REAL LEARNING IN A VIRTUAL EMERGENCY: COMPARING TEACHING METHODS FOR MEDICAL STUDENTS

Sally-Anne Shields*, 1Adetokumbo Fadipe*, 1Aaron Hundle, 1Joseph Williams,
Rosemary Warren, 1Helen Higham, 1OxSTAR, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK; 2Medical Sciences Division, University of Oxford, Oxford, UK

Introduction

Over the years, teaching methodology in clinical medicine has attempted to keep pace with rapidly changing technological advances. The next wave of technology is virtual reality simulation (VRS). VRS is a three-dimensional, computer-generated environment where users interact with virtual surroundings offering the opportunity for real-life experiences without real-life consequences.

We sought to assess the value of using VRS to teach decision-making skills to students in their first clinical year. Specifically, we compared students’ confidence levels and clinical knowledge in responding to medical emergencies after training with either a VRS or a case-based discussion (CBD) session.

Methods

First year clinical students were recruited to this study due to their limited exposure to medical emergencies. After all participants attended a didactic lecture on the topic (sepsis or DKA) they were split into two groups (VR and CBD) by random allocation. The VRS group used the Oxford Medical Simulation platform to interact with an unwell patient in clinical scenarios. The CBD group were presented with a series of clinical decisions about the differential diagnosis, perform investigations and instigate treatment. Participants completed validated questionnaires and subject-specific tests before and after the sessions to assess their confidence levels and knowledge respectively. Scores from these were compared between the two groups.

Results/Outcomes

Over 20 students were recruited to take part in this study. Post course questionnaires analysis showed that all students found the VRS comparable to CBD and in most cases more favourable as a learning tool. Confidence scores were higher in the VRS group compared to the CBD group. The post session knowledge test showed that there was no difference between the VRS and CBD group.

Discussion, conclusions and recommendations

This study has shown that virtual reality simulation can successfully teach medical students the skills they require to confidently and competently approach clinical decision-making. We would suggest that based on the results of this study it is superior to case-based teaching sessions and in the future will compare it to mannequin or actor-based simulation. The impact of VR as a therapeutic intervention is set to rise with recent advances in psychology and stoke medicine. Ensuring our medical students the skills they require to confidently and competently approach clinical decision-making. We would suggest that based on the results of this study it is superior to case-based teaching sessions and in the future will compare it to mannequin or actor-based simulation. The impact of VR as a therapeutic intervention is set to rise with recent advances in psychology and stoke medicine.

REFERENCES

TRAINING ON A CRANIOTOMY SIMULATOR IMPROVES NEUROSURGICAL OPERATIVE PERFORMANCE

Ashwin Kumaria, Huan Chan, Shazia Jawed, Andrew Dapaah*, Christine Mitoko, Laurence Glancy, Dan D’Aquino, Richard Ashpole. Nottingham University Hospitals NHS Trust, Nottingham, UK

Introduction High fidelity simulation is increasingly indicated in contemporary surgical training in the era of decreased working hours and less operative experience. Simulation offers a safe learning experience, with no risk to patient safety and circumvents trainee surgeons’ working time restrictions.

We asked if ab initio neurosurgical trainees benefit from the intensive two day ‘QMC Craniotomy Simulator Course’ using the Realistic Operative Workstation for Educating Neurosurgical Apprentices (ROWENA™). Skills taught include 3-pin head fixation, burr holes, cannulating ventricles, intracranial pressure bolt placement, turning a craniotomy flap, bone flap fixation and basics of image-guided stereotactic and neuroendoscopic surgery. This type of simulation in neurosurgery has not been carried out before.

Methods Twenty seven junior neurosurgical trainees, over four courses, with minimal prior neurosurgical operating experience were assessed by two independent assessors (Consultant and Registrar level). Participants’ ability to perform a basic neurosurgical procedure, namely burr hole evacuation of a subdural haematoma, was compared at the beginning and end of the course.

Assessments were performed using the Modified Objective Structured Assessment of Technical Skills (MOSATS) - a validated and well-utilised test of operative skill.

Results All participants’ operative ability was demonstrably improved. There were significant improvements in participants’ knowledge of instruments and procedure (by 48% and 45% respectively on MOSATS). Most importantly, significantly improved time and motion (42%), instrument handling (45%), respect for tissue (37%) and flow of operation (48%) were shown (see graphs below). The course was very well received and participants provided encouraging feedback regarding the usefulness and realism of craniotomy simulation.

Discussion, conclusion and recommendations These results, which build on our previous paper, suggest a promising role for intensive craniotomy simulation in neurosurgical training because it appears to improve trainees’ neurosurgical operative ability. The course was very well received and participants provided encouraging feedback regarding the usefulness and realism of craniotomy simulation. Twelve such courses have been carried out over six years and we intend to continue to assess improvement in trainees’ neurosurgical abilities through simulation under the auspices of the Nottingham Neurosimulation Group.

High fidelity surgical simulation offers significant, clinically meaningful improvement in surgical ability in a craniotomy simulator. There may be a role for high fidelity surgical simulation in other surgical specialties.

REFERENCES

EVALUATION OF THE IPATIENT PROJECT – A DIFFERENTIAL DIAGNOSIS TEACHING TOOL FOR OPTOMETRY STUDENTS

Julie McClelland*, Richard Beggs, Andy Jaffrey, Niall McShane, Shane Keenan, Clare Thomson. Ulster University, Coleraine, UK

Introduction In recent years, an increase in the number of available postgraduate qualifications for Optometrists has facilitated an expansion in the Optometrist’s scope of practice allowing management and treatment of a wide range of conditions (Needle et al 2008).

It is essential that Optometry teaching both at undergraduate and postgraduate levels involves encouraging the development of clinical decision making based on signs and symptoms that patients present with. Many postgraduate programmes or continuing professional development (cpd) courses available to Optometrists include an element of online learning (Acosta et al 2018).

Methods We developed a novel online simulation tool (iPa-tient) to afford students opportunities to practice their diagnostic skills on patients presenting with signs and symptoms that typically present as a ‘Red Eye’. The iPatient tool simu-lates patients, randomly generated from a pool of 14 conditions which typically present with a ‘Red Eye’. These include conditions that range from mild (e.g. allergic conjunctivitis) to sight-threatening (e.g. acute angle closure glaucoma). Medical notes, level of vision, and ocular measurements are generated to provide a variety of information for each condition. Pre-senting signs and symptoms directly relate to The College of Optometrists’ Clinical Management Guidelines for each of the 14 conditions (College of Optometrists).

Following appropriate ethical approval, the application was piloted with a group of undergraduate (n=20) and postgradu-ate/qualified (n=10) Optometrists. The programme was demon-strated and participants were asked to complete one scenario. Feedback was invited in the form of a structured questionnaire incorporating Likert responses and free comments.

Results Overall positive responses were received from both cohorts supporting the statements that the tool was ‘easy to use’ and that they ‘learnt from the tool’. Results also demon-strated that the tool was ‘ready to use in a teaching capacity’. Comments relating to how the programme could be improved included; increasing the number of conditions, improving image quality, reducing background music and refining the design aspect of the programme.

Discussion The suggested improvements could widen the application of the programme within both face-to-face and online