

Virtual Reality 360° (VR360) Simulation For Clinical Reasoning In Dementia Care Education

Immersive VR360 Technology to Enhance Occupational Therapy Students' Clinical Reasoning for Managing BPSD

Frank Ho-yin Lai¹, Ben Chi-bun Yip², Eddie Yip-kuen Hai³, David Wai-kwong Man²

¹*School of Communities and Education, Northumbria University, Tyne and Wear, United Kingdom* ²*School of Medical and Health Sciences, Tung Wah College, Hong Kong*
³*Faculty of Health Sciences and Wellbeing, University of Sunderland, Sunderland, United Kingdom*



BACKGROUND

Managing Behavioural and Psychological Symptoms of Dementia (BPSD) — **agitation, hoarding, wandering, resistance to care** — requires advanced clinical reasoning^{1,2} and person-centred strategies³.

Traditional teaching methods often fail to replicate the complexity and emotional intensity of real-world dementia care, leaving students underprepared for psychosocial interventions.

Virtual Reality 360° (VR360) technology offers an immersive, experiential learning environment enabling students to practise decision-making and empathy in realistic scenarios without compromising patient safety^{4,5,6}.

Theoretical Framework

Experiential Learning Theory (Kolb) · Constructivist Pedagogy · Person-Centred Dementia Care · Simulation-Based Education^{7,8}

OBJECTIVES

1

Evaluate VR360 simulation in enhancing clinical reasoning (CRAT) for managing BPSD

2

Examine effects across content knowledge, procedural knowledge and conceptual reasoning

3

Compare outcomes by student level (undergraduate vs. postgraduate) and prior experience

4

Explore qualitative themes of student learning experience and confidence

5

Assess VR360 as a scalable tool for dementia care education

METHODS

Mixed-Methods Quasi-Experimental Design

60 OT students · 35 female, 25 male · Pre- & post-intervention

Undergraduate & Postgraduate · Dementia care module enrolment

Instrument: Clinical Reasoning Assessment Tool (CRAT) — pre and post VR360 engagement

Intervention: Four VR360 scenarios depicting complex BPSD in home and care facility contexts

Quantitative: Multivariate Analysis of Covariance (MANCOVA) across all CRAT domains

Qualitative: Thematic analysis of reflective journals and focus group discussions

FOUR VR360 SCENARIOS

1

Agitation in Home Setting
Person with dementia experiencing distress during personal care; practise de-escalation and communication strategies

2

Hoarding & Object Fixation
Managing repetitive collecting behaviour in a residential care facility while preserving dignity and autonomy

3

Wandering & Wayfinding
Responding to a person attempting to leave the care facility, balancing safety with person-centred freedom

4

Resistance to Care
Addressing refusal of medication and personal hygiene assistance using psychosocial, non-pharmacological approaches

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graph TD; A((VR360 Simulation  
60 OT students)) --- B(Kolb's Experiential Learning Theory  
Concrete experience → reflection); A --- C(Constructivist Pedagogy  
Active knowledge construction); A --- D(Person-Centred Dementia Care  
Dignity · identity · autonomy); A --- E(Simulation-Based Education  
Safe practice · deliberate rehearsal); B --- F(Improved clinical reasoning  
Content · Procedural · Conceptual (CRAT, p < .01)  
Empathy · confidence · person-centred communication); C --- F; D --- F; E --- F;
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QUALITATIVE THEMES

Increased Confidence
Students reported feeling more prepared and confident to handle BPSD in real clinical settings.

Improved Cue Recognition
VR immersion enhanced ability to identify behavioural triggers and early signs of BPSD escalation.

Enhanced Communication
Students developed more empathic, person-centred communication strategies during scenarios.

Empathy Development
Immersive perspective-taking fostered deeper emotional understanding of persons living with dementia.

Personalised Care Appreciation
Students gained appreciation for individualised, dignity-preserving psychosocial interventions.



KEY FINDINGS

60
OT Students Participated
35F · 25M

4
VR360 Scenarios
BPSD contexts

p<.01
Significance All Domains
CRAT improvement

VR360 is an effective, scalable tool for preparing future clinicians to manage BPSD and deliver high-quality psychosocial interventions

RESULTS — CRAT FINDINGS

Postgraduate students & those with prior dementia care experience demonstrated greater CRAT gains

Gender differences emerged in conceptual reasoning — favouring female students

Significant improvements across ALL CRAT domains (p < .01)

↑
Content Knowledge

↑
Procedural Knowledge

↑
Conceptual Reasoning

PARTICIPANT OUTCOMES

Greater Clinical Preparedness

Students felt better equipped to handle BPSD in real-world settings following VR360 exposure.

Improved Empathy & Person-Centred Thinking

Immersive perspective-taking fostered respect for the lived experience of persons with dementia.

Enhanced Psychosocial Reasoning

Stronger ability to devise non-pharmacological, dignity-preserving psychosocial interventions.

Postgraduate Advantage

Postgraduate students and those with prior experience showed significantly greater CRAT gains.

Reference

CONCLUSIONS

VR360 simulation effectively enhanced clinical reasoning and emotional engagement, supporting its integration into OT education for dementia care.

By fostering empathy and person-centred thinking, **VR360 prepares future clinicians** to manage BPSD and deliver high-quality psychosocial interventions.

The immersive, safe learning environment **bridges the gap between classroom theory and the emotional complexity of real-world dementia care.**

RECOMMENDATIONS

1 **Integrate VR360 into OT curricula**
Embed immersive BPSD simulation modules as a core component of dementia care education.

2 **Extend across health professions**
Adapt VR360 training for nursing, medicine, social work and allied health students managing dementia.

3 **Develop additional scenarios**
Create new VR360 contexts covering depression, delirium, sundowning and end-of-life dementia care.

4 **Target gender-responsive learning**
Design instructional supports to address gender differences in conceptual reasoning development.

5 **Explore longitudinal impacts**
Assess sustained effects on clinical reasoning, empathy and patient outcomes across graduates' careers.

LIMITATIONS & FUTURE RESEARCH

Single institution sample

60 students from one programme; findings may not generalise to other institutions or cultural contexts.

Short-term measurement

CRAT assessed immediately post-intervention; long-term retention and transfer to clinical practice not yet evaluated.

Quasi-experimental design

Absence of randomised control limits causal inference; confounding by prior experience possible.

Future directions

Longitudinal follow-up · Multi-site RCT · Cross-professional adaptation · Patient outcome linkage · Scalability evaluation.

Corresponding Author: Frank Ho-yin Lai · frank.lai@northumbria.ac.uk · Northumbria University, Newcastle upon Tyne, UK