

3D AND VIRTUAL REALITY EXPERIENCES TO IMPROVE COGNITIVE HEALTH AND LIFE ENHANCEMENT FOR THE ELDERLY

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INTRODUCTOIN

Studies suggest that 47% of persons over the age of 85 either cannot walk or require mobility aids such as walkers and wheelchairs. Up to 80% of long-term care residents have diagnosable psychiatric conditions including anxiety, depression and dementia¹. For these residents, nursing staff and family act as their main providers of emotional and physical support. Unfortunately, these mobility and mental health challenges create a heavy burden on caregivers who often must focus on basic physical care at the expense of emotional needs of residents. Current means of emotional stimulation in long-term care facilities is limited². Guided outings and events brought into facilities act as a temporary distraction but are irregular and costly.

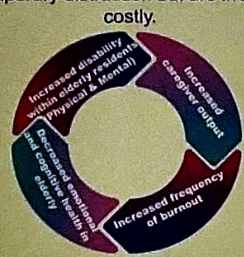
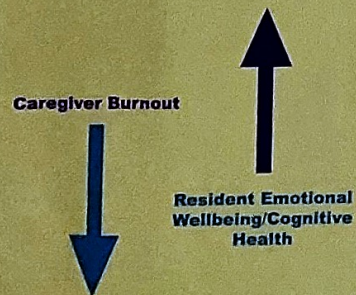


Figure 1: Cyclic effects of current emotional support systems in many long-term care facilities

HYPOTHESIS

Reminiscence therapy delivered through 3D immersive film and virtual reality headsets aim to address one's emotional need to review and process events that hold personal significance³. It is hoped that by exposing residents to immersive films, the rates of caregiver burnout and resident emotional wellbeing/cognitive health will improve.



MATERIALS & METHODS

Resident participants have witnessed and will continue to witness up to 5 3Scape immersive video experiences. Participants can engage with these video experiences in two ways: Individually via headset goggles that provide a 360-degree experience, or through more socially interactive sessions via 3D projection that is delivered to up to 5 participants at a time. The technology used in this project employs techniques such as: high frame rate, 3D stereoscopic imagery, coloration and sound adjusted for elderly persons, emotional soundscapes and realistic cinematic experiences. Notable psychological techniques include: mental triggering, positive storytelling and reminiscence therapy.

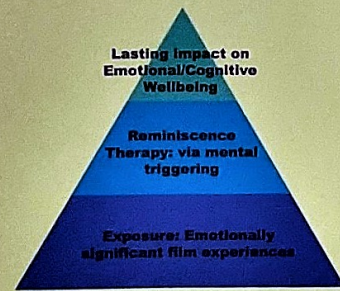


Figure 2: Therapeutic procedure and impact over consecutive exposure

Once a resident participant has assented to viewing a video on a scheduled day, the individual is assessed three times throughout that viewing day. This process establishes a pre-video emotional state, during video, and post-video emotional state.

Table 1: Scales used in evaluating cognitive health and emotional wellbeing in resident participants

Scale Used	Administration
Alzheimer's Disease and Related Dementias Mood Scale	Before/After each Video
Cohen-Mansfield Agitation Inventory (CAMI)-1-Short Version	Before/After each Video
Observed Emotion Rating Scale	Before/After each Video
Engagement Scale	During Video
Resident Demographic Survey	Baseline

RESULTS

To date, over half of participants have undergone baseline therapy; there has been considerable positive feedback from staff and family members. Emotional wellbeing and general mood/interactive behavior of residents who have undergone successive immersive film experiences has improved notably.

- ✓ 30 of 47 resident participants have received baseline to date
- ✓ Family and staff member participants will be more involved in the study at a later date.

Resident Engagement:

- ✓ Off house experience
- ✓ Social interaction with staff
- ✓ Exposure to immersive technology
- ✓ Improved wellbeing through reminiscence



Staff Engagement:

- ✓ Transport/interaction with resident participant
- ✓ Opportunity to divert resident attention from boredom/problem behaviors
- ✓ Reduction in burnout by proxy



Family Engagement:

- ✓ Opportunity to accompany/support loved one throughout the immersive experience
- ✓ Opportunity to connect with loved one through reminiscence

Figure 3: Benefits of 3D Immersive film experiences to residents, staff and family members

DISCUSSION

This potential therapeutic method may lead to improved quality of life for elderly individuals in nursing home facilities; better workplace satisfaction for caregivers and potentially reduced costs for pharmacotherapy and staff absenteeism. Preliminary findings validate the hypothesis that reminiscence therapy through 3D immersive film improves resident emotional well-being and cognitive health.



Figure 4: Resident and Staff participants viewing Memory Box a 3D 3Scape production at the Loch Lomond Villa.

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