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A Mixed-Methods Examination of Mindfulness, Situation Awareness, and Errors by Nursing Students During Simulation Scenarios
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Purpose:
The literature reports that 80% of health care errors that reach the patient and result in harm may be attributed to cognitive human factors. Experts in the study of ergonomics and human performance factors have described the 'collective mindfulness' of nurses as a critical factor necessary for highly reliable quality and safety in patient care delivery.
Faculty in schools of nursing have begun to examine methods of incorporating content related to the science of human factors and ergonomics into pre-licensure curriculum. There is limited nursing research to guide curricular development regarding cognitive human factors and the resultant impact on human attention, situation awareness and practice errors on the part of the nurse. This represents a critical gap in the nursing education literature.
The purpose of this multi-site, mixed method, descriptive correlational study was to examine the relationship between dispositional mindfulness, situation awareness (SA) and clinical competency in senior-level baccalaureate nursing students during simulated patient care experiences to further nursing knowledge of cognitive human factors and practice errors.

Methods:
Senior-level nursing students (n=102) in pre-licensure programs were recruited from two universities in demographically diverse locations. The Five Facets of Mindfulness Questionnaire (FFMQ) was administered to participants after the scenario and debriefing were completed. The Situation Awareness Global Assessment Technique (SAGAT) was conducted by the researcher between 5 and 10 minutes into the patient care scenario during a "freeze" in the simulation while the Creighton Competency Evaluation Instrument (C-CEI) was utilized to rate overall student performance. The Promoting Excellence and Reflective Learning in Simulation (PEARLS) debriefing methods was utilized to capture the participants' descriptions of their performance gaps during the simulation including those related to cognitive, behavioral, and technical errors.

Results:
Quantitative analysis of study data revealed that self-reported dispositional levels of mindfulness did not correlate to the dependent variable of clinical competence (r =0.099, n = 102, p = .320, 2-tailed) or the SA variable (r = 0.091, n = 102, p = 0.363, 2-tailed). A weak correlation between the mindfulness facet of observing and the clinical competency of communication (r = .0.193, p = 0.053) was identified. Analysis of the relationship between SA and clinical competency revealed that SA was found to have a moderately strong, positive relationship with overall clinical competency scores (n =102, r = .301, p = .002, 2-tailed). The level of overall situation awareness demonstrated a positive correlation to three of the four competency related sub-scales: assessment (r = 0.212, p = 0.032), communication (r = 0.340, p = 0.000), and clinical

judgment ($r = 0.388$, $p = 0.000$). The qualitative findings identified two areas in which nursing students described issues related to cognitive human factors: focused attention and effective communication.

Conclusion:
The findings from this research provide implications to nurse educators regarding the impact of mindfulness and situation awareness on the clinical outcomes of students thus supporting the inclusion of teaching strategies to improve mindfulness and situation awareness in nursing practice. Several pedagogical approaches to this end were identified.

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Keywords:
mindful nursing practice, mixed-methods and quality and safety education

Abstract Summary:
This presentation will overview a mixed-methods study of the relationship between mindfulness, situation awareness and clinical competency of senior-level nursing students during simulated care scenarios.

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Author Summary: Deborah Struth is currently a Research Associate with the Oncology Nursing Society. With extensive experience in healthcare quality and safety, she has a research interest in examining patient safety and nursing error through a lens of cognitive human factors, mindfulness and situation awareness. Deborah has taught in pre-and post-licensure BSN programs in addition to health care administration graduate programs. Prior to her work in health professions education, she spent over a decade in nursing administration.