

VIRTUAL REALITY EXPOSURE THERAPY AND PATIENT EDUCATION FOR PREOPERATIVE ANXIETY IN PEDIATRICS: A RANDOMIZED CONTROLLED TRIAL

Sebastian Amaya M.D¹, Sidhant Kalsotra M.D¹, Sibelle Aurelie Yemele Kitio MPH, M.S¹, Joseph D. Tobias M.D^{1,2}, Brittany Willer M.D^{1,2}

1. Department of Anesthesiology & Pain Medicine, Nationwide Children's Hospital, Columbus, Ohio

2. Department of Anesthesiology & Pain Medicine, The Ohio State University College of Medicine, Columbus, Ohio

Introduction

- Preoperative anxiety is associated with:
 - Difficult intubation
 - Emergence delirium
 - Poor pain control
 - Postoperative behavioral changes
- Education and instructional materials have shown to reduce preoperative anxiety
- Our study aims to reduce preoperative anxiety by utilizing virtual reality (VR) to demonstrate the perioperative workflow as a means of preoperative education

Methods

Single-center prospective randomized controlled trial including children 6-12 years of age who underwent ambulatory tonsillectomy and/or adenoidectomy, with or without bilateral ear tube insertion

Participants were randomized to:

- Receive VR exposure (n=51)
- Standard perioperative experience (n=56)

All participants completed the State-Trait Anxiety Inventory

P-value <0.05 was considered as significant

Figure 1. State-Trait Anxiety Inventory questionnaire for anxiety

	Not at all	Somewhat	Moderately	Very much
1. I feel calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am tense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am worried	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Results

Figure 2. Original logistic regression analysis examining the impact of VR on **patient** preoperative anxiety outcomes

Anxiety outcomes	Odds Ratio (95% CI)	P-Value
I feel calm	4.95 (2.32-10.61)	<0.001
I am tensed	0.27 (0.12-0.61)	0.001
I feel upset	0.14 (0.04-0.50)	0.003
I am relaxed	4.23 (2.00-9.05)	<0.001
I feel content	2.13 (1.04-4.34)	0.038
I am worried	0.25 (0.12-0.53)	<0.001

Figure 3. Original logistic regression analysis examining the impact of VR on **parent** preoperative anxiety outcomes

Anxiety outcomes	Odds Ratio (95% CI)	P-Value
I feel calm	3.55 (1.67-7.49)	0.001
I am tensed	0.42 (0.19-0.91)	0.028
I feel upset	0.25 (0.05-1.22)	0.085
I am relaxed	4.02 (1.90-8.50)	<0.001
I feel content	3.34 (1.56-7.16)	0.002
I am worried	0.45 (0.22-0.93)	0.032

Conclusion

- VR interventions were associated with reduced preoperative anxiety levels in both patients and their parents.

References: 1. Getahun AB. Magnitude and Factors Associated with Preoperative Anxiety Among Pediatric Patients. *Pediatric Health Med Ther.* 2020;11:485-494.

2. Gjoreski, Martin. (2016). CONTINUOUS STRESS MONITORING USING A WRIST DEVICE AND A SMARTPHONE.