

Development and Evaluation of a Bilingual Digital Dementia Awareness Game for the Singapore Population

Ethics Approval: Obtained from SIT IRB

Introduction

Dementia affects over 55 million people globally and raising awareness can help reduce negative stigma experienced by people living with dementia (PLWD). Negative stereotypes surrounding dementia are prevalent, leading to feelings of shame among family caregivers when caring for their loved ones in public ¹. This can discourage help-seeking behaviours, potentially diminishing the quality of life of PLWDs ².

Gamification appeals to diverse demographic groups and can help to reverse such negative connotations and promote positive attitude towards dementia ³⁻⁴. A serious game aimed at improving general public's attitudes towards dementia was co-designed with PLWDs from Northern Ireland (www.dementiagame.com). Further research is needed to examine the effectiveness in Singapore. Given a predominant Chinese older population in Singapore, this study focused on developing and contextualising the game to suit the Singapore culture and evaluate its impact on Singaporeans' attitude towards dementia using the English and Chinese version of the Approaches To Dementia Questionnaire (ADQ).

Aim:

- To investigate the effectiveness of co-designed English and Chinese dementia game based on Singapore's context.

Objectives:

- Evaluate whether the dementia game can improve attitudes towards dementia in Singapore.
- Explore perception and acceptability of gamification in promoting awareness about dementia in Singapore.

Methods

What is the Dementia Game?

- A HTML5 [web-based game](#) to educate, debunk myths, and assess players knowledge, attitudes, and behaviours regarding dementia.
- Players answer a variety of multiple-choice questions in 90 seconds.
- Players earn points for correct answers.



Co-designed Workshop

- With PLWD and their caregivers, to develop the game
- Chinese questions for the game were created and translated fit Singapore's context and culture

Data Collection (Quantitative)

- 138 (English) and 65 (Chinese) participants recruited through convenience sampling
- Participants' attitudes towards dementia were measured using the English and Mandarin ⁴ version of the 19-item self-report ADQ ("hope" and "recognition of personhood")

Data Collection (Qualitative)

- 19 (English) and 7 (Chinese) participants recruited through convenience sampling
- Semi-structured focus group discussions conducted after participants played the game
- Analysis conducted based on the 6-step thematic analysis framework following Braun and Clarke ⁵

Inclusion Criteria

- Aged 18 years and above
- Have basic understanding and ability to read English and Chinese respectively
- Living in Singapore and have a good understanding of Singapore culture

Results

Quantitative findings

- Significant increase in ADQ rating for hope and recognition of personhood domains for both English and Chinese studies (Figure 1 – English study)
- Individuals who work with PWDs or had previously undertaken dementia training did not report increased ADQ rating (English study)
- Significant increase in ADQ rating across all age groups; Older participants had significantly lower ADQ ratings pre and post game compared to the younger participants despite similar increase in ratings (Figure 2 – Chinese study)

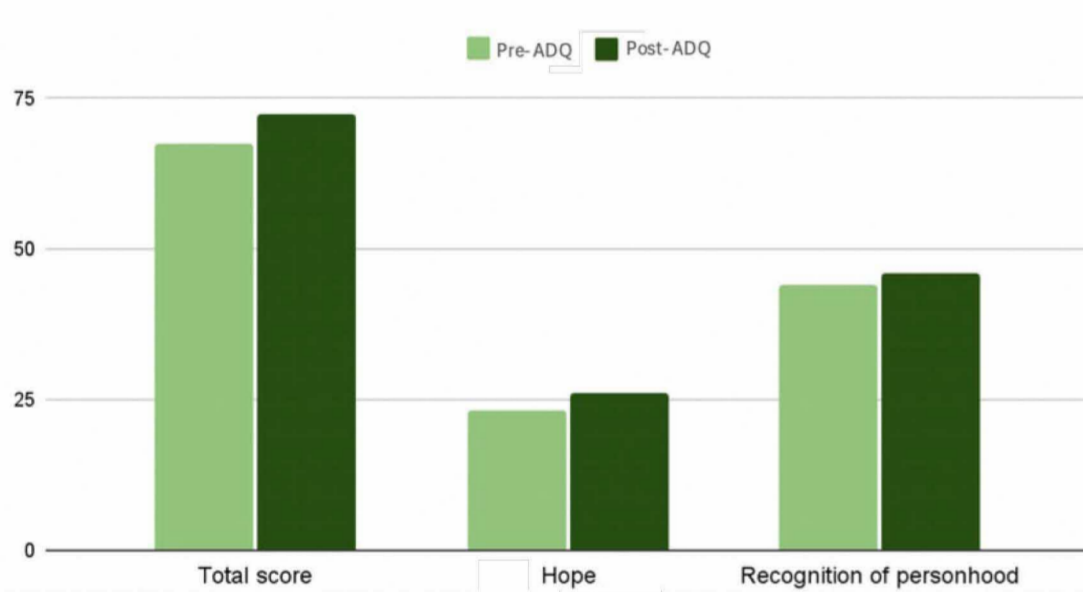


Figure 1

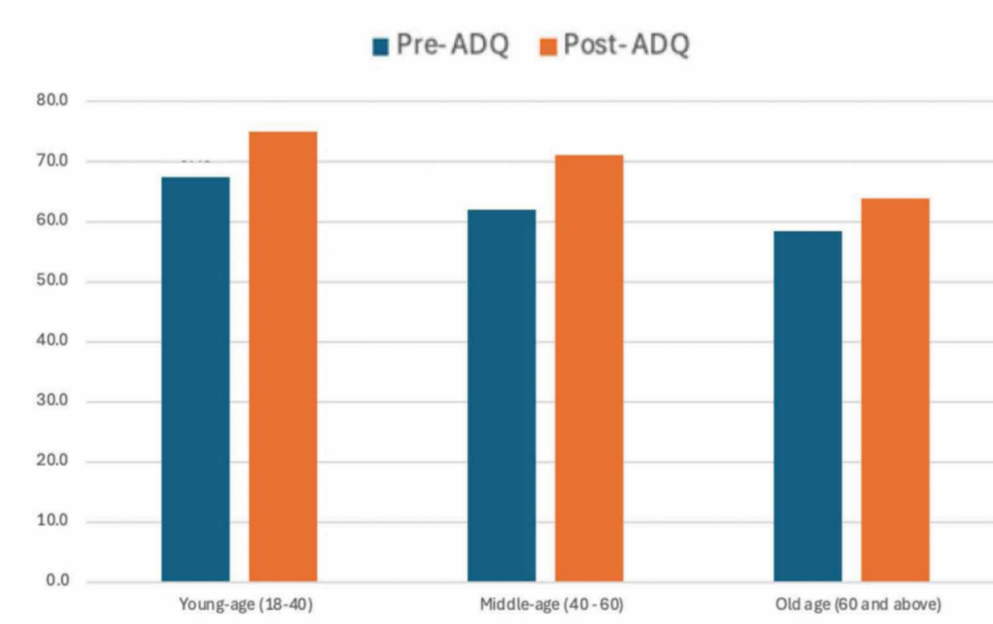


Figure 2

Qualitative findings

- Most participants reported improved knowledge and attitudes towards dementia, except those with pre-existing knowledge/experiences related to dementia (English study).
 - Reduced fear, increased confidence to help
 - Overcoming stereotypes and recognising normalcy
 - Knowledge expansion and perception shift
- Respondents shared that while they initially had limited and negative view towards dementia, playing the game renewed their understanding in a positive manner including changing their responses towards PLWD. They also suggest enhancing the game by including emotion evoking feature and adding more visual and audio elements (Figure 3 - Chinese study).

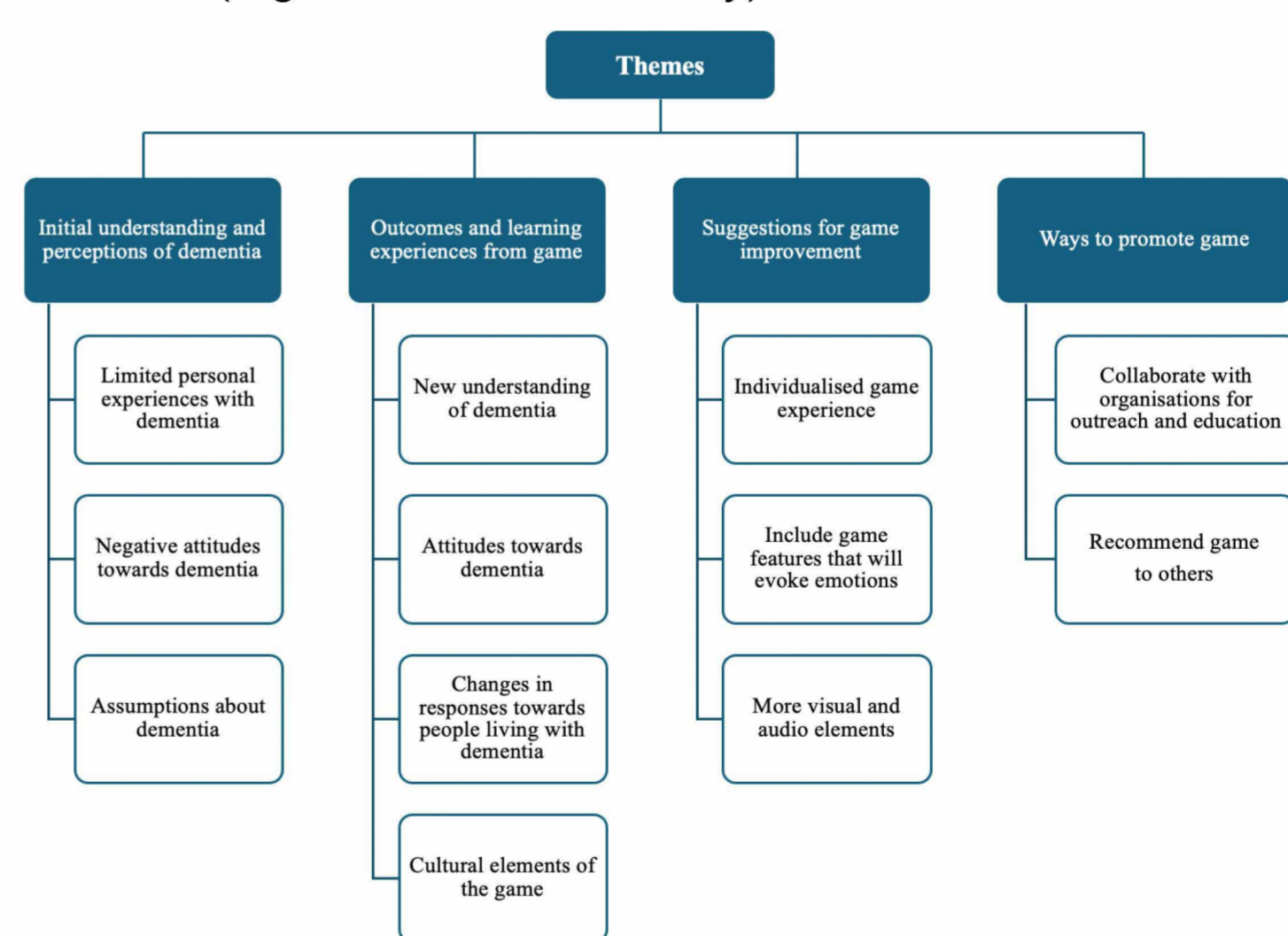


Figure 3

Discussion

Gamification is an effective method to improve attitudes towards dementia

- A useful knowledge translation tool which helped promote awareness and understanding of dementia ⁶⁻⁷.
- Qualitative findings suggest that participants expressed deeper understanding and empathy towards PLWDs, enhanced awareness of the need to provide support and new knowledge gained about the disease, contributing to a reduction in stigma ⁶⁻⁷.
- May not be as effective for individuals who are knowledgeable about dementia.

Age differences in baseline attitudes

- Older adults had significantly lower baseline ADQ scores compared to other age groups.
- This could be explained using the Construct Level Theory (CLT) ⁸.
 - They perceive dementia as proximal and more relatable, leading to fear and unconscious anxiety projection onto PLWD.
 - Older Chinese adults have limited dementia awareness, influenced by cultural beliefs that view dementia as familial retribution ⁹.

Limitations

- Convenience sampling and a homogenous sample may limit generalisability of findings
- Longer term effect remains unknown.
- Social desirability effect particularly among qualitative respondents.
- Advocates for dementia/those with prior experience more likely to participate.

Future directions

- Recruit a more representative sample through maximum variation sampling.
- Track changes in attitudes and knowledge over periods.
- Explore new research questions based on insights gained from current study, e.g., gamified methods suitable for older adults and reduce the influence of CLT.

Publication Link:

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