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Implementing blended learning in emergency airway management training: a randomized controlled trial

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Abstract

Background: While emergency airway management training is conventionally conducted via face-to-face learning (F2FL) workshops, there are inherent cost, time, place and manpower limitations in running such workshops. Blended learning (BL) refers to the systematic integration of online and face-to-face learning aimed to facilitate complex thinking skills and flexible participation at a reduced financial, time and manpower cost. This study was conducted to evaluate its effectiveness in emergency airway management training.

Methods: A single-center prospective randomised controlled trial involving 30 doctors from Sarawak General Hospital, Malaysia was conducted from September 2016 to February 2017 to compare the effectiveness of BL versus F2FL for emergency airway management training. Participants in the BL arm were given a period of 12 days to go through the online materials in a learning management system while those in the F2FL arm attended a-day of face-to-face lectures (8 h). Participants from both arms then attended a day of hands-on session consisting of simulation skills training with airway manikins. Pre- and post-tests in knowledge and practical skills were administered. E-learning experience and the perception towards BL among participants in the BL arm were also assessed.

Results: Significant improvements in post-test scores as compared to pre-test scores were noted for participants in both BL and F2FL arms for knowledge, practical, and total scores. The degree of increment between the BL group and the F2FL arms for all categories were not significantly different (total scores: 35 marks, inter-quartile range (IQR) 15.0 – 41.0 vs. 31 marks, IQR 24.0 – 41.0, $p = 0.690$; theory scores: 18 marks, IQR 9 – 24 vs. 19 marks, IQR 15 – 20, $p = 0.992$; practical scores: 11 marks, IQR 5 -18 vs. 10 marks, IQR 9 – 20, $p = 0.461$ respectively). The overall perception towards BL was positive.

Conclusions: Blended learning is as effective as face-to-face learning for emergency airway management training of junior doctors, suggesting that blended learning may be a feasible alternative to face-to-face learning for such skill training in emergency departments.

Trial registration: Malaysian National Medical Research NMRR-16-696-30190. Registered 28 April 2016.

Keywords: Emergency airway management, Blended learning, Online learning, E-learning

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