The aim of this study was to examine the impact of the physical fidelity of the simulation model on learning outcomes for a simulation-based education program for CVC insertion.” Diederich et al (2015).

Abstract:

INTRODUCTION: Simulation-based education for central venous catheter (CVC) insertion has been repeatedly documented to improve performance, but the impact of simulation model fidelity has not been described. The aim of this study was to examine the impact of the physical fidelity of the simulation model on learning outcomes for a simulation-based education program for CVC insertion.

METHODS: Forty consecutive residents rotating through the medical intensive care unit of an academic medical center completed a simulation-based education program for CVC insertion. The curriculum was designed in accordance with the principles of deliberate practice and mastery learning. Each resident underwent baseline skills testing and was then randomized to training on a commercially available CVC model with high physical fidelity (High-Fi group) or a simply constructed model with low physical fidelity (Low-Fi group) in a noninferiority trial. Upon completion of their medical intensive care unit rotation 4 weeks later, residents returned for repeat skills testing on the high-fidelity model using a 26-item checklist.

RESULTS: The mean (SD) posttraining score on the 26-item checklist for the Low-Fi group was 23.8 (2.2) (91.5%) and was not inferior to the mean (SD) score for the High-Fi group of 22.5 (2.6) (86.5%) (P < 0.0001). Residents in both groups judged the training program to be highly useful despite perceiving a lesser degree of physical realism in the low-fidelity model compared with the high-fidelity model (P = 0.05).

CONCLUSIONS: Simulation-based education using equipment with low physical fidelity can achieve learning outcomes comparable with those with high-fidelity equipment, as long as other aspects of fidelity are maintained and robust educational principles are applied during the design of the curriculum.
Reference:


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