Assessing capability, opportunity, motivation and behaviour (COM-B) in a gamified peer-led education module for fall prevention among low-literacy older community adults in Sarawak

Ong Mei Fong[1], Chew Keng Sheng[2], Chai Chau Chung[3], Rosalia Saimon[4], Christina Busak Henry Sum Agong[5]

[1]Department of Nursing, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia, [2]Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia, [3]Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia, [4]Community Medicine and Public Health, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia, [5]Department of Nursing, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

ABSTRACT

Introduction: Sarawak has been reported as one of the eight districts known as an ageing district. Falls are unintentional falls because of slipping, tripping, stumbling or unplanned descent to a floor or place lower than your body, and they are a common implication of old age, often associated with existing comorbidities that lead to multiple health consequences. Telehealth or mHealth for fall prevention education reduces the burden and obstacles, such as transportation factors, caregivers' availability, or expenses, which can prevent most older individuals from visiting a hospital. However, poor digital literacy or low literacy is a challenge when utilising these benefits. Peer-led fall prevention education has been shown to be effective for older populations with low educational levels, empowering them to engage in preventive behaviours. The COM-B model (Capability, Opportunity, Motivation, and Behaviour) has limited exploration when assessing patients' capability, opportunity, motivation, and behaviour. Furthermore, the efficacy and improvement in engagement of preventive behaviour among low-literacy, high-risk older community adults in Sarawak have yet to be investigated through gamified peer-led fall prevention education. Therefore, this study aims to evaluate a gamified peer-led fall prevention education module to promote Capability, Opportunity, Motivation, and Behaviour (COM-B) among low-literacy older adults in the community for fall prevention. **Materials and Methods:** A multistage random sampling approach will be employed to identify older people aged 55 and above residing in the community from any of the three divisions (Kapit, Samarahan, and Serian), with eight districts in Sarawak, thereby representing all ethnicities of Sarawak. A Delphi method will be adapted to explore a gamified peer-led fall prevention education module, and content will be gathered from expert opinions across various disciplines, utilising the principles of the COM-B model. The gamification process will adopt a framework by Hunicke et al. (2004), utilising the Mechanics-Dynamics-Aesthetics (MDA) framework. A focus group discussion will also be conducted among older people to evaluate their perceptions of fall risks and prevention. The study is estimated to be conducted from June 2026 until May 2029. The required sample size is estimated to be between 300 and 400 for the instrument's validation and focus group discussion interviews. SPSS software version 27.0 will be used to analyse the instrument's EFA and test-retest reliability, and SmartPLS 4.0 will be used for the instrument's CFA. Meanwhile, Microsoft Excel will be used to present the thematic analysis and findings. **Results:** The COM-B model will guide the content identification and development of the research instrument and peer-led fall prevention education module for low-literacy older communities, which can be shared later with other healthcare disciplines, communities or health sciences students. The gameful experience of older adults using a gamified peer-led fall prevention education will be evaluated to assess the extent to which this gamification helps improve engagement in fall preventive behaviour among low-literacy older communities. In addition, this study may also serve as a fall prevention education module to be used and trained among peer educators delivering education to low-literacy older adults in the community. **Conclusion:** This study is expected to provide an evidence-based, theory-informed, and culturally appropriate gamified peer-led fall prevention education module tailored to older adults with a lower-literacy in Sarawak.

Keywords: COM-B model, older adults, falls, peer-led fall prevention education, preventive behaviour