Virtual Reality for educating and reducing preoperative anxiety in Children – Phase 2: Design, face validity and acceptability by pediatric patients and their parents.

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Introduction

Up to 65% of children experience significant preoperative anxiety when undergoing anesthesia for operative and diagnostic procedures. Psycho-educational child pre-operative anxiety reduction techniques have been extensively researched and can be categorized into preoperative preparation, distraction techniques and parental presence. Children above the age of 6 have started to develop logical thinking, have a better understanding for reasons for events and maybe assisting with the reduction of preoperative anxiety and postoperative behavioural disorders. Children with previous anaesthetics also rated the experience highly and believed it to be a realistic depiction of actual events.

Methodology

Following Institutional Approval and written consent, we recruited children between the ages of 6 and 18 to use our novel immersive virtual reality 1st person experience prior to anesthesia. This allowed children to prepare for the operating room by enabling them to ‘experience’ the process of receiving and recovering from an anaesthetic, thereby improving their understanding of upcoming events and maybe assisting with the reduction of preoperative anxiety and postoperative behavioural disorders.

Participants completed questionnaires evaluating the immersive VR experience on ease of use (System Usability Score - SUS), level of realism, acceptability, impact on their anxiety and preference over the standard PPT method.

Results

- 93 children between the ages of 6 and 18 and their parents took part in our study. 1 child declined to participate as they had >8 previous anesthetics and felt that they had nothing to gain from it.
- 95.5% of children evaluated the immersive virtual reality experience highly and believed it to be a realistic depiction of actual events.
- 90% of children felt that they had nothing to gain from it.
- 95% of children agreed that the immersive VR experience prepared them well for anesthesia and 90% would wish to use it again in the future.
- 95.5% of children evaluated the immersive virtual reality experience highly and believed it to be a realistic depiction of actual events.
- 98% (98%; 95% CI, 92-100) of children rated the system as easy to use & required no further training.
- Children & parents both reported high SUS scores of 85.6 and 86.5 respectively indicating excellent usability.

Comments from children included ‘this would help with anxiety’, ‘so cool’ and ‘Is that all that happens? I feel so much better now’.

- 83.3% (95%CI, 86-98) of children chose the immersive virtual reality experience over the PowerPoint slideshow for future anesthesia preparation.

Reference