

Evaluating the Impact of Immersive Virtual Reality in an Inpatient Rehabilitation Hospital



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Introduction

- 86% of patients report post-operative pain (1).
- Treatments focus on medications such as opioids (2)(3).
- Research suggests immersive virtual reality (IVR) as an emerging tool that can be used to help reduce acute pain in a variety of patient populations (4) (5) (6) (7) (8) (9).
- IVR uses a computer headset to make users feel present in a simulated environment.
- Encompass Health Rehab Hospital of Braintree is an inpatient acute rehab hospital that specializes in brain injury (BI), stroke, & ortho rehab. There is a need for nonpharmaceutical based treatments for patients to help reduce pain & improve quality of life (QoL).
- Occupational Therapy Practitioners (OTPs) can work to address acute pain by providing patients with meaningful experiences that are motivating & help to reduce pain. (10) (11)

Purpose: Determine feasibility of using immersive virtual reality at Encompass Rehab Hospital of Braintree

Aim 1: Develop and implement an IVR training protocol for therapists

Create training materials Train interested therapists

Activity Analysis

Average of 8/10

comfort with

training information

Aim 2: Develop and trial patient IVR experiences to improve quality of life

Game Catalog

• This poster will address therapists' training and patient experiences

Aim 1: Therapist Training

Develop Post Session 2 Session 1 Recruitment training Training materials Interest • 30 min Operating • Data • PowerPoint Meta analysis survey • IVR with • Therapist Quest II • Schedule • Refine Guides trainings Quest II • Q&A based on Manual of feedback Feedback Operating Procedures (MOP)• 6 OT 8/13 had no prior At least 4 from each • 6 PT (1 student) VR experience unit (n=13) 1 Rec Therapist 100% extremely 100% reported satisfied & would Average training somewhat or consider use with time 45 minutes extremely competent patients

Most common

eedback *more time*

to practice

Aim 2: Patient IVR Experiences

Develop Game Catalog

- Activity analysis of Quest II games
- Create walkthrough guides

Patients 37

85 years old

Rating

Create reference tools

Patient Experiences

Refined materials

based on feedback

Recruitment

- Email therapists that completed VR training
- Patient demonstrated interest

Participants

Patient Conditions (n=16)

Conditions

Pre/Post IVR NRS Pain Ratings (n=7)

• 9 males

• 7 females

CVA

Pre IVR

-P1 -P2 -P3 -P4 -P6 -P7 -P9

Post Op

In bed = 1

Sitting = 8

Standing =

Experience

- One hour therapy session
- Therapist provided support to make progress towards goals

13/16 (81%

no prior IVR

experience

Septic

Shock

Post IVR

Data Collection

- Demographics
- Numeric Rating Scale (NRS) pre/ post
- Prior IVR experience (Y/N)
- Presence (Y/N)
- Emotions (name)

Results

Therapists reported improved function, affect, compared motivation to standard therapeutic activities for all patients (n=16)

4 patients with *high* anxiety had reduced symptoms following IVR. 1 patient demonstrated improved affect for 36 hours post IVR

100% of patients said they felt *present* in IVR & would use again if given opportunity

7/16 patients reported pain at start of session

Patients' (n=7) average change in pain=4.2 points on NRS (66% reduction)

6/7 Patients reporting pre/post pain had a 2+ point drop on the NRS [clinically significant *change*(12)

3/7 patients had *100*% reduction in pain

Challenges and Outcomes Challenges to Practice **Positive Outcomes** Possible & beneficial to use IVR Infection 13 therapists trained Control Patients had *positive* Cultural experiences with IVR acceptance Location for of new Patients reported would use therapy tool IVR again Logistics; Reductions in pain Contra-LOS & indications scheduling Positive emotions & improvements in affect Duration of therapy Therapists reported *increased patient* engagement Facilitators MOP, therapist quick look tools, training ppt, & game catalog

Conclusion

Provide adequate information & evidence to therapists/patients to

IVR can be an *effective tool* for therapists to use to *increase patient motivation to* participate in therapy, reduce acute pain, & increase quality of life

Feasibility

- Able to set up & implement IVR use in an inpatient acute rehab
- Logistical challenges can be overcome

Outcomes

- Clinically significant decrease in pain
- Increases in function, QoL, & participation during therapy

Limitations

- Small sample size of patients with pain
- Scheduling logistics

support learning & acceptance of IVR

Future Steps

- Continue to train interested therapists
- Continue data collection of patient IVR experiences
- Explore other positive effects & duration of IVR use

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