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VIRTUAL REALITY FOR THERAPEUTIC RECREATION IN DEMENTIA HOSPICE CARE: A FEASIBILITY STUDY

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Research conducted at multiple Hillcrest Health Services facilities and private residences

Purpose

- Feasibility study to explore virtual reality (VR) via wireless goggles as a therapeutic recreation for people with dementia on hospice (hPWD)
- To explore the acceptability of VR to hPWD
- To identify any problems and/or benefits associated with using VR as a form of therapeutic recreation in hPWD on hospice

Background

- Behavioral and psychological symptoms of dementia (BPSD) include: apathy, agitation, anxiety, elation, depression, disinhibition, and delusions/hallucinations (Cerejeira)
 - BPSD are variable, compounding, and taxing on caregivers
 - Current treatments include music, aroma, multi-sense, reminiscence, and cognitive behavioral therapies, as well as sedating or antipsychotic pharmacology
- Little in the literature regarding recreational VR use in those with dementia. However, VR has been used as a tool to screen/evaluate for a dementia diagnosis, as it creates a safe, easily adaptable, and more life-like environment than traditional pen and paper cognitive task tests (Flynn, Schultheis).
 - Previous research has shown that PWD do not experience any exceptional adverse events or simulator sickness when using some forms of VR technology (Flynn).
 - Previous research used VR technology involving large screens and hand held Wii-like devices. None had used immersive goggles.
- Despite numerous human interest and media reports demonstrating the positive effects, tolerability and acceptability of immersive virtual reality in the elderly, there is a lack of published research in this setting, especially regarding dementia and hospice.

VR Experience

- VR Goggles: Lenovo Mirage Solo with Day Dream
- Video: Malaekahana Sunrise (360° Video, 4K) - 3.5 min video looped 12 times in a continuous playlist
 - Video played through YouTube Premium browser on the goggles
 - Video selected due to lack of excessive motion or scene changes, lack of people in the scene, and distance from water
 - Ocean wave sounds played from phone speaker placed near the participant

(screen capture of the participant's view)

Total VR Usage Time

Conclusions and Future Directions

- VR use was generally safe and enjoyable in this population of people with dementia on hospice.**
- There was no statistically significant difference between dementia type and usage time, or dementia severity and usage time
- Two participants had worsened baseline behavioral and psychological symptoms of dementia after VR use.
- Future research will need a larger sample size with a control group.
- We hypothesize that in the right setting, VR can provide meaningful activity and enhance quality of life for hPWD and could potentially be a non-pharmacologic intervention for BPSD.
- In practice we have found it to be a useful tool to help hospice patients achieve non-achievable "bucket list" items at the end of life. Such as "going to the beach one last time," going fishing and flying a plane.

Results

Demographics	Primary Dementia Diagnosis	Residence
Mean Age: 85yrs	Alzheimer's Disease: 11	Home: 4
Females: 22 — Males: 3	Vascular Dementia: 6	Assisted Living: 1
Caucasian: 21 — Black: 3	Mixed Dementia: 5	Nursing Home: 13
FAST: <7= 5; ≥7= 12	Other/Unspecified: 3	Memory Care: 7

- Fourteen reported enjoying the VR and 12 would do it again (n=4 unable to respond verbally).**
- Two stopped VR early due to a ≥ 2-point increase in PAIN AD score from baseline per protocol.
- At phone follow-up, one participant was reported to have increased hallucinations and another to be more tearful.

Qualitative Findings

- Four themes emerged: narration, affirmation, comfort level, and unfulfilled.**
 - Narration occurred when a participant recounted what he/she experienced while wearing the headset
 - Affirmation suggested that the participant either enjoyed or was appreciative of the VR experience
 - Comfort level was demonstrated by comments about wearing the headset
 - Unfulfilled included comments indicating that the participant was somewhat unsatisfied with their experience

Theme	% With	Example
Narration	44%, n=7	Participant counted islands multiple times. Narrated what she saw. "The sounds of the ocean, this is really wonderful, I love the ocean." "Now its a different time of day, that's pleasant."
Affirmation	44%, n=7	"Looks better than what I've been looking at," "Hmmm that's pretty."
Comfort Level	50%, n=8	Participant's head was too small for strap, and they said it was heavy on their nose
Unfulfilled	44%, n=7	"It's a one time experience, you don't need it twice"; "What else do I get to see?"

Methods

CONSENT

- Convenience sample of patients enrolled in hospice through local hospice agency
- All patient's lacked capacity to consent and so consent was obtained through participant's Power of Attorney
- Baseline PAIN-AD score done

Goggles ON

- "Can you see the waves?"
- "Are the goggles comfortable?"
- Timer and background wave noises started
- PAIN-AD every 5 min of use

FOLLOW UP

- > 3 hours later, primary caregiver was called to assess for any changes from the participant's baseline, positive or negative
- Statistics were calculated using SAS version 9.4.

Goggles OFF

- "Did you enjoy doing that?"
- "Would you do that again?"
- "Where else would you like to go besides the beach?"
- Final PAIN-AD score collected

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