

# VR IN DIALYSIS

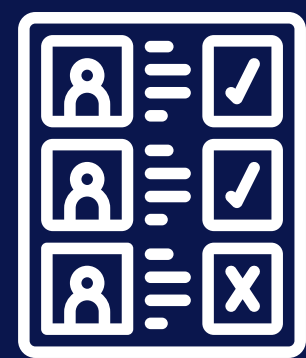
Unravelling the possibilities: A cross-over randomised controlled feasibility trial on immersive virtual reality

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## BACKGROUND

Previous studies have shown that Immersive Virtual Reality (VR) can help reduce depression, pain, and anxiety<sup>1</sup>. Additionally, it has been found to be a safe and effective method for patients undergoing haemodialysis<sup>2</sup>. VR has the potential to help patients escape the harshness of clinical settings and treatments<sup>3</sup>.



Poor attendance at clinic appointments and low adherence to treatment plans contributes to hospitalisations. VR has been shown to increase motivation and adherence.<sup>4</sup>

Geographical accessibility and cultural acceptability impact First Nations peoples' attendance rates.<sup>5</sup>



65% of THHS renal patients are Aboriginal and/or Torres Strait Islander descent.

65%

## SETTING

Townsville Hospital and Health Service (THHS)

- In-hospital dialysis unit (30 chairs/ 113 patients)
- Outpatient Satellite Unit (11 chairs/ 44 patients)



## PARTICIPANTS



- Adult patients undergoing dialysis 3 days/week
- Patients with a history of severe migraines were excluded.
- Clusters were determined by place of dialysis and scheduled days in either an in-centre or satellite unit.
- VR training was offered to all dialysis clinicians.

## GAP

No previous studies investigated the use of immersive VR in Australia with individuals undergoing haemodialysis.



## AIM

To explore the feasibility of an immersive VR experience for patients undergoing haemodialysis and report the effects of VR on patients undergoing haemodialysis.

## METHOD

This was a randomised cross-over controlled trial. Intervention and control periods were 4 weeks in duration. There were 3 VR scenes offered to the intervention group during scheduled dialysis sessions.

## OUTCOMES

Primary	Compare participants' attendance at scheduled dialysis sessions between intervention and control periods
Secondary	Compare participants' adherence to haemodialysis regimens (with respect to fluid allowances) between intervention and control phases
Secondary	Measure change in ratings of quality of life, engagement with self care and other psychological measures reported by participants between intervention and control phases
Secondary	Assess the acceptability and appropriateness of using VR during haemodialysis from the perspective of clinical staff

## COLLECTION

- Data from the electronic medical records
- Patient questionnaire administered verbally
- Conversational interviews with participants
- Clinician questionnaire about the feasibility of VR in the renal setting
- Data downloaded from Meta Quest 2 VR headsets

## ANALYSIS

- Descriptive statistics for participant attributes
- Mean and ranges for quantitative variables
- Percentages for categorical variables
- Outcome variables compared for 4 week periods with and without intervention
- Random-intercept mixed effects logistic regression to analyse attendance

## IMAGINE...

### The Rural Hillside scene in OutbackVR

This scene transports participants to a farm-like hillside with a windmill and a water tank. Every 5 minutes the scene changes from daylight to night-time. Participants can hear the soft breeze and distant bird songs as they move around the scene.

### The Beach scene in OutbackVR

Participants are transported to a small beach with palm trees, rocks, sand, umbrellas, boats, a wooden pier, a lighthouse and an ocean view. They can explore the beach and discover animals swimming in the ocean.

### The Billabong scene in OutbackVR

A natural looking billabong surrounded by eucalyptus trees. Participants can explore the scene and find Australian animals.



"took me away from here for a while"



"right where I want to be, at the water's edge"



"felt more relaxed when I got home"

## RESULTS

34 Patients 49 Staff  
5 patients relocated to Townsville for treatment  
23 (68%) reported their home town was more than 150km away  
No significant impact on adherence or attendance rates

Participants had improved Quality-of-Life during and after the trial

Participants from more than 150km away had more significant improvements

Patients enjoyed the distraction from the clinical setting

## CHALLENGES

- The VR technology was adapted for participants with arteriovenous fistulas as they were limited to using one hand.
- Future studies in busy clinical areas may benefit from designated VR assistants to assist with fitting and removing the headsets to avoid an increased workload for staff.
- An AQoL (quality of life) questionnaire suitable for First Nations people is yet to be developed.

## SUMMARY

Using VR technology in a busy clinical setting can be challenging. However, this study identified that it would be feasible to conduct future trials with larger sample sizes to explore relationships between VR usage and patient outcomes. The dialysis patients enjoyed the VR experience and have requested more entertainment and educational opportunities in the future.

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