play (primary nurse and observers respectively). Some students enjoy active roles in simulation scenarios while others prefer passive roles (Harder, Ross, & Paul, 2013). Newberry (2014) noted there were no significant differences in student satisfaction and self-confidence in learning between active and passive roles in simulation. Furthermore, when knowledge was assessed among the active and passive roles, no differences in knowledge gained were found (Kaplan, Abraham, & Gary, 2012).

Research evidence; however, is sparse regarding comparisons of CDM accuracy between roles. To our knowledge, no studies have been done that examine clinical decision making accuracy between active and passive roles within the simulation setting. Therefore, our innovative inquiry is necessary to inform nurse educators and about this aspect of simulation.

Purpose and Framework: The purpose of this presentation is to present findings from a quantitative study that examined clinical decision making accuracy (cue acquisition; diagnosis; action) among simulation roles in fourth semester associate degree nursing students. The theoretical framework used to undergird the study is built upon the Nursing Education Simulation Framework (Jefferies & Rogers, 2007). This framework was used as a guide when developing the components involved in the simulation scenario used in this study.

Design: The study utilized a mixed factorial design with stopping points (shortness of breath [SOB] and rhythm change) and decision phase (cue acquisition, diagnosis, and action) as within subjects' factors and simulation role (observer, family, primary nurse, and auxiliary nurses) as between subjects' factors. Decision making accuracy among fourth semester students in a simulation scenario was examined. The research question for this study was: *Are there differences in clinical decision making accuracy among the different roles in an acute care simulation scenario with fourth semester ASN students*?

Methods: Students participated in an acute care scenario (a two-day post open heart surgery patient) as part of their regularly scheduled simulation experience. Roles within the scenario were randomly assigned prior to the start of the scenario. Students who consented to participate in the study completed a CDM form at two distinct decision stopping points (SOB and Atrial Fibrillation [AFib]).

The stopping points were intentionally designed to be clinically different and distinct. Shortness of breath is a clinical situation familiar to fourth semester nursing students and nursing actions to resolve the problem may be more easily anticipated. New onset cardiac rhythm change (AFib) is new content to fourth semester students and there is one primary action which should be taken – call the provider to obtain orders for antiarrhythmic medications.

The CDM form completed by participants was comprised of three questions: (A) *What are you noticing about the patient right now*?; (B) *What do you think is going on right now with the patient*?; (C) *What specific action(s) should the nurse take at this time*? These items gathered data about the cue acquisition diagnosis, and action/intervention phases of the CDM process respectively (Elstein, Shulman & Sprafka, 1978).

Results: CDM accuracy forms were scored independently by two doctorally prepared certified nurse educators (the first two authors). Several statistically significant findings ($p < 0.05$) were revealed related to the relationship between demographic variables and CDM accuracy on the two stopping points. Within the SOB situation age was negatively correlated with cue acquisition ($r = -0.21$) and grade point average was positively related to decision about nursing actions ($r = 0.2$). In the AFib situation prior patient care experience was positively associated with cue acquisition ($r = 0.19$).

Data were analyzed to examine within subject differences between the two stopping points. Stopping point #1 (SOB) was a familiar situation for students. As a result of their familiarity, students were most accurate (74% accuracy) with recognizing cues in the patient. It was not surprising that the diagnosis phase of CDM was the least accurate (29% accuracy) since many diagnoses for SOB exist. Often students associated SOB with only one reason, despite that they were instructed to be specific and thorough with their answers. Once focused on a single diagnosis, their subsequent action plan became limited. Stopping point #2 (AFib) was new content for all students. Due to the unfamiliarly of a cardiac rhythm change, often students were able to recognize an increase in heart rate (56% accuracy) but less likely to recognize a change in rhythm (48% accuracy). Subsequently, their plan of action was often incorrect (27% accuracy). Unlike the SOB situation where a number of nursing actions were appropriate, there was truly just one correct action for the AFib situation – call the provider for orders.

When examining CDM accuracy across stopping points and simulation role, one statistically significant finding was revealed. During the AFib situation, mean levels of cue acquisition accuracy differed across role: observers (67%), medication and education nurses (50%), primary nurse (46%), and family members (41%). The significant role effect ($p = 0.03$) in the AFib situation indicated observers were

statistically more accurate with cue acquisition than family members. Overall CDM accuracy in the AFib stopping point, though not statistically significant ($p = 0.07$), revealed observers were most accurate in the CDM process while family members were the least accurate. During the SOB situation, despite their role, students performed comparably regarding CDM accuracy.

Nursing Implications: Simulation is used in schools of nursing for various reasons such as skill mastery, team building, and priority setting. This study is the first to examine simulation roles and accuracy of CDM; therefore findings may provide a catalyst for change within simulation settings. The findings have implications for both nursing education as well as nursing practice. In nursing education today, clinical groups often exceed 10 students. Out of necessity educators assign more students to the passive observer role in the simulation lab, despite limited evidence to support this practice. This study found the observer role in simulation to be beneficial related to CDM accuracy. Typically nurse educators as well as students see active roles in simulation as most valuable (Harder, Ross, & Paul, 2013). However, observers may actually gain substantially from the experience because they are under less scrutiny, experience less stress, and are able to collaborate with peers. For these reasons, CDM among observers may actually improve.

This study concluded, related to CDM accuracy, the family member role may be less beneficial; as was the case in the AFib stopping point. When assigning the family member role, the student is often instructed to remain “in-role”. Consequently, a student in a wife role is thinking about what a wife would do or say; not what a nurse would do or say. Nurse educators should be mindful of a simulation experience’s goal when determining role assignment. If the intended goal is practicing the process of CDM and accuracy, educators might use caution when assigning family member roles.