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Virtual reality mobile application to improve videoscopic airway training: A randomised trial

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Abstract

Introduction: Flexible bronchoscopic intubation (FBI) is an important technique in managing an anticipated difficult airway, yet it is rarely performed and has a steep learning curve. We aim to evaluate if the integration of virtual reality gaming application into routine FBI training for emergency department doctors would be more effective than traditional teaching methods.

Methods: We conducted a randomised controlled trial to compare self-directed learning using the mobile application, Airway Ex* in the intervention group versus the control group without use of the mobile application. All participants underwent conventional didactic teaching and low-fidelity simulation with trainer's demonstration and hands-on practice on a manikin for FBI. Participants randomised to the intervention arm received an additional 30 minutes of self-directed learning using Airway Ex, preloaded on electronic devices while the control arm did not. The primary outcome was time taken to successful intubation.

Results: Forty-five physicians (20 junior and 25 senior physicians) were enrolled, with male predominance (57.8%, 26/45). There was no difference in time taken to successful intubation (median 48 seconds [interquartile range, IQR 41-69] versus 44 seconds [IQR 37-60], $P=0.23$) between the control and intervention groups, respectively. However, the intervention group received better ratings (median 4 [IQR 4-5]) for the quality of scope manipulation skills compared to control (median 4 [IQR 3-4], adjusted $P=0.03$). This difference remains significant among junior physicians in stratified analysis.

Conclusion: Incorporating virtual reality with traditional teaching methods allows learners to be trained on FBI safely without compromising patient care. Junior physicians appear to benefit more compared to senior physicians.

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