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# Effect of Simulation Role on Clinical Decision-Making Accuracy

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## KEYWORDS

simulation;  
simulation roles;  
teaching strategy;  
clinical decision-  
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## Abstract

**Background:** Clinical simulation affords valuable practice with the process of clinical decision-making. Participation in the simulation experience often includes various roles (e.g., primary nurse; observer) as well as familiar and unfamiliar situations.

**Method:** This study used a quantitative, mixed factorial design.

**Results:** Role did not impact clinical decision-making accuracy on the familiar situation. On the unfamiliar situation, observers outperformed other roles, whereas family members were markedly less accurate.

**Conclusion:** These results emphasize the need for students to rotate through various roles and for educators to consider the nature and goal of the scenario when deciding what types of roles to assign.

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## Background

Clinical decision-making (CDM) is cornerstone for practicing nurses and affects patient outcomes (Pearson, 2013; White, 2014). Therefore, nursing students must learn this process during the confines of their educational setting. Problem-based situations in the classroom are used to provide a window into one's cognitive processes; however,

they bear little resemblance to the demands facing nurses in the practice arena, including distractions and the need to collaborate with other practitioners. Simulation is a means of practicing the process of CDM in a safe, structured environment that mimics clinical practice.

Students in simulation are assigned various roles such as the primary nurse, medication nurse, family member, and observer. The varied roles within simulation are inherently different, perhaps due to the level of student engagement. For instance, the observer role experiences fewer stressors (Bloch & Bloch, 2015), which may increase available

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cognitive resources and enhance the ability to perform analytical processes. However, observers do not have the opportunity to experience real-time, in-room, active participation. Students are often assigned to varied roles, some with lesser amounts of engagement, as a function of limited

resources. To our knowledge, there are no studies that examine the effect of simulation role on CDM accuracy. Therefore, the purpose of this study was to assess the accuracy of CDM among various roles in an acute-care simulation scenario in prelicensure nursing students.

### Key Points

- We examined CDM accuracy among simulation roles.
- When the situation is unfamiliar, observer role has higher levels of CDM accuracy and family member role has low levels of CDM accuracy.
- Active and passive roles have value depending on learning outcomes.

## Review of Literature

### Clinical Decision-Making

CDM among nurses involves several, often interactive, cognitive processes. [Benner and Tanner \(1987\)](#) argue that in CDM, analytical and intuitive processes yield quality solutions to clinical problems although other studies suggest that situational, user, and difficulty variables may impact the relative success of each method ([Thompson, Spilsbury, Dowding, Pattenden, & Brownlow, 2008](#)). The analytical approach to CDM involves effortful and verbalizable processes surrounding a series of rule-based decisions ([Elstein, Shulman, & Sprafka, 1978](#)). During an initial encounter with the patient, the nurse identifies a set of relevant cues (e.g., low blood pressure; dizziness) and generates potential hypotheses or diagnoses (e.g., dehydration). The diagnosis that is most consistent with available evidence guides subsequent action. Success of the analytical process varies based on a number of factors, including user knowledge ([Benner, 2001](#)), ability to identify relevant cues ([Shelestak, Meyers, Jarzembak, & Bradley, 2015](#)), and effectiveness of clustering information into patterns ([Elstein et al., 1978](#)). Mastery of the analytical processes of CDM and subsequent quality decision action is challenging for novice practitioners ([Whyte et al., 2012](#)). This study addressed components of CDM and accuracy among nursing students.

To gain a window into the CDM thought processes, a “think-aloud” technique may be used ([Newell & Simon, 1972](#)). Implementation of this technique requires participants think through a real-life or simulated clinical problem and talk aloud as they process information. They speak about cues they observe, possible diagnoses, plausible decision options they are considering, and finally explicate their action choice. Versions of the

“think-aloud” technique have been used with studies of CDM ([Burbach, Barnason, & Thompson, 2015](#); [Clarke, Boyce-Gaudreau, Sanderson, & Baker, 2015](#)) and do not appear to bias the participant toward either analytical or intuitive processes ([Elstein et al., 1978](#)). During this study, students were asked to write their thought processes at specific decision points during a simulation scenario. Questions asked related to three important aspects of CDM: cue acquisition ([Burbach & Thompson, 2014](#)), diagnosis, and action ([Elstein et al., 1978](#)).

### Simulation Role

To accommodate large groups of students during a simulation scenario, students are typically assigned either active or passive roles. Active nurse roles may include primary, documentation, and charge nurse. Passive roles include family members and observers. Although some students enjoy the passive role, others prefer the active nurse roles ([Harder, Ross, & Paul, 2013](#); [Hober, 2012](#)). [Newberry \(2014\)](#) and [Jeffries and Rizzolo \(2006\)](#) noted that role did not affect student satisfaction and self-confidence in learning between active and passive roles in simulation. Furthermore, no differences were found in knowledge gained based on simulation role ([Jeffries & Rizzolo, 2006](#); [Kaplan, Abraham, & Gary, 2012](#)). Research evidence is very sparse regarding comparisons of outcomes among simulation roles. To our knowledge, no studies have been performed that compare CDM accuracy between active and passive roles in simulation. Therefore, our inquiry will inform nurse educators about the benefits of simulation for students in different roles.

### Theoretical Framework

This research study was built on the Nursing Education Simulation Framework (NESF; [Jeffries & Rogers, 2007](#)), which includes important simulation concepts that were integral to this study. According to [Jeffries and Rogers \(2007\)](#), the NESF is a useful guide when implementing and evaluating simulation activities. The framework identifies five main conceptual components: teacher factors, student factors, educational practices, simulation design characteristics, and expected student outcomes.

This framework was used as a guide in several ways. First, the simulation design characteristics and the educational practice components of the framework were implemented when modifying the simulation scenario. For instance, we verified that objectives and learner behaviors were appropriate, the simulator was of the correct fidelity, and expectations for performance were high but realistic. Second, we incorporated the teacher component by including faculty members with clinical expertise related to the content of the scenario. Third, concepts within the

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