Virtual Reality for educating and reducing preoperative anxiety in Children –
Phase 1: Design, face validity and acceptability by healthcare professionals.
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Introduction

Up to 65% of children experience significant pre-
operative anxiety when undergoing anaesthesia for
operative and diagnostic procedures. Psycho-
educational child pre-operative anxiety reduction
techniques have been extensively researched and
may be conveniently categorised into preoperative
preparation, distraction techniques and parental
presence. Children above the ages of 6 who have
started to develop logical thinking, have a better
understanding of the reason for the therapies
required and may benefit from tours and
preparation programmes.

Virtual Reality offers an immersive experience
that may assist with reduction of anxiety in
children. However, such technologies need to
be assessed for realism and acceptability by
healthcare professionals, pediatric patients
and their parents.

The aim of our study was to investigate
the usability and acceptability of
virtual reality for preparation of
children for the operating room
by healthcare professionals.

Methodology

Following institutional approval, we designed an immersive
virtual 1st person peri-operative experience. This allows
children to prepare for the operating room by enabling them
to 'experience' the process of receiving and recovering from an anesthetic, thereby improving their understanding of upcoming events and hopefully assisting with the reduction of pre-operative anxiety and postoperative behavioural disorders. The concepts in the VR experience were developed in collaboration with our hospital’s ChildLife department.

During phase 1, we recruited healthcare workers and
asked them to undertake the virtual experience and
complete a questionnaire to assess the face and content
validity of the VR experience for children. Using
an accelerated rapid cycle development
framework, we evaluated the level of
realism, acceptability, and incidence of
side effects.

Results

97 staff (67% female) at our hospital reviewed and
completed the Virtual Reality Experience. Staff were
from across many professions including physicians –
29%, Nursing 25% and other clinical and non-clinical
disciplines 46%.

91% rated the VR experience as realistic, 96% as
being beneficial for preparing paediatric surgical
patients and 82% believed it would reduce anxiety
levels in children and 94% thought that this technology
should be used in other areas of the hospital. 99%
(96/97) of healthcare workers would recommend the
immersive VR experience to their pediatric patients.

The final build had a motion sickness and dizziness
incidence of 0% and 7.5% respectively among
healthcare workers. These side effects were
significant enough to stop
the participant completing the
experience.

Conclusions / Discussion

We have demonstrated that healthcare workers believe
that our virtual experience is a valid and acceptable form
of preparing children for their peri-operative experience.
The high level of acceptance may indicate a superior
efficacy for preparing children and may contribute to
reducing anxiety.

Further research is required to ascertain the acceptance,
feasibility and benefits of virtual reality by children and
their parents and also to ascertain which subsets of
children this virtual experience is most appropriate for.

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