Managing Perioperative Anxiety in Children: A Descriptive and Feasibility Study

**Background:** More than 5 million children undergo surgical procedures in North America every year, and up to 75% of them experience considerable perioperative anxiety. Perioperative anxiety is associated with many adverse medical, behavioral, and psychological outcomes. Numerous attempts have been made to reduce perioperative anxiety in children, but these are limited by their expense and time-intensive nature. Accordingly, we have developed a novel, tablet-based virtual reality program that re-creates the hospital experience as a means of reducing perioperative anxiety and morbidity in children. Prior to the implementation of our intervention trial, we conducted two pilot studies to understand the stability of perioperative anxiety in children and to examine the feasibility of our intervention protocol.

**Methods:** In Study 1, we recruited 30 children (20 boys, 10 girls) aged 8-13 years (M age = 9.5±1.2) who were undergoing elective outpatient surgical procedures at McMaster Children’s Hospital. The anxiety levels of children’s and their parents’ (21 mothers, 7 fathers, 2 legal guardian; M age = 39.5±5.9) were measured in person using the following self-report: child completed the Story-Telling Medicine Questionnaire (STMQ) and the Screen for Childhood Anxiety Related Disorders (SCARED); parent completed the SCARED, the State-Trait Anxiety Inventory (STAI), and the Post-Hospital Behavior Questionnaire (PHBQ). These questionnaires were given at three time points: 1 week before surgery, immediately pre-operatively, and 1 month post-op. In Study 2, we recruited 30 children (19 boys, 11 girls) aged 8-13 years (M age = 10.5±1.6) and their parents (23 mothers, 6 fathers, 1 legal guardian; M age = 40.6±8.0). The same measures were administered at the same pre-op time points and 1 month after surgery via telephone.

**Results:** The first pilot study provided evidence that children’s STMQ scores (r = .46, p < 0.05) and parents’ STAI scores (r = .54, p < 0.05) were moderately stable across pre-op visits. We demonstrated that participant recruitment and anxiety measurement were feasible at these time points. However, we also identified the issue of reduced study retention during post-op visits. This was due to the fact that many outpatient surgical patients did not return to the clinic for follow-up. A second pilot study (Study 2) is currently in progress. We have recruited another 30 children (8 to 13 years of age) and their parents to assess the feasibility of our refined approach to post-surgical assessment which utilizes reminders and administering the questionnaires over the telephone in order to increase retention. Preliminary data from this second pilot study also suggests that children’s STMQ scores (r = .53 p < 0.01), SCARED scores reported by child (r = .95, p < 0.01) and parents (r = .88, p < 0.01), and parents’ state anxiety scores (r = .66, p < 0.01) were correlated between the first two visits. Combined data from the two pilot studies which showed that children’s STMQ scores (r = .48, p < 0.01) and parent’s state anxiety levels (r = .42, p < 0.01) were moderately stable prior to surgery. The long-term goal of this work is to test an inexpensive, non-invasive and easily transferable virtual reality intervention program we developed to manage perioperative anxiety and its effects on children in a randomized controlled trial.