More than 250,000 people die in the United States each year due to medical errors, which constitutes the third leading cause of death, ranking behind only heart disease and cancer (Makary & Daniel, 2016). In a hospital setting, nurses can detect errors early and initiate actions to prevent negative consequences for patients (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Nurses who are situationally aware understand why a patient’s condition may be changing and can anticipate what is likely to happen next, allowing them to react quickly and appropriately when something goes wrong (Cohen, 2013). Therefore, training nurses to improve their situation awareness (SA) could be the most valuable strategy in reducing deaths and other costs associated with medical errors. However, the opportunity to learn and practice SA is noticeably missing from undergraduate nursing curricula (McKenna et al., 2014). O’Meara et al. (2015) and Williams, Quested, and Cooper (2013) noted that high-level SA is crucial for nursing graduates who will be required to make potentially life-saving decisions in complex, unpredictable, and demanding situations.

SA is defined as an individual’s cognitive capacity to perceive components in his/her surroundings, comprehend the ensuing information, and utilize the acquired facts to forecast future events (Wright, Teakman, & Endsley, 2004). Maintaining SA is an essential skill in medical settings that can be developed over time to improve patient care and ensure patient safety. Although human factors research pertaining to SA has been dominated by military and industry applications, Farnan (2016) noted that SA would “undoubtedly” improve the quality and safety of patient care by reducing errors. For instance, Schulz et al. (2016) found errors in SA were responsible for 81.5% of the cases from the German Anesthesia critical incident reporting system.

The results of Schulz et al. (2016) show much research is needed in the medical field pertaining to SA in order to improve patient care and safety. The present SA training involves a hands-on, dynamic training process that utilizes a realistic scenario that requires nurses to use their expertise to: 1) recognize key situational elements (e.g., a patient presenting symptoms of a stroke) at a particular time and place, 2) understand/interpret this information to rule out alternative causes of the symptoms, and 3) predict future events based on the acquired patient information, despite distractions. This scenario-based SA training and subsequent practice in situation assessment can serve as an effective weapon for nurses to combat medical errors.

The participants were ten nurses with less than two years of work experience employed at a local hospital. The nurses participated in a single-day educational session that lasted for approximately six hours. During the training session, the nurses completed two simulation scenarios, received a lecture on situation awareness, participated in group discussions, and received mindfulness training. The nurses completed two 12-15 minute scenarios in a simulated hospital setting (one at the beginning of the educational session and one at the end of the session) to measure their SA during patient care.
At the start of the educational session, the nurses entered individually to begin care for the simulated patient in a simulated hospital room. They interacted with a patient, an “intelligent manikin,” which was programmed to exhibit vital signs and symptoms of a patient suffering from a femur fracture that transitioned into a stroke (simulation scenario A). At three points during the exercise, the simulation was stopped and the nurse participants were verbally questioned with their responses being recorded about the current situation to assess their current levels of SA. Specifically, without the information visible to them, the participants were asked to recall the latest patient vital signs (e.g., blood pressure, temperature, heart rate), the current state of the patient (e.g., stable, deteriorating), and what will likely happen to the patient if the trend continues (e.g., will become dehydrated, will need pain medications, cardiac arrest). After the nursing simulation session, the nurse participants were debriefed regarding their performance.

After completion of the simulation exercise, the nurses attended a workshop on SA that included various hands-on activities to help demonstrate key concepts and strategies. For example, brief videos were shown depicting a nurse actor demonstrating either good or poor SA while caring for a patient. Following each video, the participants engaged in a group discussion about the actor’s performance in the video by answering questions pertaining to SA. The questions were designed to foster discussion among the participants (e.g., “What information does the nurse have about the patient's condition?” and “What should the nurse be doing next?”). Toward the end of the workshop, the nurses were instructed on breathing exercises designed to increase mindfulness and concentration skills.

The program concluded with a second exercise in the nursing simulation lab. The nurses attended to the “intelligent manikin” patient programmed to exhibit vital signs and symptoms of pneumonia that transitioned into sepsis (simulation scenario B). Following the same procedures as Simulation Scenario A, the simulation was paused at three time points and the participants were verbally questioned about the current situation to assess their current levels of SA. The participants were debriefed regarding their performance and dismissed from the training.

In addition to post training participant survey data, the training will be evaluated using a pre-post design comparing SA maintenance skills at the start of the workshop (scenario A) to that at the end of the workshop (scenario B). Data will be analyzed using a non-parametric test of mean differences. It is anticipated that the training will increase the SA of nurses, which will equip them to act optimally when caring for patients in various medical situations.

Title:
Interprofessional Collaborative Approach for Improving Situation Awareness Using Simulation in a Nursing Residency Program

Keywords:
Interdisciplinary, Simulation and Situation Awareness

References:


**Abstract Summary:**

Lack of situation awareness (SA) in healthcare is a leading cause of medical errors. The University of West Florida's psychology and nursing faculty collaborated on an interdisciplinary, innovative approach to enhancing SA among novice nurses in a residency program. SA improvement was later assessed in a simulated patient care setting.

**Content Outline:**

I. Introduction

A. Medical errors in healthcare

a) More than 250,000 people die in the United States each year due to medical errors.

b) Medical errors are the third leading cause of death, ranking behind only heart disease and cancer

c) Training nurses to improve their situation awareness could be the most valuable strategy in reducing deaths and other costs associated with medical errors.

B. Situation Awareness

a) Situation Awareness is defined as an individual's cognitive capacity to perceive components in his/her surroundings, comprehend the ensuing information, and utilize the acquired facts to forecast future events.

b) Situation Awareness was responsible for 81.5% of the cases from the German Anesthesia critical incident reporting system.

II. Research Methods
A. Participants

a) Ten nurses with less than two years of work experience employed at a local hospital.

B. Setting

a) University Nursing Skills & Simulation Learning Center

C. Materials/Instruments

a) Situation Awareness Assessment

b) Simulation Exercise

D. Procedure

a) Introduction to simulation

b) Simulation Scenario A with situation awareness assessment

c) Workshop

d) Group discussion

e) Mindfulness training

f) Simulation Scenario B with situation awareness assessment

g) Debriefing

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Professional Experience: Jill Van Der Like, DNP, MSN, RNC is the Clinical Assistant Professor and Director of the Nursing Skills & Simulation Learning Center for the University of West Florida School of Nursing. Dr. Van Der Like has been a registered nurse for 31 years, and a clinical instructor for eleven of those years. She uses student-centered simulation instruction to improve the quality and safety in patient care, and interprofessional education and research for community health. She is active in the Sigma Theta Tau International Honor Society of Nursing, National League for Nursing, and Florida Nurses Association. She volunteers as the Student Nurses Association Advisor, for the Pensacola Bay Area IMPACT 100, and the Florida Guardian ad Litem program. Her research interests include behavior change for hand hygiene compliance in the healthcare setting, and anxiety during nursing simulation instruction.
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**Author Summary:** Dr. Stephen Vodanovich, professor, teaches personnel selection, industrial psychology, legal issues in industrial and organizational psychology, method in personnel, and social psychology. He received a bachelor's degree in psychology from Loyola University, and master's in psychology and doctorate in industrial and organizational psychology from St. Louis University.