

Abstract

Background: Simulation-based education and peer-assisted learning (PAL) are both known as useful educational methods. Previous research has reported that combining these two methods are effective for training medical residents in short-term evaluation. This study was aimed to evaluate the middle- to long-term effects of simulation-based education combined with PAL on the performance of medical residents during emergency department duties.

Methods: This study was designed as a case-control study and conducted over three years at Okayama University Hospital in Japan. Postgraduate-year-one medical residents were assigned to three groups: a simulation group that received simulation-based education, a lecture group that received traditional lecture-based education, and a control group that received no such prior trainings. Prior training in emergency department duties using PAL was performed as an educational intervention for the simulation and lecture groups during the clinical orientation period. The residents' medical knowledge was assessed by written examinations before and after the orientation. The performance of residents during their emergency department duties was assessed by self-evaluation questionnaires and objective-assessment checklists, following up with the residents for three months after the orientation period and collecting data on their 1st, 2nd, and 3rd emergency department duties. All the datasets collected were statistically analyzed and compared by their mean values among the three groups.

Results: A total of 75 residents were included in the comparative study: 27 in the simulation group, 24 in the lecture group, and 24 in the control group. The simulation and lecture groups obtained significantly higher written examination scores than the control group. From the self-evaluation questionnaires, the simulation group reported significantly higher satisfaction in their prior training than the lecture group. No significant differences were found in the emergency department performance of the residents among the three groups. However, when evaluating the improvement rate of performance over time, all three groups showed improvement in the subjective evaluation, and only the simulation and lecture groups showed improvement in the objective evaluation.

Conclusion: Simulation-based education combined with PAL is effective in improving the knowledge and satisfaction of medical residents, suggesting the possibility of improving work performance during their emergency department duties.