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Evaluation of the Role of Simulation and Virtual Reality as High-Yield Adjuncts to Paediatric Education

Authors : Alexandra Shipley

Abstract : Background: Undergraduate paediatric teaching must overcome two major challenges: 1) balancing patient safety with active student engagement and 2) exposing students to a comprehensive range of pathologies within a relatively short clinical placement. Whilst lectures and shadowing on paediatric wards constitute the mainstay of learning, Simulation and Virtual Reality (VR) are emerging as effective teaching tools, which - immune to the unpredictability and seasonal variation of hospital presentations - could expose students to the entire syllabus more reliably, efficiently, and independently. We aim to evaluate the potential utility of Simulation and VR in addressing gaps within the traditional paediatric curriculum from the perspective of medical students. Summary of Work: Exposure to and perceived utility of various learning opportunities within the Paediatric and Emergency Medicine courses were assessed through a questionnaire completed by 5th year medical students (n=23). Summary of Results: Students reported limited exposure to several common acute paediatric presentations, such as bronchiolitis (41%), croup (32%) or pneumonia (14%), and to clinical emergencies, including cardiac/respiratory arrests or trauma calls (27%). Across all conditions, average self-reported confidence in assessment and management to the level expected of an FY1 is greater amongst those who observed at least one case (e.g. 7.6/10 compared with 3.6/10 for croup). Students rated exposure through Simulation or VR to be of similar utility to witnessing a clinical scenario on the ward. In free text responses, students unanimously favoured being ‘challenged’ through ‘hands-on’ patient interaction over passive shadowing, where it is ‘easy to zone out.’ In recognition of the fact that such independence is only appropriate in certain clinical situations, many students reported wanting more Simulation and VR teaching. Importantly, students raised the necessity of ‘proper debriefs’ after these sessions to maximise educational value. Discussion and Conclusion: Our questionnaire elicited several student-perceived challenges in paediatric education, including incomplete exposure to common pathologies and limited opportunities for active involvement in patient care. Indeed, these experiences seem to be important predictors of confidence. Quantitative and qualitative feedback suggests that VR and Simulation satisfy students’ self-reported appetite for independent engagement with authentic clinical scenarios. Take-aways: Our findings endorse further development of VR and Simulation as high-yield adjuncts to paediatric education.

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