HHS Public Access

Author manuscript

Med Educ. Author manuscript; available in PMC 2021 November 01.

Published in final edited form as:

Med Educ. 2020 November ; 54(11): 1067–1068. doi:10.1111/medu.14314.

Usability matters for virtual reality simulations teaching communication

Francis J. Real[1,2], **Andrea Meisman**[3], **Brittany L. Rosen**[2,3]

[1]Division of General and Community Pediatrics, Cincinnati Children's Hospital Medical Center, 3333 Burnet Ave, MLC 2011, Cincinnati, OH 45229, USA

[2]Department of Pediatrics, University of Cincinnati College of Medicine, 3230 Eden Avenue Cincinnati, OH 45267 United States

[3]Division of Adolescent and Transition Medicine, Cincinnati Children's Hospital Medical Center 3333 Burnet Avenue Cincinnati, OH 45229 United States

1 | WHAT PROBLEMS WERE ADDRESSED?

The human papillomavirus (HPV) vaccine is effective at reducing HPV-associated cancers; however, current vaccination rates in the United States are estimated at only 60%. Clinicians can positively impact caregivers' decisions to vaccinate through the use of evidence-based communication strategies. Nevertheless, current continuing medical education (CME) related to HPV vaccination primarily consists of online didactic-based trainings with limited opportunities to practice skills. Immersive virtual reality (VR) that uses a 3D-mounted headset may promote skill development by allowing deliberate practice of communication strategies in a virtual clinic environment. Immersive VR has not been previously applied to CME on HPV vaccination. Thus, we conducted usability testing of four VR simulations focused on HPV communication strategies at an urban adolescent primary care clinic. Usability testing, a critical but underutilised method, focuses on assessing how an intervention serves its intended purpose by utilising expert users to identify gaps and weaknesses.[1]

2 | WHAT WAS TRIED?

During the 20-minute VR curriculum, participants verbally counselled animated caregivers (avatars) hesitant to accept the HPV vaccine for their children. The avatar's responses to the participant's counselling were driven in real time by a facilitator (FR). For the participant to succeed (vaccine accepted), he or she had to demonstrate evidence-based communication

Correspondence: Francis J. Real, Division of General and Community Pediatrics, Cincinnati Children's Hospital Medical Center, 3333 Burnet Ave, MLC 2011, Cincinnati, OH 45229, USA. francis.real@cchmc.org.

Conflict of Interest:
The authors declare no conflict of interest.

Financial Disclosure:
None of the authors have any financial relationships relevant to this article to disclose.

Ethical Approval:
The study was approved by the Cincinnati Children's Hospital Medical Center Institutional Review Board.

skills related to HPV vaccine counselling such as the use of ‘presumptive announcements’ (ie short statements assuming parents agree to vaccinate). After each scenario, the facilitator provided the participant with specific feedback regarding his or her use of evidence-based communication skills. Scenarios were scaffolded with increasing difficulty, and participants repeated any failed scenarios until mastery was demonstrated. Semi-structured interviews were conducted following participation to assess usability. Demographic data and participants’ attitudes regarding the curriculum’s immersive nature were evaluated via a validated survey. IRB approval obtained prior to data collection.

3 | WHAT LESSONS WERE LEARNED?

Four physicians with advanced training in adolescent medicine completed the curriculum in February and March 2020. Most physicians identified as Caucasian females with an average age of 43 years. On a 5-point Likert scale (strongly disagree to strongly agree), all physicians agreed or strongly agreed that the VR environment captured their senses, and they felt present in the virtual space. During semi-structured interviews, all physicians reported the scenarios as realistic to patient encounters and appreciated the opportunity to practice in a safe environment. No side-effects related to wearing the VR headset or being in the virtual environment were reported. Despite their experience and advanced training, all participants reported learning new skills, thus calling to attention the importance of CME that allows for practicing evidence-based communication strategies. Participants provided feedback to optimise the curriculum for future iterations including adjustments to the VR (eg refining avatar movements) and the scenarios (eg providing additional patient history). The described diagnostic approach to usability testing uses qualitative strategies to understand participants’ perceptions of an intervention to illuminate user barriers and promote rapid iterative refinement of a curriculum. Next steps include modifying our curriculum based on feedback and subsequently implementing with general paediatric providers to assess its impact on HPV vaccination rates.

Acknowledgements

Thank you to Bradley Cruse, MFA and David Davis, MFA for the development of the curricular materials described.

Funding Source: This work was supported through the National Cancer Institute (1R21CA238170-01A1). Funders played no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript.

REFERENCE

1. Jake-Schoffman D, Silfee V, Waring M, et al. Methods for evaluating the content, usability, and efficacy of commercial mobile health apps.JMIR Mhealth Uhealth. 2017;5(12):e190. [PubMed: 29254914]