USABILITY OF VIRTUAL REALITY IN PEDIATRIC URODYNAMIC TESTING: PRELIMINARY RESULTS OF A PHASE ONE PILOT STUDY

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INTRODUCTION

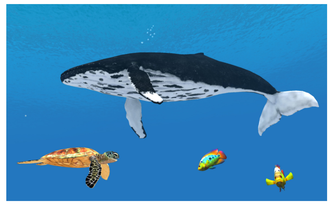
Urodynamics testing is an invasive procedure commonly used to assess the function of the lower urinary tract and bladder. Children receiving this type of evaluation often undergo physical and emotional discomfort. There is emerging evidence that virtual reality (VR) therapy offers an alternative noninvasive approach to reduce procedural pain and anxiety in patients. However, less is known about the use of this technology in urodynamic testing.

RESEARCH QUESTION

In pediatric patients undergoing urodynamic testing, is the use of virtual reality feasible as a complementary pain management therapy in comparison to standard care?

MATERIALS AND METHODS

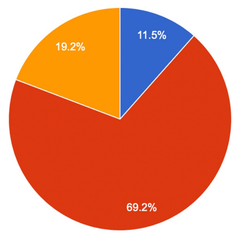
Children aged 5 to 18 years old undergoing urodynamic testing were recruited through a quota sampling approach. VR software designed by KindVR allowed the patient to immerse in an underwater world with minimum simulator side effects.



There are two phases of the research: baseline (VR education and implementation during the imaging portion of the urodynamic test) and follow-up (VR utilized and tested during the entire urodynamic procedure). The data presented will be from phase 1 only. Acceptability and feasibility were determined by two questionnaires. Pain, anxiety, and fear were measured pre and post-urodynamic procedures using the VAS Pain scale, Anxiety Thermometer Scale, and Children's Fear Scale. Satisfaction surveys were completed by the subject and clinical staff post procedure.

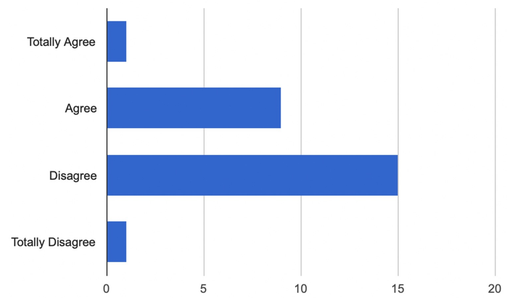
Gender	N= 12
Male	8
Female	4
Ages	
5-8	5
9-12	3
13-18	4
Previous # of Urodynamic Tests	
1-3	4
4-6	4
7-9	4
Previous VR Experience	
Yes	5
No	7
Currently Preforms Regular Catheterization	
Yes	11
No	0

Clinicians' Perspective: Virtual Reality Helped the Child to Cooperate During the Medical Procedure

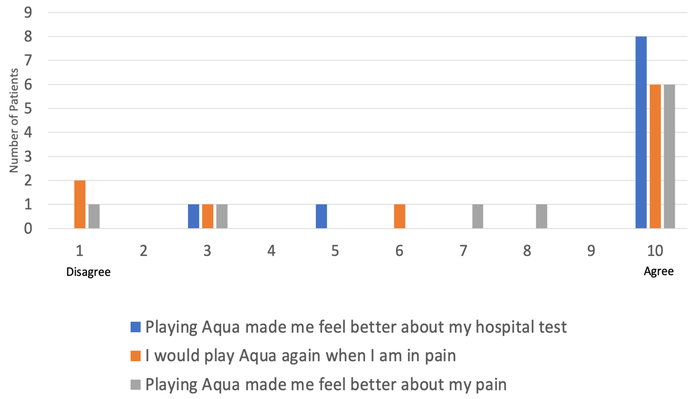


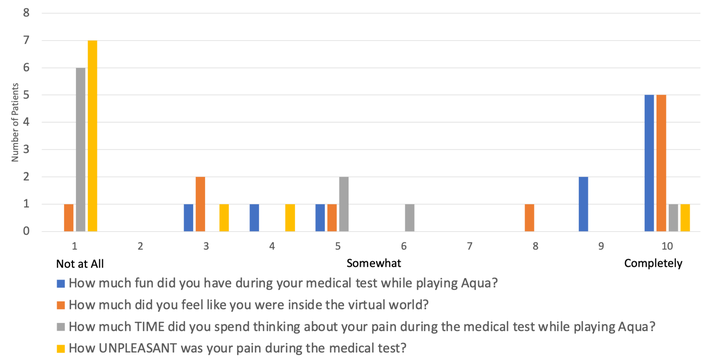
Totally Agree (3, 11.5%), Agree (18, 69.2%), Disagree (5, 19.2%), Totally Disagree (0, 0.0%)

Clinicians' Perspective: Virtual Reality Helped the Child Control His/Her Pain

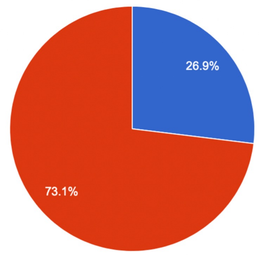


Patient Experience with Aqua VR During Urodyanic Testing





Clinicians' Perspective: I Would Use Virtual Reality Again to Distract Children During a Painful



Totally Agree (7, 26.9%), Agree (19, 73.1%), Disagree (0, 0.0%), Totally Disagree (0, 0.0%)

RESULTS

A total of twelve patients were eligible to be enrolled. One patient of 5 years of age opted out of the VR due to high levels of anxiety. 80% of the participants "completely agree" that the implementation of VR made them feel better about their procedure and a majority reported that they will play VR again when in pain. There were no significant safety, technical, or equipment issues. There was minimal disruption to exam workflow and the implementation of VR was well received from the clinician survey (n=26). 80.7% of clinicians agree that VR helped the patient to cooperate during the medical procedure and a 100% would use virtual reality again to distract children.

CONCLUSION

Preliminary data showing positive patient and clinical staff satisfaction suggests VR may be beneficial as a complimentary modality in pediatric urodynamic testing. Continued data collection will further inform the usability of VR throughout the entire procedure.

ACKNOWLEDGEMENT

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