ORIGINAL RESEARCH

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VIRTUAL REALITY VERSUS MANIKIN SIMULATION FOR TEACHING CLINICAL ASSESSMENT IN EARLY CLINICAL YEARS MEDICAL STUDENTS

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Introduction: Simulated teaching is common in undergraduate medical education, but the cost of high-fidelity manikin simulation can be prohibitive. Although manikin and virtual reality (VR) simulation have been evaluated in final-year medical students [1], a similar comparison has not been undertaken for early clinical years students. We aimed to compare manikin and VR simulation in this cohort.

Methods: This single-centre, prospective, observational study recruited third- and fourth-year Hull York Medical School medical students undertaking clinical rotations at York Hospital. Ethical approval was gained. All potentially eligible students were approached. Sessions followed a structured lesson plan facilitated by a Clinical Teaching Fellow. In separate sessions, students completed an Airway, Breathing, Circulation, Disability and Exposure assessment of a simulated unwell patient using a head-mounted virtual reality device or high-fidelity manikin. All students completed a session using each modality.

The primary outcome was effectiveness of teaching, measured using the Simulation Effectiveness Tool-Modified (SET-M) [2]. SET-M was completed after each session and item scores were compared using Wilcoxson's signed-rank test. P

values <0.05 were considered significant. Demographic and safety data were collected.

Results: Ninety-eight students of 118 eligible completed both questionnaires. Median age was 22, 67% were female, 50% were third-year. 38% had previously used VR educationally. For all SET-M items, >70% of students agreed or strongly agreed with the statement after using either modality.

After VR simulation, students were significantly more likely to feel empowered to make clinical decisions and felt they had developed a better understanding of medications; they felt more confident in their ability to prioritise care and interventions, provide interventions that foster patient safety, and use evidence-based practice to provide care.

After manikin simulation, students were more likely to feel confident in communicating with their patient and colleagues.

There were no statistically significant differences in other items of SET-M. No safety issues were reported.

Discussion: VR allows students to respond to changing clinical conditions and see the effect of their interventions in real time, making it more suitable for developing confidence in providing and understanding interventions.

Manikin simulation requires real-time communication with the patient and clinical team, allowing better development of communication skills.

VR is flexible, easily portable and has a lower cost to set-up and maintain, making it well suited to dynamic, modern teaching environments [3].

VR and manikin simulation have comparable effectiveness overall; educators should choose the method best suited to their educational context and chosen learning outcomes.

Ethics statement: Authors confirm that all relevant ethical standards for research conduct and dissemination have been met. The submitting author confirms that relevant ethical approval was granted, if applicable

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