

Performance measurement in stress and crisis simulation situations

Comparative study in the simulated care of war wounded by military physicians and nurses.

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Background: High-fidelity simulation is widely used in the ongoing education of caregivers. Real or simulated crisis and stressful situations negatively affect performance, can impede the application of guidelines for casualty care and can be the source of medical errors. The study investigated whether participants performance (1st study) and three months memorization of pedagogical messages (2nd study) would improve if they used the digital cognitive aid MAX (Medical Assistant eXpert) during a simulated complex situation compared to memory alone.

Methods: Participants were randomized in two groups of parallel arms. Four blocks of two scenarios involving combat casualty care were defined and randomly assigned to each group. Participants used the digital cognitive aid (MAX) only once: Group 1 in the first scenario and Group 2 in the second scenario. For the first study, the primary endpoint was the percentage of actions and steps in the designated protocol performed by each subject with or without MAX. The secondary endpoints show the cognitive aid's effect on the non-technical performance scores and on the self-efficacy scores. Three months later, for the second study, learners were asked to recall pedagogical messages from their two scenarios, and were scored for each scenario. The primary endpoint of the second study was the number of key messages recalled after simulation using the digital cognitive aid or not. The secondary endpoints were the influence on the results of the profession and age of the leader, and of the scenario block.

Results: The use of the digital cognitive aid MAX significantly improved technical and non-technical performance as well as three months memorization of pedagogical messages for military physicians and nurses.