

Pediatric Distraction on Induction of Anesthesia with Virtual Reality (PEDI-VR) and Perioperative Anxiolysis: A Randomized Controlled Trial

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Introduction

- Perioperative pediatric anxiety is common and can negatively impact children undergoing surgery and anesthesia
- Audiovisual (AV) distraction, including virtual reality (VR), is a noninvasive, non-pharmacological modality that can reduce perioperative anxiety
- Goal of study: Determine whether distraction with a VR headset during induction of general anesthesia (GA) in pediatric patients reduced preoperative anxiety

Methods

- Randomized, controlled, parallel-group study
- 71 children aged 5-12 years scheduled for elective surgery with GA
- 2 groups: Virtual reality group (VR) or non-virtual reality control group (No VR)
- Patients in VR group received AV distraction with a VR headset during induction of GA
- Modified Yale Preoperative Anxiety Scale (mYPAS) administered at three time points to assess patient anxiety: in the preoperative holding area (baseline, or T0), on entering the OR (T1), and during induction of GA (T2)
- Data were analyzed with a mixed-effects model
- Secondary outcome measures: Preoperative parental anxiety, pediatric induction compliance, and parental satisfaction



Figure 1: Pediatric patient engaged with VR headset

References

- Eijlers R, et al. *Anesth Analg*. 2019;129(5):1344-53
Kain ZN, et al. *Arch Pediatr Adolesc Med*. 1996;150(12):1238-1245
Kim H, et al. *Anesth Analg* 2015;121(3):778-784

Results

- Baseline variables were similar in the VR (33 patients) and No VR groups (37 patients)
- Average patient age was 8.0 ± 2.3 years (mean \pm SD) and 51.4% of patients were female
- Parents were present for 91.4% of inductions and no patients received premedication

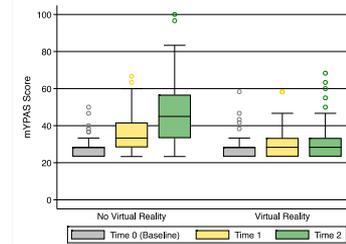


Figure 2: mYPAS scores in VR and No VR groups

- T0 mYPAS scores were no different between the two groups
- mYPAS scores at T1 and T2 were significantly lower in the VR group vs. control ($p < 0.0001$ for both T1 and T2)
- Parental anxiety, induction compliance, and parental satisfaction were not significantly different between the two groups

Discussion

- To our knowledge, this is the first study to evaluate the effectiveness of VR as an AV distraction technology during induction of GA, demonstrating a reduction in pediatric preoperative anxiety with the use of VR
- Future directions for study: Longer postoperative follow-up, VR for procedures such as regional nerve blocks in pediatric patients, and emerging immersive AV technologies such as augmented reality

Conclusions

- Perioperative VR is an effective, noninvasive modality for anxiolysis during induction of anesthesia in pediatric patients