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Simulation for Healthcare Students: Lessons Learned from COVID 19

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Abstract. Part of the higher education (HE) experience of our healthcare students is to implement theoretical lessons learned within a practice environment – most often within the country's National Health Service (NHS). With the emergence of the worldwide Covid19 (C19) pandemic, HE institutions had to reconfigure ways to support students to experience practical elements of their course online or via simulation. With the help of external funding from Health Education England (HEE), Bournemouth University piloted a variety of simulated projects across a variety of professions including paramedicine and child and adult nursing. Students were able to access simulated skills via online and virtual reality (VR) resources, contributing to their learning experience during a worldwide pandemic. This has created a platform for further investment and educational pedagogy around simulation in healthcare provision, contributing to workforce development and future proofing educational establishment.

Keywords: Simulation, higher education, healthcare, students, C19.

1 Introduction

Higher Education Institutes that deliver education and clinical skills training to healthcare students in the United Kingdom (UK) have had to reconfigure education delivery due to the implementation of three national lockdowns spanning from March 2020 to March 2021 [1]. Bournemouth University offers a wide variety of healthcare degrees ranging from undergraduate degrees in Adult and Child Nursing to Paramedic Science. All healthcare degrees consist of theoretical and practical components. Whilst it remained relatively easy moving from face-to-face to online theoretical delivery via Teams or Zoom, addressing the practical components, which include clinical skills and students attending NHS trusts for practical experiences, was far more difficult. To address this change in educational pedagogy, Bournemouth University embarked a variety of online and virtual reality simulation projects. These were funded by Health Education England (HEE) as the C19 pandemic stopped face- to-face teaching and led to a new paradigm in healthcare that

increasingly involved technology and innovative ways to provide education and training [2].

Simulation is a valuable way of enhancing technology and improving patient care and safety and with the support of remote facilitation, has been shown to significantly improve the performance of healthcare learners [2]. Using immersive technologies such as VR can revolutionize healthcare education and offers new and innovative ways to engage all students.

Our project consisted of three pilot projects: VR feedback as a reflective tool for paramedic students, simulated online case studies for adult nursing students and 360-degree camera filming with VR for child nursing students.

1.1 Pilot Projects

The first project - Exercise Martian Attack! - was aimed to reconceptualize simulation during C19 for paramedic students with the creation of a short video setting the scene for clinical tasks first year paramedic students needed to achieve. Three-hundred-and-sixty-degree film clips (sample in Fig 1) captured these simulated scenarios and debriefs and were added on a virtual platform hosted by Panopto so that students could reflect on the scenarios in their own time to aid their learning and reflection. The film clips were accessible through a range of technologies, from google cardboards to Oculus Quest™, added the high-fidelity aspect of realism to the student's learning experience.

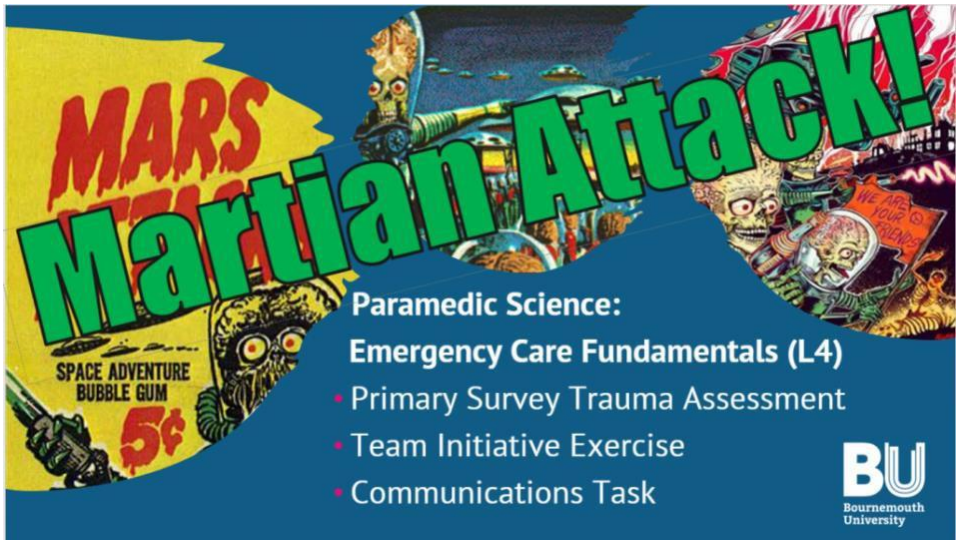

Fig. 1. The introduction to Martian Attack! for paramedic science first year students.

The second project used virtual simulation case studies hosted by Laerdal® to teach nursing students how to recognize and respond to deteriorating patients in a timely manner. The case studies included anaphylaxis, acute exacerbation of asthma, chronic obstructive pulmonary oedema and blood transfusion. This pilot's work was published [3] and evidenced that virtual simulation had a significant effect on improving knowledge and clinical skills in student nurses when recognizing and responding to deteriorating patients.

The third study – Assessing baby Robin – aimed at using 360-degree videos (Fig 2) accessed via Google Cardboard and Oculus Quest™ headsets to scale the clinical simulation experience for child nursing students. Evaluation of this pilot project showed that using virtual simulation helps prepare students for in-person simulation, saving face-to-face time and allowing students to access the platform at times which are most suitable for them.

Fig. 2. A snapshot of the 360-video clip used to assess Baby Robin.

2 Conclusion

Simulation is the future of healthcare and has grown significantly in the last few years [4]. It also provides an interesting and dynamic alternative to face-to-face didactic teaching as evidenced by C19, which created new opportunities to use and deliver simulation to healthcare students. Simulation can also help to redesign models of care and support student redeployment as was evidenced during this pandemic and these pilot projects provided a basis for further external investment. Simulation can also extensively contribute to how we support delivery of healthcare to our future workforce that is safe, of high quality and promotes improvement within the health and care systems in the UK and further afield.

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