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Developing a critical skills assessment for disaster response military personnel: A pilot study

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Purpose/Aims: Prior to starting our two-year National Guard sleep study, our research team was faced with the challenge of identifying a method of measuring medical decision making in a military field setting that would be non-disruptive to the disaster response training exercises underway. Thus, the purpose of this pilot study was to select an appropriate set of medical calculation questions and basic life support (BLS) questions sensitive enough to detect fatigue-related critical skills deterioration.

Rationale: Demands of our larger study and the urgency of needing information to guide which questions to employ required us to gather preliminary evidence regarding the similarity of the response time and difficulty of the questions used to measure medical decision making. As such, we used Doctor of Nursing Practice (DNP) and Baccalaureate of Science Nursing (BSN) students as a proxy for National Guard medical personnel.

Method: Thirty-seven students who were enrolled in a DNP program or a BSN program participated in this study. Over the course of three days, student participants were sent five questions in the morning and five questions in the evening. On the fourth day, students were sent 10 questions in the morning and 10 questions in the evening. DNP students received medication calculation questions and BSN students received BLS questions. All questions were drawn from standardized test bank sources, were multiple choices and were thoroughly reviewed by the research team for relevant content prior to study testing.

Results: Twenty-five (50%) and twenty-eight (56%) of the 50 BLS and medication calculation questions met the selection criteria of average response times between 10 and 50 seconds and accuracy of at least 80%. From these, 16 questions were selected from both sets with smaller standard deviations, minimum response times of at least 5 seconds and maximum response times less than 90 seconds.

Implications: In order to test the impact of sleep deprivation, fatigue, or any other stressors on critical decision making skills of military medical personal during field training operations it was necessary to develop a test battery of questions that are sensitive enough to detect variation due to human factors. Our study accomplished this objective, and the resulting medication calculation and BLS questions can be used to readily assess deterioration in critical decision making skills within a field setting.

Biography

Denise A Smart has her expertise in military population health and occupational health. Her focus is on workplace safety during training and real-world military disaster responses for National Guard medical personnel. She has experience of over 22 years as a Navy Nurse and Public Health Officer for the Air National Guard before retiring in 2012. She has been working closely with Dr. Lois James (Co-Investigator) on this two-year research project.

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