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Comparison of simulation and video-based training for acute asthma

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Abstract

Background: Emergency medicine is particularly well suited to simulation training. However, evidence for the efficacy of simulation-based medical training remains limited especially to manage high-risk cases such as acute asthma.

Objective: The objective of our study was to compare the performance of high-fidelity simulation (HFS) and interactive video-case challenge-based training (IVC) for final-year medical students in the management of acute asthma.

Methods: This was a prospective randomized controlled study conducted at the emergency department (ED) of Monastir University hospital (Tunisia). 69 final-year medical students were randomized to HFS (n = 34) and IVC (n = 35) training on acute asthma topic. The study was conducted over a 1-week period. Efficacy of each teaching method was compared through the use of multiple-choice questionnaires (MCQ) before (pre-test), after (post-test) training and a simulation scenario test conducted 1 week later. The scenario was based on acute asthma management graded on predefined critical actions using two scores: the checklist clinical score (range 0 to 30), and the team skills score (range 0 to 16). Student satisfaction was also evaluated with the Likert 5 points scale. Two years after the post-test, both groups underwent a third MCQ testing to assess sustainability of knowledge.

Results: There were no differences in age between groups. There was no statistically significant difference between the HFS and IVC groups pre-test scores ($p = 0.07$). Both groups demonstrated improvement in MCQ post-test from baseline after training session; the HFS MCQ post-test score increased significantly more than the IVC score ($p < 0.001$). The HFS group performed better than the IVC group on the acute asthma simulation scenario ($p < 0.001$). Mean checklist clinical score and mean team skills score were significantly higher in HFS group compared to IVC group (respectively 22.9 ± 4.8 and 11.5 ± 2.5 in HFS group vs 19.1 ± 3 and 8.4 ± 3.1 in IVC group) ($p < 0.001$). After 2 years, MCQ post-test scores decreased in both groups but the decrease was lower in HFS group compared to the IVC group.

Conclusion: High-fidelity simulation-based training was superior to interactive video-case challenge for teaching final year medical students,and led to more long-term knowledge retention in the management of simulated acute asthma patients.

Trial registration: The study was registered at www.

Clinicaltrials: gov NCT02776358 on 18/05/2016.

Keywords: Acute asthma; High-fidelity simulation; Interactive video-case education.

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Figures

Fig. 1 The study population flowchart. IVC...

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