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

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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 2 clinical scenarios. The CBD group were presented with the same clinical scenarios but in the form of a supervised, structured and interactive case-based discussion. Students in each group were required to make 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 psychology1 and stoke medicine2. Ensuring our medical students start their careers with a firm grasp of this technology which will certainly translate to better outcomes for patients in the future.

REFERENCES


USING MENTAL SIMULATION AS PREPARATION FOR SURGERY; AN INTERVENTIONAL STUDY EXPLORING ITS EFFECTS ON SURGICAL TEAM PERFORMANCE AND NON-TECHNICAL SKILLS

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Introduction Mental Simulation (MS) is a broad term used to cover a variety of preparatory actions used by clinicians in clinical practice, to visualise a task prior to performance. It has been defined as ‘the cognitive rehearsal of a task in the absence of overt physical movement’.1 Anecdotally, we know clinicians rely on MS prior to performing difficult tasks, especially when true simulation type equipment isn’t available.2

While widely performed and accepted in other areas of expertise (sports, aviation etc), Medicine has been slow to incorporate it into its educational frameworks. Though in recent years, a body of evidence has begun to prove that it can be used to augment and improve surgical individual performance.3

The conundrum here however, is that preventable errors in healthcare rarely occur due to technical mistake or individual performance. Poor teamwork and its relatable non-technical skills (NTS) (communication, situational awareness etc) is a much larger driving force in the prevention of harm to patients.4

We hypothesis that a group MS task, focussed on NTS, performed by the entire surgical team prior to performing an operation will result in better NTS, and thus theatre team performance. This may result in better outcomes and thus results for patients.

Methods A two-part, longitudinal, interventional, real world study was performed. Part A of the study involved the video recording of a trauma and orthopaedic surgical team performing carpal tunnel procedures, as they would normally in clinical practice. This was then assessed using observational teamwork scores (OTAS) and assessing the number of surgical errors. Surgical team members were also asked to fill out a mental readiness questionnaire (mMIQ) and a safety attitude questionnaire (ORMAQ). Part B of the study involved the theatre team performing a 15 min MS of a carpal tunnel procedure prior to operating. The theatre was then video recorded again and the same outcomes recorded for comparison.

Results All data has been fully collected, and currently being analysed by statisticians. Early reports look promising in favour of MS.

Discussions and conclusions Pre-operative MS has the potential to provide a free, quick and widely accessible tool to augment team performance in theatre. This could potentially decrease the number of surgical errors, improving the team’s performance and thus improve patient outcomes and safety.

REFERENCES