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The impact of peer-led falls prevention education on community-dwelling older adults: A mixed methods evaluation

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The Impact of Peer-Led
Falls Prevention Education on
Community-Dwelling Older Adults:
A Mixed Methods Evaluation

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Author's Declaration

I affirm that this thesis contains no material previously published or written by another person, except where due reference is made in the thesis, and that it contains no work which the student has previously presented for an award of the University or any other educational institution.

Contribution by others to the journal articles that contribute to the body of this thesis are listed in the Statement of Contributors.

Linda Khong

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Abstract

Older adults are not optimally engaged in falls prevention strategies. Peer education may be an approach to improving engagement and uptake of falls prevention strategies by community-dwelling older adults. However, empirical research regarding this approach has been inconclusive. Accordingly, the primary aim of this research was to design a peer-led falls prevention education program and evaluate its impact on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies.

This research was a mixed methods study conducted in two phases. Phase 1 comprised three concurrent studies. These aimed to elucidate the issues regarding falls prevention education and information from key stakeholders and to inform the research in Phase 2. The aims of Phase 1 were, first; to seek key stakeholders' perspectives in order to gain a better understanding of the role of peer educators in falls prevention, second; to garner views about community-dwelling older adults' preferences for seeking and receiving falls prevention information, and third; to seek expert evaluation and opinion about the peer educators' presentations of falls prevention education for community-dwelling older adults.

Feedback from peer educators and expert reviewers indicated that peer education was a feasible and potentially effective approach to deliver education about falls prevention, but that the education should be presented in a personalised manner and incorporate adult learning principles and behaviour change theory. Older adults also suggested that practical strategies and information should be presented in a positive and respectful manner. Their prior experience of falling was found to be an important mediator to receptivity to falls prevention messages. Based on the findings of Phase 1, Phase 2 involved the design, development, implementation and evaluation of a new contemporary peer-led falls prevention education program. A longitudinal quasi-experimental trial (n=232) was conducted to compare the effectiveness of the presentation with the existing program, using a purpose-developed questionnaire.

Peer-led falls prevention education significantly increased older adults' beliefs that falls prevention measures would be useful, their knowledge about falls prevention strategies and intention to take measures to reduce their risk of falling. Older adults who received the contemporary program were significantly more likely to develop a clear action plan to engage in specific measures to reduce their risk of falling compared to the control group. Future research should investigate how well-designed peer education programs contribute to improving older adults' engagement in falls prevention.

Publications, Presentations and Awards

Some of the work included in this thesis has been published or submitted for publication or has been presented at conferences.

Publications

Khong, L., Farringdon, F., Hill, K. D., & Hill, A-M. (2015). "We are all one together": Peer educators' views about falls prevention education for community-dwelling older adults - a qualitative study. *BMC Geriatrics,* 15(28), 1-10. http://dx.doi.org/10.1186/s12877-015-0030-3

Khong, L., Bulsara, C., Hill, K. D., & Hill, A-M. (2016). How older adults would like falls prevention information delivered: Fresh insights from a World Café forum. *Ageing and Society,* 1-18. http://dx.doi.org/10.1017/S0144686X16000192

Bulsara, C., **Khong, L.**, Hill, K. D., & Hill, A-M. (2016). Investigating community perspectives regarding preferences for falls prevention education using a World Cafe approach. *Journal of Community Psychology*, 44(7), 937-944. http://dx.doi.org/10.1002/jcop.21816

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M. (2017). Can peer education improve beliefs, knowledge, motivation and intention to engage in falls prevention amongst community-dwelling older adults? *European Journal of Ageing.* http://dx.doi.org/10.1007/s10433-016-0408-x

Manuscripts Submitted

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M (in press). Community peer-led falls prevention presentations: What do experts suggest? *Journal of Primary Prevention*.

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M. Design and development of a theory-informed peer-led falls prevention education program to translate evidence into practice: A systematic approach. Submitted for publication and under peer review.

Presentations

Khong, L., Hill, K. D., & Hill, A-M. (2013). *Peer-led falls prevention education: Does it work? Review of literature.* Paper presented at 11th Australasian Injury Prevention & Safety Promotion Conference, Fremantle, WA.

Khong, L. (2014). *Peer-led community falls prevention programme: Peer educators' perspectives*. Symposium conducted at the Institute for Health Research, Fremantle, WA.

Hill, A-M., Farringdon, F., Hill, K. D., & **Khong, L.** (2015). *Peer-led community falls prevention program: Peer educators' perspectives.* Paper presented at the SCGH Grass-Roots Falls Festival, Perth, WA.

Khong, L., Farringdon, F., Hill, K. D., & Hill, A-M. (2015). *Peer-led community falls prevention program: Peer educators' perspectives.* Paper presented at the World Confederation of Physical Therapy Congress, Singapore. *Physiotherapy, 101*, e744. http://dx.doi.org:10.1016/j.physio.2015.03.3609

Bulsara, C., **Khong, L.**, Hill, K. D., & Hill, A-M. (2015). *Using a World Café community forum to explore preferences of seniors about seeking and receiving falls prevention health-related information.* Poster presented at the 9th Health Services and Policy Research Conference and New Zealand, Melbourne, VIC.

Awards

Received the Australian Postgraduate Award (APA) scholarship from The University of Notre Dame Australia for undertaking the research doctorate. Was awarded a joint-scholarship with the Australian Government's Collaborative Research Networks (CRN) program.

Member of the winning team at the inaugural Australian-French 24-hour Entrepreneurship Challenge (2-3 June 2016), open to all doctoral candidates in Australia. This is facilitated by the Australian Academy of Science and supported by the French Embassy in Australia; the Department of Industry, Innovation and Science; The Australian National University; and the Australian and French business communities. A two-week sponsored study tour to France to visit top biomedical innovation research incubators and start-ups (7 to 20 September 2016).

Accredited titled Gerontological Physiotherapist in Australia since 2013.

Statement of Contribution by Others

The studies in this thesis were undertaken between May 2013- August 2015 through the School of Physiotherapy at The University of Notre Dame Australia and the Institute for Health Research in collaboration and partnership with Injury Control Council of Western Australia (ICCWA). The research was developed by the doctoral candidate Linda Khong in association with her supervisors and ICCWA. Linda Khong participated in all aspects of the research from initial stage of development of research questions, data collection, data analysis, drafting and authorship of the manuscripts included in this thesis. Her supervisors and several co-authors contributed to the studies as detailed below.

Associate Professor Anne-Marie Hill was the principal supervisor providing constant intellectual guidance and expertise throughout the doctoral candidate's research process. Anne-Marie contributed to all stages of all the studies included in this thesis ranging from initial study concept and design of each study to data analysis and editorial advice in the drafting of each manuscript as well as the thesis. Anne-Marie, through Collaborative Research Network funding, provided the main funding for this research.

Professor Keith Hill was the co-supervisor, providing constant intellectual guidance and expertise throughout the doctoral candidate's research process. Keith also contributed some funding to the research and contributed to all stages of all the studies in this thesis.

Adjunct Professor Richard Berlach was one of the supervisors, providing intellectual guidance and expertise especially pertaining to the educational aspects of the research and to the thesis. Richard was the key contributor to the conception of the expert review questionnaire in Study 3 (Chapter 6) and mentored the doctoral candidate over the development of the Guidebook that formed part of the intervention.

Chapter 4

Associate Professor Fiona Farringdon was one of the authors of the paper in the chapter and contributed to the development, conceptualisation and design of Study 1, a qualitative study. Fiona guided the doctoral candidate with data interpretation, concepts and coding of the focus groups and interviews. Fiona also contributed to the interpretation of the results and reviews of the manuscript.

Chapter 5

Associate Professor Caroline Bulsara was one of the authors of the paper in the chapter. Caroline was instrumental with the conceptualisation of the World Café approach (methodology) of Study 2, a community participatory research forum. She was the main facilitator at the forum and provided expert guidance for this study including coding and data interpretation. Caroline also contributed to reviews of the manuscript.

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"Appreciation is a wonderful thing.
It makes what is excellent in others belong to us as well."

– Voltaire

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Key Terms (Definitions)

Definition of older adult

For this research, an older adult was defined as someone 60 years and above. This chronological cut-off age definition accords with the definition by previous peer-led falls prevention education programs and other research studies (Deery, Day, & Fildes, 2000; Garner, Kempton, & Van Beurden, 1996; Gillespie et al., 2012).

Definition of community-dwelling

For this research, community-dwelling older adults were defined as those living at home or residences that do not provide residential health-based care or rehabilitative services such as retirement villages (Gillespie et al., 2012). This excludes those older adults living in residential care facilities or older adult populations in hospitals.

Definition of a fall

For this research, a fall was defined as "an unexpected event which results in a person coming to rest on the ground or floor or other lower level" (Lamb et al., 2005, p. 1619).

Definition of peer education

Peer education has been described as an "umbrella" term (Shiner, 1999, p. 557) used to describe a range of interventions and learning approaches where both the educator and the peers share an affinity with a characteristic such as age or experience.

Café table facilitator

A facilitator who stays at each table of community members at the community forum.

COM-B model, TDF and BCT

The COM-B model is the central model of behaviour of the Behaviour Change Wheel theory (Michie, van Stralen, & West, 2011). It is an acronym for Capability, Opportunity and Motivation impacting on behaviour. The COM-B model hypothesises that behaviour is influenced by the three core constructs of capability, opportunity and motivation, and any required change in health behaviour will be dependent on changing any of these constructs (Michie, West, Campbell, Brown, & Gainforth, 2014). The Theoretical Domains Framework (TDF) (Cane, O'Connor, & Michie, 2012) is an expansion of the COM-B model's concepts. Behaviour change technique (BCT) is an observable, replicable "active component of an intervention designed to change behaviour" (Michie et al., 2014, p. 234; Michie, Fixsen, Grimshaw, & Eccles, 2009). BCT is the mechanism applied to change behaviour in an intervention (Michie et al., 2014).

Community forum

A gathering of diverse members of the community with the aim of participation and discussion around the target topic.

Contemporary peer-led falls prevention program

A newly-developed program designed by the research team. It consisted of a peer-led falls prevention presentation, a workshop to train new peer educators and resources to support the program. This is elaborated on in Chapter 7 of this thesis.

Expert

A person who possesses the context knowledge, cognitive skills, tacit knowledge, insight and higher-order pattern recognition required in effective problem analysis.

ICCWA

Injury Control Council of Western Australia https://www.iccwa.org.au. A not-for-profit community organisation that currently runs programs for the community including education in falls prevention for older adults in the Perth metropolitan areas.

Speaker's kit

This is a resource kit that contains a DVD, video-tape and booklet that the peer educators bring to show the audience at their talks.

COTA

Council on the Ageing Australia, or branch. e.g. COTA Western Australia http://www.cotawa.org.au. A membership-based organisation of older Australians whose aim is to make a difference through education and advocacy including in the area of health. COTA Australia is the peak national organisation representing the rights, needs and interests of older Australians.

Carers WA

Carers Association of WA http://www.carerswa.asn.au is a non-profit, community-based organisation and registered charity organisation that represents carers' interests in the Western Australia community. It is a peak body recognised by both the State and Federal governments as the voice of family carers.

Curtin FM Radio

Curtin FM Radio http://curtinfm.com.au/ is a community-based network broadcasting from the campus of Curtin University. The station caters to a mature audience that favours music from the 50s, 60s and 70s, throughout Perth metropolitan area and internet.

Health Consumers Council of WA

Health Consumers' Council of WA (HCC) http://www.hconc.org.au/home is an independent voice to raise awareness and advocate for health consumers' rights in Western Australia.

National Seniors Australia WA

National Seniors Australia http://nationalseniors.com.au is a consumer lobby for older Australians and advocates on issues of importance to senior Australians and identifies trends in ageing.

Probus Clubs

Probus clubs https://probuswa.wordpress.com/ are for retired or semi-retired business or professional people. Probus clubs can be found world-wide and were formed with the aim of providing fun, fellowship and intellectual stimulation amongst active seniors.

List of Abbreviations

ADL	Activities of Daily Living
AIDS	Acquired Immunodeficiency Syndrome
BCT	Behaviour Change Techniques
CASP	Critical Appraisal Skills Program
CINAHL	Cumulative Index to Nursing and Allied Health Literature
COM-B Model	Capability, Opportunity, Motivation-Behaviour Model
DVD	Digital Video Disc
EMBASE	Excerpta Medica database
GEE	Generalised Estimating Equation
HIV	Human Immunodeficiency Virus
ICC	Intraclass Correlation Coefficient
ICCWA	Injury Control Council of Western Australia
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCT	Randomised Controlled Trial
TDF	Theoretical Domains Framework
WA	Western Australia

Chapter 1

Introduction

1.1   Chapter Outline

This chapter provides a synopsis of the research in this thesis including the background of the research and an outline of each chapter.

1.2   Introduction

Falling among older adults is a major public health problem and can have serious consequences for the individual, family and the community (Peel, 2011; World Health Organisation, 2007). Older adults spent more than 1.3 million patient days in hospital each year in Australia in 2011-2012, because of falls (Tovell, Harrison, & Pointer, 2014). While there is strong evidence that interventions such as exercise and review of medications can reduce falls among community-dwelling older adults (Deandrea et al., 2010; Gillespie et al., 2012), there has been difficulty in translating these evidence-based interventions into practice. Reasons for the gap in translation may be attributed in part to inadequate reporting of research interventions for replication and practice (Glasziou et al., 2010). However, some of the research to practice gap can be explained by examination of the role of the older adult within the "research to practice pipeline" (Glasziou & Haynes, 2005). This explains that even when interventions are accepted and practiced by health professionals and health care systems, the patient (in the case of falls prevention – the older adult), must be aware of and understand the interventions, then agree to them and subsequently adhere to them (Glasziou & Haynes, 2005). Multiple studies have now demonstrated that many older adults have low perceived risk of falls, low levels of knowledge about effective strategies to reduce their risk of falling and low motivation to engage in falls prevention strategies (Bunn, Dickinson, Barnett-Page, McInnes, & Horton, 2008; Dickinson, Machen, et al., 2011; Dorresteijn, Rixt Zijlstra, van Eijs, Vlaeyen, & Kempen, 2012; Hill, Hoffman, Beer, et al., 2011; Hughes et al., 2008; Yardley, Bishop, et al., 2006). Unsurprisingly in this case, it has been shown that there is a lower than optimal level of engagement, and low levels of uptake and adherence, to falls prevention strategies by community-dwelling older adults (Nyman & Victor, 2012).

Health education: specifically; peer education; has been recommended as an intervention that could potentially improve community-dwelling older adults' knowledge about falls and falls prevention and uptake of relevant evidence-based strategies (Peel & Warburton, 2009). Peer education encompasses interventions where information, skills and values are imparted amongst people who share common characteristics such as age or shared experience (Shiner, 1999; Simoni, Franks, Lehavot, & Yard, 2011). There are also reported theoretical benefits of peer education

(Quine, 2006; Turner & Shepherd, 1999) and other health-related peer education studies have shown this approach is effective in achieving positive health behaviour change outcomes (Lorig, Ritter, & Gonzalez, 2003; Swerissen et al., 2006). Health behaviour change theory suggests that providing an individual with knowledge and motivation are critical for achieving health behaviour change (Michie et al., 2011). However, there is a paucity of empirical evidence about whether the peer-led approach to falls prevention education can raise knowledge about falls prevention and motivation to engage in falls prevention strategies amongst community-dwelling older adults. Therefore, evidence to date about the efficacy of a peer-led approach in falls prevention education is inconclusive (Peel & Warburton, 2009). There is also a paucity of falls prevention education studies, using any education approach, being conducted among older community populations, and the evidence for education in falls prevention in this setting has been reported as inconclusive (Gillespie et al., 2012).

This research aimed to design a peer-led falls prevention education program and evaluate its impact on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. It was conducted in two phases. In Phase 1, three studies were conducted concurrently to gain an understanding of key stakeholders' perspectives about the provision of falls prevention information and education for older adults to inform the research in Phase 2. Subsequently, Phase 2 consisted of the design and development of a new contemporary peer-led falls prevention education program, which was underpinned by health behaviour change theory and incorporated relevant adult learning principles. A quasi-experimental trial was then conducted to evaluate the effectiveness of delivering the contemporary peer-led falls prevention education program on community-dwelling older adults' beliefs and knowledge about falls prevention, their motivation, and intention to engage in falls prevention strategies.

1.3   Overview of Chapters

Chapter 2

This chapter provides an overview of and context for the research by initially reviewing the epidemiology of falls including prevalence, costs and consequences of falls, risk factors and evidence-based strategies to prevent falls amongst community-

dwelling older adults. The chapter also integrates and synthesises findings from previous studies that investigated factors influencing engagement and uptake of falls prevention strategies by community-dwelling older adults. Relevant educational, pedagogical and behaviour change theories applied to falls prevention are presented and a justification for the choice of theoretical framework used in this research. Research findings, specifically falls prevention education for the community-dwelling older adults, are reviewed and gaps in the evidence identified. Furthermore, the chapter provides evidence and the rationale for peer education in the area of health, and importantly, for investigating the effect for older adults in falls prevention. Finally, a summary of the research gap and how the present research addresses this gap via its aims is presented.

Chapter 3

This chapter provides an overview of the design and methodology of the studies included in this thesis. The structure of the thesis including research design, overview of methods used in each study and research aims; ethical considerations, research setting and participants, data collection and procedure, and finally data analysis are described.

Chapter 4

This chapter describes Study 1 (Phase 1) which was a qualitative study conducted to explore the perspectives of a group of peer educators about their role in delivering the peer-led falls prevention education for community-dwelling older adults.

This chapter is based on a published article:

Khong, L., Farringdon, F., Hill, K. D., & Hill, A-M. (2015). "We are all one together": Peer educators' views about falls prevention education for community-dwelling older adults - A qualitative study. *BMC Geriatrics,* 15(28), 1-10. http://dx.doi.org/10.1186/s12877-015-0030-3

Chapter 5

This chapter describes Study 2 (Phase 1) which was a community-based participatory research forum that was undertaken to examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information.

This chapter is based on two published articles:

Khong, L., Bulsara, C., Hill, K. D., & Hill, A-M. (2016). How older adults would like falls prevention information delivered: Fresh insights from a World Café forum. *Ageing & Society*. http://dx.doi.org/10.1017/S0144686X16000192

Bulsara, C., **Khong, L.,** Hill, K. D., & Hill, A-M. (2016). Investigating community perspectives regarding preferences for falls prevention education using a World Cafe approach. *Journal of Community Psychology,* 44(7), 937-944. http://dx.doi.org/10.1002/jcop.21816

Chapter 6

This chapter describes Study 3 (Phase 1) which was a mixed methods design study conducted to evaluate peer educators' presentations of the existing falls prevention program against established criteria, by experts from various areas of specialisation.

This chapter is based on a manuscript in press:

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M. (in press) Community peer-led falls prevention presentations: What do experts suggest? *Journal of Primary Prevention*

Chapter 7

This chapter describes the steps taken to develop the peer-led falls prevention education program (intervention) and includes an integration of the evidence from the literature review and the three studies (Study 1, 2 and 3 described in Chapter 4 to 6 respectively) introduced in Phase 1.

This chapter is based on a manuscript submitted for publication and under peer review:

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M.   Design and development of a theory-informed peer-led falls prevention education program to translate evidence into practice: A systematic approach.

Chapter 8

This chapter describes a quasi-experimental trial conducted to evaluate the effectiveness of the peer-led falls prevention education program (intervention) compared to the existing program for community-dwelling older adults.

This chapter is based on a published article:

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M. (2017) Can peer education improve beliefs, knowledge, motivation and intention to engage in falls prevention amongst community-dwelling older adults? *European Journal of Ageing* http://dx.doi.org/10.1007/s10433-016-0408-x

Chapter 9

This final chapter summarises and synthesises the results of the series of studies included in this thesis. The findings discussed are specific to each study and research aim. The strengths, limitations and challenges, and implications for practice are presented and recommendations for future research considered.

Chapter 2

Review of the Literature

2.1   Scope of the Review

The research presented in this thesis was conducted in a community setting, so the focus of the literature review is also confined to the community setting. Although falls occur more commonly in residential care and hospital settings, these settings and populations have different epidemiology and are regarded by falls researchers as requiring interventions and research methods specifically tailored for those settings (Cameron et al., 2012). Accordingly, with community settings in mind, the purpose of this literature review is to present the background, justification of and rationale for the present research studies.

2.2   Defining a Fall

A *fall* has been consistently described as a change in body position towards a lower level but there are variations of what constitutes a fall in research studies (Hauer et al., 2006; Zecevic, Salmoni, Speechley, & Vandervoort, 2006). Falls have been described in terms of context such as preceding events leading up to a fall or aetiology contributing to a fall (Hauer et al., 2006; Kellogg International Work Group, 1987; Zecevic et al., 2006). Moreover, older adults have been found to use the term slips, trips and falls interchangeably (Zecevic et al., 2006). Therefore, it has been suggested that an operational definition of a fall should be used (Zecevic et al., 2006). The operational concept of a fall should be comprehensive, be clearly defined as well as at a level of understanding suitable for a layperson such as an older adult (Gillespie et al., 2012; Lamb et al., 2005). In addition, the use of a standardised definition of a fall should facilitate reliability in comparison of results across studies (Hauer et al., 2006; Zecevic et al., 2006).

Accordingly, for the purpose of this research and thesis, a fall is defined as "an unexpected event which the participants come to rest on the ground, floor, or lower level" (Lamb at al., 2005, p. 1619).

For this research, an older adult is defined as someone 60 years or older. This chronological cut-off age accords with the definition used in two peer-led falls prevention education programs (Deery, Day, & Fildes, 2000; Garner et al., 1996) and other research (Gillespie et al., 2012).

For this research, community-dwelling older adults are defined as those living at home or residences such as retirement villages that do not provide residential health-based care or rehabilitative services (Gillespie et al., 2012). This excludes those older adults living in residential care facilities or older adult populations in hospitals.

2.3   The Research Problem

Falling in older adults is a major public health problem and has serious consequences for the individual, family and community in general. There is strong evidence that falls prevention interventions can reduce falls in community-dwelling older adults. However, poor uptake and adherence has limited the translation of this evidence into practice and hence, the success of such interventions amongst community-dwelling older adults is limited.

The purpose of Section 2.3 is to review the literature regarding the epidemiology of falls in Australia and other western developed countries such as the United Kingdom (UK) or United States of America (USA). As such, the prevalence, cost, consequences of falling, falls-related risk factors as well as evidence-based strategies pertaining to community-dwelling older adults will be discussed. Finally, the current understanding of the enablers and barriers to uptake and adherence of evidence-based falls prevention strategies that community dwelling older adults experience will also be presented in the next Section 2.4.

2.3.1 Epidemiology of falls among community-dwelling older adults

2.3.1.1 Prevalence of falls in the community

Differences in falls incidence/prevalence reported could be affected by factors such as the aim of a study, definition of a fall, sample cohort stratification, inclusion and exclusion criteria, and method of collecting falls data (Cumming, Kelsey, & Nevitt, 1990).

A prospective study involving a large random sample of 5,681 New South Wales community-dwelling residents aged 65 years and above and conducted in 2009 (Centre for Health Advancement and Centre for Epidemiology and Research, 2010). found that 25.6% of older adults reported a fall at least once in the previous twelve months (Milat et al., 2011). Regarding recurrent falls, estimates ranging from 10% to 16 % of community-dwelling older adults who experienced two or more falls in the past year were found in other prospective studies using representative cohort samples (Pluijm et al., 2006; Stalenhoef, Diederiks, Knottnerus, Kester, & Crebolder, 2002; Tinetti, Inouye, Gill, & Doucette, 1995; Tromp et al., 2001). Those deemed as having a high risk of recurrent falling also have a high risk of injury (fractures and loss of independence) (Pluijm et al., 2006). In addition, there is an age-related increase in the incidence of falls. Milat et al. (2011) found that only 21.5% of those in the 65-69 age group reported a fall, compared to 34% in the 85-89 age group and 35.9% in the above 90 age group in the NSW (Australia) community.

2.3.1.2 Costs of falls

In Australia, 55% of all hospitalised falls injuries occurred in adults over 65 years of age from the period 2012 to 2013 (AIHW: Pointer, 2015). Currently, the average total length of stay per fall injury hospitalisation is approximately 15.5 days accounting for over 1.3 million hospital patient days being recorded in 2009-2010 for falls-related admissions in Australia (AIHW: Bradley, 2013). After inpatient hospital admissions, cost of long term care is the next highest cost component (Scuffham, Chaplin, & Legood, 2003).

While hospital-related costs account for most of the costs associated with falling for older adults living in the Australian community (Centre for Health

Advancement and Centre for Epidemiology and Research, 2010), many falls did not result in hospitalisation (Milat et al., 2011). Though 66% of those who fell sustained an injury and 20% visited the hospital, 90% of the older adults did not need an admission to hospital (Milat et al., 2011). In these cases, other non-hospital costs should be considered (Centre for Health Advancement and Centre for Epidemiology and Research, 2010). These costs may include outpatient medical treatments, pharmaceutical, allied health, community nursing and domiciliary services (Centre for Health Advancement and Centre for Epidemiology and Research, 2010). Older adults who fall, and especially those who fall repeatedly, are more likely to use healthcare services than older adults who do not fall (Rizzo et al., 1998).

Falls incur an overall economic cost to a country. A standardised economic cost review identified substantial healthcare costs involved with older adults' falling worldwide in developed countries (Davis et al., 2010). In 2008, the USA incurred approximately US$23 billion costs relating to non-fatal falls annually, and the UK incurred about US$1.6 billion. Comparatively, Australia's cost was US$143 million and projected to increase to US$151 million by 2021 (Davis et al., 2010). There has also been a rate increase of 3.5% (95% CI 3.1-3.9) per year in falls-related hospitalisations for older adults from 2003-2012 with an increase from 2,000 to 3,000 persons for males and 3,500 to 4,500 persons for females per 100,000 population (Harvey, Mitchell, Brodaty, Draper, & Close, 2016). This rate has been projected to escalate 2.5 times and the total cost of falls has been projected to increase to over $1.375 billion per year by 2051 (Moller, 2003). However, while these estimates highlight that falls are a serious and costly problem for countries, the impact and consequences of falling on the individual and community go well beyond economic costs.

2.3.1.3 Consequences of falls

Falls are a significant cause of morbidity and mortality for older people and have a substantial negative impact on older adults' independence, function and quality of life (Alamgir, Muazzam, & Nasrullah, 2012; Kannus et al., 1999; Rubenstein, 2006; Sattin et al., 1990). Falls accounted for 29% of unintentional injury mortality cases in 2006 (Alamgir et al., 2012) and the rate of death and injury rises with increasing age (Sattin et al., 1992; Tovell et al., 2014).

Falls can also result in physical injuries and social and psychological consequences (Campbell et al., 1990; Craig, Murray et al., 2013; Milat et al., 2011; Rubenstein, 2006; Tovell et al., 2014). Regarding consequences, the findings reported in the following studies differ due to varying population profiles, settings (including Australia and different Western countries) and measures used (Masud & Morris, 2001; Peel, 2011).

Studies have estimated that between 20-66% of falls result in injuries (Craig, Murray et al., 2013; Milat et al., 2011) although most injuries are relatively minor (for example, cuts, grazes, bruising). Approximately 3%-13% of all falls result in fractures (Campbell et al., 1990; Rubenstein, 2006; Tovell et al., 2014). Of these, hip fracture is the most serious falls-related injury with 15% of older hip fracture patients dying in hospitals and about 20% not surviving beyond the first year after the fracture (McClure et al., 2005; Wolinsky, Fitzgerald, & Stump, 1997). Those who survive their hip fractures are likely to suffer long-term disability and increased social dependence, reflecting a reduced quality of life (Hall, Williams, Senior, Goldswain, & Criddle, 2000; Wolinsky et al., 1997). A study found that 25% to 75% of older patients who fractured their hips do not return to their pre-morbid level of function and mobility (Magaziner, Simonsick, Kashner, Hebel, & Kenzora, 1990). The healthcare costs of hip fracture are also the costliest of falls injuries (Davis et al., 2010).

While there has been a reported trend of decreasing rates of hip fractures in some countries such as Australia, there has been an estimated increase of about 7% in the rate of traumatic brain injury due to falls in 2009-2010, compared to previous years (AIHW: Bradley, 2013). Harvey and Close (2012) have reported that 83% of traumatic brain injury hospitalisations are due to falls-related episodes and the mortality rate is in the region of 13%.

Falling can also affect the broader health and well-being of older adults according to the findings reported in a recent large Australian prospective longitudinal study (Peeters, Jones, Byles, & Dobson, 2015). This study followed 10,277 participants at three-year intervals for a period of twelve years, and found that those who had fallen fared significantly worse in terms of their physical, social and functional capacity (Peeters et al., 2015). Moreover, experiencing a fall(s) increases the risk of premature admission to residential care (Peel, 2011).

Consequences of falls can also extend beyond the physical aspects, affecting the social and psychological domains. Psychological consequences such as developing a fear of falling leading to a loss in self-confidence in daily function (Scheffer, Schuurmans, van Dijk, van der Hooft, & de Rooij, 2008) may also occur. While there are many definitions of fear of falling, one systematic review described fear of falling as an umbrella term to encompass falls-related self-efficacy, concerns about balance in mobility, leading to avoidance of activity (Zijlstra, van Haastregt, van Eijk, et al., 2007; Zijlstra, van Haastregt, van Rossum, et al., 2007). Prevalence of fear of falling has been reported to range from 21–85% (Zijlstra, van Haastregt, van Eijk, et al., 2007) and has also been reported to be present even in 50% of older adults who have not experienced a fall (Scheffer et al., 2008). Fear of falling can be a cause or a consequence of falling and has been associated with subsequent reduced quality of life, loss of self-efficacy, activity avoidance and depression (Deshpande, Metter, Lauretani, Bandinelli, & Ferrucci, 2009; Scheffer et al., 2008).

Fear of falling can trigger the onset of depression or vice versa, the association between the two psychological states has been described as reciprocal or bidirectional (van Haastregt, Zijlstra, van Rossum, van Eijk, & Kempen, 2008). Depression affects about 12-15% of community-dwelling older adults and can be triggered by falling, fear of falling or become a risk factor for falling (Beekman et al., 1995; Blazer & Williams, 1980). Depression was associated with an increase in risk of falling and recurrent falls in older adults (Deandrea et al., 2010; Gassmann, Rupprecht, Freiberger, & Group, 2009; Stalenhoef et al., 2002). This is because older adults' depression has been associated with impaired cognitive and motor performance (McDermott & Ebmeier, 2009; Wright, Kay, Avery, Giordani, & Alexander, 2011). Such impairments can influence gait stability, hence increasing older adults' risk of falling (Yogev-Seligmann, Hausdorff, & Giladi, 2008).

2.3.1.4   Risk factors for falling

Falls usually arise from a combination of different risk factors (Rubenstein, 2006). Generally, the higher the number of risk factors, the higher the risk of falling (Nevitt, Cummings, & Hudes, 1991; Tinetti & Williams, 1998). Risk factors associated with falling are characteristics that predispose individuals to falling compared to individuals who do not possess such characteristics (Rubenstein, 2006).

Epidemiological studies revealed that over 400 risk factors have been identified and there are various ways of classifying falls-related risk factors (Masud & Morris, 2001). Risk factors can be broadly classified as intrinsic in nature (within the individual, such as physiological changes associated with ageing, impaired vision, impaired balance) or extrinsic (external to the individual, such as environmental factors) or an interaction of both intrinsic and extrinsic risk factors (Cesari et al., 2002; Tideiksaar, 1989). These risk factors can be further re-classified as modifiable and non-modifiable risk factors. Modifiable risk factors are reversible precipitating characteristics that may be intrinsic or extrinsic in nature (Tideiksaar, 1989). Non-modifiable risk factors are those that are not reversible in nature such as age or gender (Tideiksaar, 1989). Given the large number of risk factors that have been reported to be associated with falls (Deandrea et al., 2010; Masud & Morris, 2001), this review does not attempt to review the literature exhaustively but will be limited in scope to presenting an overview of the modifiable risk factors with the strongest associations with falls and those relevant to this research.

A recent systematic review of 74 prospective studies found risks of falling for community-dwelling older adults associated with history of falls, vertigo, Parkinson disease, impaired vision, gait problem, use of medication, use of walking aid and depression (Deandrea et al., 2010). For this research, the modifiable risk factors that will be discussed are:

- Sensory impairment, such as disorders with vision
- Physical impairment involving disorders with mobility issues such as gait, foot, and postural instability/balance problems
- Use of medication, including the number of medications taken and the use of some medication types associated with increased falls risk
- Environmental home hazards

Impaired vision has been shown to be a significant risk factor for falls in community-dwelling older adults (Ivers, Norton, Cumming, Butler, & Campbell, 2000; Lord & Dayhew, 2001). An estimated 20% of community-dwelling older adults have impaired vision, and the rate increases as individuals age (Evans et al., 2002). Regardless of the type of vision lost (visual acuity, contrast sensitivity, depth perception or visual field), vision plays a critical role in safe mobility and environmental hazard detection (Lord & Dayhew, 2001).

Mobility issues such as impaired gait, foot and ankle problems and postural stability disorders (balance) in older adults increase their risk of falls because these problems affect ability to balance effectively in situations when falls may occur (Deandrea et al., 2010; Menz & Lord, 2001; Menz, Morris, & Lord, 2006; Shumway-Cook, Brauer, & Woollacott, 2000; Stubbs et al., 2014). Between 20 and 50% of older adults have reported experiencing gait disorders and balance deficits (Rubenstein, 2006), while 36% suffer foot problems such as foot lesions, structural deformity or disabling foot pain (Barr, Browning, Lord, Menz, & Kendig, 2005; Menz et al., 2006). Foot pain and reduced ankle dorsiflexion range of motion are important foot-related risk factors that significantly impair older adults' mobility (Menz, Morris, & Lord, 2005). Inappropriate footwear was also identified as a falls risk factor (Gabell, Simons, & Nayak, 1985; Sherrington & Menz, 2003). Seventy-five percent of falls-related hip fracture participants reported wearing inappropriately designed footwear at the time of falling (Sherrington & Menz, 2003).

Studies have shown a significant association between type of medications and number of medications taken by older adults and risk of falls (Hartikainen, Lonnroos, & Louhivuori, 2007; Landi et al., 2005; Leipzig, Cumming, & Tinetti, 1999a; Woolcott et al., 2009). Medication has been recognised as a risk factor for falling because of age-related changes and probability of existing co-morbidities in older adults (Boyle, Naganathan, & Cumming, 2010; Deandrea et al., 2010). Several systematic reviews have evaluated the use of medication associated with risk of falling (Hartikainen et al., 2007; Leipzig et al., 1999a, 1999b; Woolcott et al., 2009) and the findings are illuminating. Medications with increased risk of falling were sedatives or hypnotics (an estimated 47% increased risk) and in particular benzodiazepine and antidepressants (61% increased risk) (Woolcott et al., 2009). These high falls-risk medications have an impact on the physiological status of older adults either via a direct effect on the individual's central nervous system or through interactions with other medications (Boyle et al., 2010; Hill & Wee, 2012). The physiological effects reported can include affected vision, fatigue, impaired physical performance, postural hypotension, postural instability, delayed balance reactions, dizziness, and cognition changes such as memory loss (Agostini & Tinetti, 2002; de Groot et al., 2013; Gray et al., 2003; Hanlon et al., 1998; Hill & Wee, 2012; Lord, Anstey, Williams, & Ward, 1995). Furthermore, it has been shown that the higher the dosage or duration of the

high falls-risk medication taken, the higher the risk of hospitalisation after a fall (Pratt et al., 2014). Polypharmacy in older adults is deemed to be the concurrent use of four or more medications (Bjerrum, Rosholm, Hallas, & Kragstrup, 1997). The higher the number of medications taken, the higher the risk of falls (Hartikainen et al., 2007). This is shown where the likelihood of falls was increased by 30% when four or more medications (polypharmacy) were taken compared to those who did not take any medications (Tromp et al., 2001).

The majority (59%, n=41,080) of hospitalised fall injuries reported during 2009-2010 in Australia, adults aged 65 years and over, were reported to occur in and around the home (AIHW: Bradley, 2013). Of those injuries, 28% (n=19,495) occurred inside the home itself. Particularly, areas inside the home that were shown to be especially hazardous were bathroom (6.5%) and the bedroom (5.5%). Environmental home hazards are risk factors for falling (Lord, Sherrington, Menz, & Close, 2007; Rubenstein & Josephson, 2006) and have been found to increase the risk by 38% (Letts et al., 2010). Potential environmental home hazards identified in a validated home safety checklist involved 14 areas related to the home or the person (Clemson, 1997). In particular, around the bathroom, these included floor surfaces, shower recess and grab rail; for the bedroom, bed height, wardrobe and lighting were highlighted (Clemson, 1997). According to Clemson (1997), falls risk management involves assessment of the home environment including recommendations for safety such as eliminating, reducing or modifying the hazard. Besides adaptations to the home environment, other studies have determined environmental interventions to include provision of mobility aids such as walking aids; and communication aids such as personal alarms (Gillespie et al., 2012).

However, environmental and home hazards alone are often an insufficient falls risk factor explanation and it is the interaction between the environmental hazard and the older adult that is of considerable significance (AIHW: Pointer, 2015; Lord, Menz, & Sherrington, 2006). The risk factor for falling can arise when there is a mismatch between the individual's abilities or behaviour and exposure to the potential hazard. There is a higher likelihood that some older adults with intrinsic impairments such as physical or visual impairments have a lesser capacity to cope when exposed to potential hazards in the environment (Hornbrook et al., 1994). This combination with

the environment can manifest as a risk factor for falling (Hornbrook et al., 1994; Lord, Menz, & Sherrington, 2006; Rubenstein, 2006).

Twenty-four percent of adults aged 65 years and over use a walking aid (assistive device) and one-third use more than one device (Gell, Wallace, LaCroix, Mroz, & Patel, 2015). Using a cane is the most common walking aid (Gell et al., 2015). Although walking aids have been reported to be beneficial for those older adults requiring assistance, evidence regarding the use of a walking aid as a risk factor is mixed. Several studies have suggested that such use can be protective of those with physical and mobility impairments by increasing gait stability and so reduce the risk of falling (Graafmans, Lips, Wijlhuizen, Pluijm, & Bouter, 2003; Hardi, Bridenbaugh, Gschwind, & Kressig, 2014). Empirical research showed improvements in gait stability, decreased attentional demands, and decreased pain by reduced weight-bearing on limbs. These were seen as factors contributing to reducing the risk of falls in community-dwelling older adults (Bateni & Maki, 2005; Hardi et al., 2014; Jansen et al., 2015; Miyasike-daSilva, Tung, Zabukovec, & McIlroy, 2013). Moreover, some older adults described feeling safer when using an aid and some older adults identified a walking aid as part of their plan to reduce their risk of falling (Aminzadeh & Edwards, 1998; Jansen et al., 2015). While the above benefits were reported, there was also evidence that conflicted with the recommendation regarding the use of a walking aid reducing the risk of falling. Systematic reviews reported insufficient evidence that using a walking aid reduced the number of falls or fallers (Karlsson, Magnusson, von Schewelov, & Rosengren, 2013; Ohare, Pryde, & Gracey, 2013). In addition, several studies have reported the use of a walking aid as contributing to a two to three-fold rise in the risk of falling (Deandrea et al., 2010; Letts et al., 2010; Rubenstein & Josephson, 2002). Such evidential inconsistency could arise for several reasons. There is likelihood that walking aid use indicates an increased physical impairment with an inherent increased risk of falling in this group of older adults (Campbell, Reinken, Allan, & Martinez, 1981). Moreover, studies have found that a majority (70%) of mobility aid users lacked prior healthcare consultations and hence were not likely to receive advice regarding the choice of aid; nor had they received the appropriate training in using the aid safely (Liu, 2009; Liu, Eaves, Wang, Womack, & Bullock, 2011). It has been found that there are increased biomechanical and metabolic demands with using walking aids that might translate to in an increased risk

of falling without the consultation and appropriate training (Bateni & Maki, 2005). In summary, some older adults with impairments may not be using the appropriate walking aid or using the aid appropriately, which can increase their risk of falling. As such, walking aid use, or lack of use, can be considered a risk factor for falling.

2.3.2   Evidence for reducing falls among the community-dwelling older adult population

Falls prevention strategies can be implemented as a single strategy or combination of strategies. Based on the Prevention of Falls Network Europe (ProFANE) classification, a single strategy intervention consists of one major strategy that is applied to all participants (Lamb et al., 2011). An example might be falls prevention education delivered to each of the community-dwelling older adults participating in a study. Multifactorial interventions consist of more than one strategy and involve a combination of strategies such as home modification and exercise programs depending on individual risk assessment (Lamb et al., 2011). In comparison to the above, a multiple intervention is where two or more major strategies are applied to every participant within the study (Lamb et al., 2011).

The most recent systematic review regarding falls prevention conducted by the Cochrane collaboration, with 79,193 community-dwelling older adult participants across 159 randomised controlled trials by Gillespie et al. (2012), reported several effective single falls interventions. These were exercise interventions (gait, balance or strength training), medication review (supplementation with Vitamin D), surgery (cardiac pacemaker, first cataract surgery), and environment modifications (home safety, footwear and mobility aids). In the review, the most common trialled single intervention reported was exercise (59 trials), with 40 programs being multifactorial in design (Gillespie et al., 2012). It also found that multifactorial falls intervention programs such as an individually tailored combination of interventions based on risk assessment or multiple interventions reduced the rate of falls but not the risk of falls (Gillespie et al., 2012; Stubbs, Brefka, & Denkinger, 2015). However, the challenges involved with the implementation of multifactorial interventions such as the knowledge deficits of health professionals in assessing and managing the interventions for individuals and the cost-benefit of such approaches, were questioned by other researchers (Tinetti, Gordon, Sogolow, Lapin, & Bradley, 2006). A meta-analytical

study showed that targeted single factor intervention was equally as effective as multifactorial interventions and as cost-effective at a population level, too (Campbell & Robertson, 2007). Key interventions that have proved effective for falls risk reduction of modifiable risk factors and are included as content in education interventions are discussed below.

2.3.2.1 Improving postural instability and balance

Targeted exercise interventions which improve balance can significantly reduce the rate of falls, reduce the risk of falling, fear of falling and depression, according to several systematic reviews (Gillespie et al., 2012; Kendrick et al., 2014; Petridou, Manti, Ntinapogias, Negri, & Szczerbinska, 2009). Two hour minimum exercise per week involving a balance component at a moderate to high level of challenge, conducted on a group or home-basis, has been shown to be effective in the research literature (Sherrington, Tiedemann, Fairhall, Close, & Lord, 2011; Sherrington et al., 2008). Randomised controlled trials have shown that Tai Chi exercises (single strategy) can significantly improve balance in older adults (Voukelatos, Cumming, Lord, & Rissel, 2007) and significantly reduce the risk of falling (Gillespie et al., 2012).

As identified earlier maintaining gait stability can be enhanced with the use of walking aids by community-dwelling older adults and so potentially prevent falls (Graafmans et al., 2003; Hardi et al., 2014). However, there can be challenges when older adults do not have a medical or health professional consultation to advise regarding aid usage and do not receive appropriate training. Challenges are further compounded when more than one aid is used or adherence to recommended use is not adhered to.

2.3.2.2 Improving or managing visual impairment

Interventions for managing risks relating to impaired vision have been varied and outcomes inconsistent (Gillespie et al., 2012). A multifactorial intervention involving eye assessment and eye-care via a health professional was found to be ineffective in reducing falls (Day et al., 2002). Undergoing cataract surgery for the first eye significantly reduced the rate of falls by 34%, and enhanced the participants' general health status (Harwood et al., 2005). In comparison, a subsequent study found that there was no significant reduction in the rate of falling among participants that underwent cataract surgery for the second eye

(Foss et al., 2006). There is evidence indicating that corrective lenses need careful consideration. One study found that multifocal lenses contribute to 35.2% of falls generally, and 40.9% of falls outside the home (Lord, Dayhew, & Howland, 2002). This may be because multifocal glasses affect the older adults' depth perception, edge contrast sensitivity, and the judgement of safe foot clearance (Johnson, Buckley, Scally, & Elliott, 2007). Hence, the ability to detect obstacles may be affected using multifocal glasses, which increases the risk of falling and tripping (Lord et al., 2002; Menant, St George, Sandery, Fitzpatrick, & Lord, 2009). A randomised controlled trial demonstrated that a switch to single-lens glasses as a falls prevention strategy may be beneficial when walking, engaging with outdoor environments or negotiating unfamiliar surroundings (Haran et al., 2010; Haran et al., 2009).

2.3.2.3   Managing foot/ankle issues: Podiatry and footwear

Appropriate footwear and/or podiatry intervention can positively influence balance and so reduce the risk of falling (Koepsell et al., 2004; Menant, Steele, Menz, Munro, & Lord, 2008a, 2008b). One systematic review suggested that shoe design and footwear characteristics such as low heels at less than 4.5cm, firm slip-resistant soles and a high heel collar, enhanced balance in older adults (Menant et al., 2008a, 2008b). Another study showed that athletic shoes are the preferred footwear to manage the risk of falls (Koepsell et al., 2004). Anti-slip footwear has been shown to reduce the risk of falls outdoors in icy weather in community-dwelling older adults with a history of falls (McKiernan, 2005). Regarding disabling foot pain in community-dwelling older adults, a randomised controlled multifaceted (multiple) podiatry intervention was found to be effective in reducing the number of falls by 36% (Spink et al., 2011). The intervention included footwear assessment and advice, customised insoles, standardised foot exercises as well as a generic falls prevention education booklet. However, as with other previously cited studies, researchers here too reported issues with uptake and adherence to various aspects of their recommendations (Spink et al., 2011).

2.3.2.4   Managing medications

Research evidence investigating medication-related falls in older adults proposed a conservative approach regarding the prescription of high falls-risk medication (Hill & Wee, 2012; Huang et al., 2012). The recommendation was to avoid

prescribing long-term use of a medication in favour of starting with the minimal effective dose over a limited time duration, monitoring for adverse effect and withdrawing of the medication whenever possible (Hill & Wee, 2012; Huang et al., 2012). In addition, wherever possible, alternative non-pharmaceutical options to the presenting problems were encouraged (Hill & Wee, 2012). A cross-sectional randomised controlled trial found that self-medication assessment by older adults with follow-up medication review by doctors educated by trial pharmacists significantly reduced the risk of falling in the intervention group (Pit, Byles, & Cockburn, 2007).

2.3.2.5 Managing environmental home hazards

Studies and systematic reviews have found positive outcomes in falls prevention with home modifications (Campbell et al., 2005; Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008; Gillespie et al., 2012; Letts et al., 2010; McLean & Lord, 1996; Nikolaus & Bach, 2003; Pighills, Torgerson, Sheldon, Drummond, & Bland, 2011). The reduction of environmental and home hazards has been found to decrease the number of fallers and the rate of falling in community-dwelling older adults (Clemson et al., 2008; Gillespie et al., 2012). It has been shown to reduce the risk of falling in the cohort of community-dwelling older adults who are at an increased risk of falling (Clemson et al., 2008; Gillespie et al., 2012; Lord et al., 2006). This can be achieved through a home safety assessment by an occupational therapist with consequent home modification (Cumming et al., 1999; Gillespie et al., 2012; Lord et al., 2006; Nikolaus & Bach, 2003). Other studies have found that subgroups of older adults with visual impairment (Campbell et al., 2005; Clemson et al., 2008); and physical impairment (reduced lower limb sensation and strength) (McLean & Lord, 1996), also benefitted from a modification in environmental hazards.

2.3.2.6 Other interventions

Supplemental Vitamin D in the presence of Vitamin D insufficiency, withdrawal of sleeping medications, and pacemakers are effective interventions for reducing falls (Bischoff-Ferrari et al., 2009; Campbell, Robertson, Gardner, Norton, & Buchner, 1999; Gillespie et al., 2012). However, these interventions are usually managed by a medical doctor and as such will not be discussed. We focussed on the

interventions that older adult can initiate and modify themselves. Education as an intervention will be discussed in Section 2.6.3.

2.3.3 Section summary

In summary, falls among older adults are a serious health and social problem for the older adult and the broader community. Between 25-29% of community-dwelling older adults fall at least once a year. The cost and consequences of falling are substantial and have a wide-ranging impact on not only the physical, but also social and psychological well-being of the older adults who experienced a fall(s). There is compelling evidence elucidating what the falls-related risk factors are for falling and evidenced-based strategies have been recommended for community-dwelling older adults. There is established evidence that multi-targeted or individual strategies including regular exercise, addressing the environment, optimising vision and controlling medication are key strategies that can reduce an older adult's risk of falling.

2.4 Older Adults' Engagement in Falls Prevention Programs

Section 2.3.2 discussed the diversity of evidence-based strategies to prevent falls in older adults. Adherence in the present research is defined as the extent to which a participant is willing to follow, and actively cooperate with a recommended practice (Probstfield, 1989). Such adherence is necessary to reduce falls or the risk of falls and may include undertaking exercise, removing home hazards, and following medical advice to reduce high falls risk medication. Adherence rates vary between single and multifactorial interventions, between different single interventions such as home modification and exercise, and within the same intervention such as different exercise interventions (Nyman & Victor 2012; Simek, McPhate, & Haines, 2012). The success and efficacy of falls prevention interventions, be it single or multifactorial, has been limited by the extent of the uptake and adherence to such interventions by the older adult population (Hill, 2009; World Health Organisation, 2007). In other words, studies examining adherence suggest that there has been only limited translation of this research evidence into practice.

A review of 99 community-based randomised controlled trials summarised the limited uptake and adherence of falls prevention interventions by older adults

(Nyman & Victor, 2012). The median recruitment rate for accepting an invitation to participate in falls prevention interventions evaluated in the clinical trials was 70%, the median attrition rate of participants completing the intervention at the 12-month follow-up was 10% and the overall level of adherence across all trials was 80%. However, twelve months after the clinical trials finished, it was estimated that the average participation and adherence to falls prevention interventions had fallen to 50.4% (Nyman & Victor 2012).

Although there is strong evidence showing that engaging in exercise is an effective falls prevention strategy, uptake of this intervention has been proven limited. Community-dwelling older adults have been shown to have low awareness and knowledge regarding exercise requirements to minimise falls (3% out of 333 participants surveyed (Hill, Hoffman, Beer, et al., 2011)). Australian data demonstrate that older adults have low levels of engagement in physical activity including exercise (Armstrong, Bauman, & Davies, 2000; Hackney & Wolf, 2014; Stubbs et al., 2015).

Home modifications to reduce hazards are most effective for older adults at risk of falls and when prescribed by an occupational therapist (Clemson et al., 2008; Gillespie et al., 2012; Pighills et al., 2011). However, the effect of reducing environmental hazard risks has been found to be variable on falls outcomes, as it is also dependent on the uptake and engagement of the older adult in adopting the recommended modifications. For example, one study found that while 75% of older adults adhered to using a non-slip bathmat, only 19% added a rail to external stairs at the study's 12-month follow-up (Cumming et al., 1999). Therefore, researchers have suggested that the efficacy of this falls prevention strategy is dependent on the ability of the health professional to engage the individual older adult to implement recommendations (Clemson, Cusick, & Fozzard, 1999; Lord et al., 2006).

A pilot study showed that though there was success in reducing the risk of medication-related falls, participants' adherence with reduction or complete withdrawal of high-risk medication can be challenging (Campbell et al., 1999). Such challenges were identified as finding appropriate support to help participants wean off the medication and adhere to permanent withdrawal of the medication (Campbell et al., 1999).

Moreover, when presented with falls prevention strategies, studies have reported limited uptake of suggested interventions, because prospective participants indicated that the falls prevention strategy offered was not personally relevant or of interest. In one randomised trial, only 11% of the 40,000 community-dwelling older women invited to participate, accepted the invitation to have their balance screened for an assessment of falls risk (El-Khoury et al., 2015). In another cross-sectional study of 5,755 community-dwelling people aged 70 and above, 62.7% of older adult respondents were not interested in participating in any of the different program formats (such as a home visit or telephone consultation) offered for managing concerns about falls (Dorresteijn et al., 2012).

These findings highlight that a large number of older adults are not optimally engaged in falls prevention strategies. Neither are they actively seeking out nor receiving information about falls and suitable falls prevention strategies. Such data highlights the need to understand why there is resistance to accepting information and subsequent uptake of and adherence to falls prevention strategies. Accordingly, the present research is focused on investigating a specific intervention that may impact on older adults' knowledge and awareness about falls and falls prevention strategies and may motivate and influence behaviour change, namely, greater engagement in and uptake of falls prevention.

2.4.1   Factors influencing older adults' engagement and uptake of falls prevention strategies: Enablers and barriers

The challenge of facilitating older adults' uptake of and adherence to falls prevention interventions may be partly attributable to the diversity of the older adult population. The older adult population is not homogeneous; older adults may possess different perspectives, beliefs and attitudes towards ageing, and may experience varying impacts of ageing on their physical and psychological status (Managing Innovation, 2000; Ory, Hoffman, Hawkins, Sanner, & Mockenhaupt, 2003). Multiple studies have found that epidemiological as well as other factors contribute to older adults' limited uptake of and adherence to falls prevention interventions. The following studies in this section reflect the myriad and complexity of factors that could influence uptake and show that adherence to falls prevention interventions is a complex challenge.

A literature review of older adults' views including their perceptions of factors that facilitate (enablers) and hinder action around falls prevention is reported in this section. Understanding of older adults' views about falls prevention could help translate research evidence to practice in terms of generating greater uptake of the strategies recommended in the Section 2.3.2 (Evidence for reducing falls). For example, if older adults lack knowledge or motivation, these can reduce their uptake of strategies. Factors influencing engagement with and adherence to falls prevention activities, and those limiting uptake, will be also be discussed. Finally, a list of recommended strategies for overcoming identified barriers, and factors enhancing engagement in recommended strategies, will be discussed.

The focus of the initial part of this section is to examine reviews that have investigated community-dwelling older adults' beliefs, attitudes, perceived enablers of and barriers to participation in falls prevention programs. A systematic search of electronic databases was conducted for relevant studies published from January 1995 to current (April 2016). These included Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline and Excerpta Medica dataBASE (EMBASE). Besides using enablers and barriers as key literature search terms, cognate terms and their derivatives, such as the following, were also searched: engage; promote; enrol; participation; motivation; adhere; perspectives; views; compliance; attitudes; attributes, facilitators. The search strategy is presented in Appendix C, Table C.1. Figure 2.1 illustrates the studies/papers screened and reviewed at each step.

Studies could be individual investigations or reviews and were included if they met all of the following criteria:

- They investigated enablers and barriers to older adults' uptake and participation in falls prevention strategies
- Participants were community-dwelling older adults aged 60 years and over

Studies were excluded if any of the following criteria applied:

- They evaluated exercise or other falls prevention interventions to prevent falls but not enablers or barriers to participants completing their interventions
- They were reviews of mainly hospital or residential-based studies and did not include community-based studies
- They only reviewed risk factors for falling
- They were falls-related guidelines, taxonomy or protocols
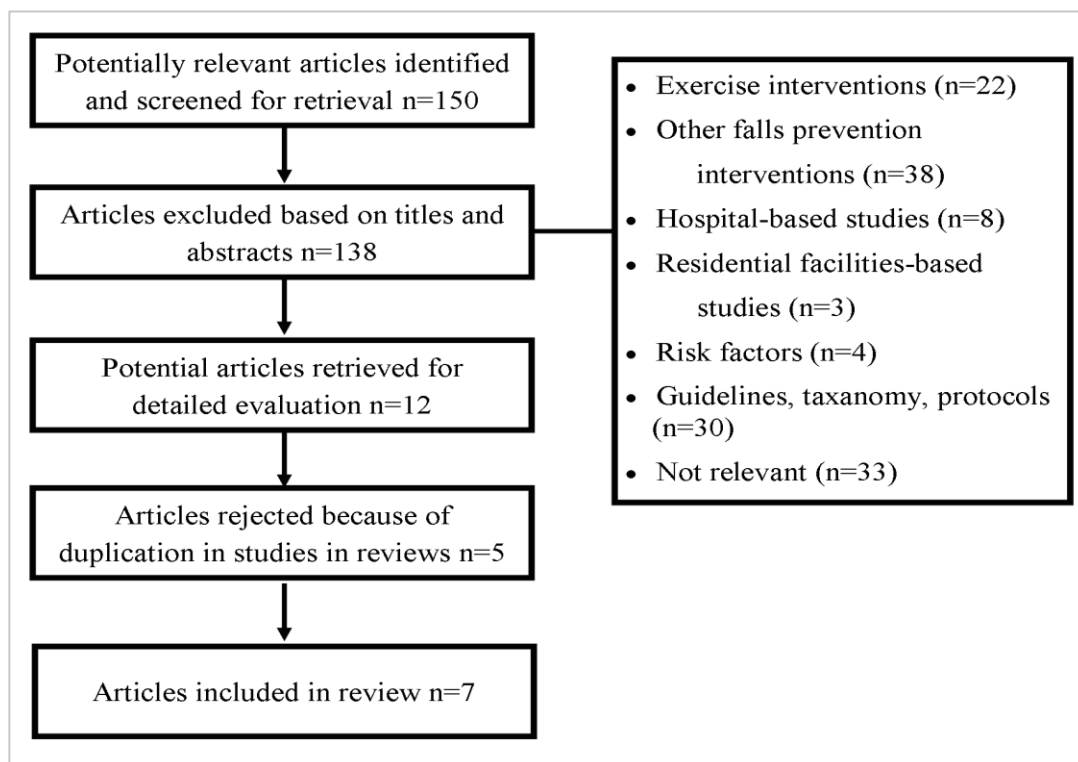
Figure 2.1 **Flowchart of Articles Screened, Evaluated and Included in the Review of Enablers and Barriers in Falls Prevention (Community-Based)**

Key information about the selected studies or reviews relevant to this research are summarised in Table 2.1. Full details of the studies such as research design and aim(s), a brief description of the sample, and research setting and critique are described in Appendix C, Table C.2. The studies included seven mixed methods studies (including systematic reviews): (Bunn et al., 2008; Dollard, Barton, Newbury, & Turnbull, 2012; Elskamp, Hartholt, Patka, van Beeck, & van der Cammen, 2012; McInnes & Askie, 2004; McInnes, Seers, & Tutton, 2011; McMahon, Talley, & Wyman, 2011; Shaw, Connelly, & McWilliam, 2014). Of the seven studies included in the synthesis of findings reported, four were qualitative studies. Three of them used qualitative approaches (semi-structured/in-depth interviews) and one was a review of qualitative studies (McInnes et al., 2011).

When examining these studies, the quality of the included systematic reviews was assessed against the PRISMA checklist (Liberati et al., 2009) while the qualitative studies were assessed against the Critical Appraisal Skills Program (CASP) qualitative research checklist (CASP, 2014; Kitto, Chesters, & Grbich, 2008). Three of these studies reported results from a mixed-setting of community-dwelling older adults and older adults living in residential care or residing in hospitals. Therefore, for these

studies (Bunn et al., 2008; McInnes & Askie, 2004; McInnes et al., 2011), it was not possible to differentiate the data source in terms of residency status. The difficulty in synthesising these findings from heterogeneous methodological and theoretical approaches (if any) was also compounded by the varying quality of the studies. Of the seven mixed methods studies, the quality of the studies varied as shown in Table 2.1. For example, two of the studies did not describe participants' profiles or report the number of those who refused to participate or the reason for doing so (Dollard et al., 2012; Elskamp et al., 2012). Three of the qualitative studies that were rated by the CASP checklist fulfilled 80% of the criteria (Table 2.2), demonstrating procedural and theoretical rigour.

Table 2.1   **Summary of Included Studies on Factors Influencing Older Adults' Engagement and Uptake of Falls Prevention Strategies**

Author	Design	Number of studies included	Setting	Comments
McInnes 2004	Systematic Review (24 studies)	RCT (n = 3); Cross-sectional (n = 4); Systematic review (n =1); Narrative review (n = 3); Pre-post (n = 3)	1 residential care, 3 hospitals, 20 community (mixed setting)	Explicit inclusion and exclusion criteria provided; screening assessment information about main study designs provided in detail; described how reliability was established for data synthesis process. Meta-analysis of data not performed. Recommendations were relating to participation in a falls prevention program and did not relate to intention or transition for behaviour change in day-to-day life and activities
Bunn 2008	Systematic Review (24 studies)	Qualitative (n = 12); RCT (n = 2); Cross-sectional (n = 6); Evaluation (n = 2); Process evaluation (n = 2)	18 community, 1 combined community and residential care, 3 residential care, 2 hospitals (mixed setting)	Inclusion criteria stated; search strategy described in detail Qualitative studies were rated against seven criteria ranging 3.5-7.0. Authors acknowledged the lack of assessment tools for qualitative studies in systematic reviews Challenges described and study addressed what and how to promote participation in falls prevention amongst older adults; focussed on beliefs and attitudes as basis for examination of actual behaviour in participation
McMahon 2011	Literature Review (19 studies)	Qualitative (n = 11); quantitative (n = 7); Mixed methods (n = 1)	Community	Search keywords provided; flow chart of inclusion/exclusion diagram was provided; process to establish trustworthiness of the study was described. Evaluations of quantitative and qualitative studies was based on authors' published criteria. Enablers and barriers related to participation in falls prevention programs. Did not provide factors for translation to day-to-day living or behaviour change

Author	Design	Number of studies included	Setting	Comments
McInnes 2011	Qualitative Meta-ethnography		Community Residential care Hospital (fallen outside of hospital) (mixed setting)	Reflected procedural rigour with search strategy; explicit inclusion and exclusion criteria, screening flowchart provided; theoretical framework of meta-ethnography stated; reflected interpretative rigour of findings with inter-rater reliability reported and triangulation
Elskamp 2012	Qualitative Telephone-structured interviews	15 interviews with those who refused to participate in the RCT	Emergency Department	Number of those who refused to participate in the interviews was not known. Participants' profiles were not described. Process of data analysis, that is, who and how the data was analysed was not described
Dollard 2012	Semi-structured interviews	6 females, 3 males	Community-dwelling	Defined the term 'fall' used in study. Recruitment strategy described explicitly. Reasons for refusing to participate is not known. Reflected reliability with audit trial, triangulation of findings with another investigator
Shaw 2014	Qualitative Phenomen-ology Via in-depth interviews	7 females, 2 males	Community-dwelling	Recruitment strategy described. Participants' profile described Interviews were recorded and transcribed verbatim. Reflective memos were used. Findings were credible and consistent with literature

Table 2.2   **Quality Assessment of Included Qualitative Studies**

Studies	Procedural rigour		Interpretative rigour	
Authors	Authors' position stated (Aim)	Sampling strategy described and justified	Data collection described adequately	Data analysis[a]	Respondent validation (e.g. member checking)
McInnes 2011	✓	✓	✓	✓	✗
Dollard 2011	✓	✓	✓	✓	✗
Elskamp 2012	✓	✗	✗	✗	✗
Shaw 2014	✓	✓	✓	✓	✗

Assessment checklist adapted from Critical Appraisal Skills Programme (CASP) Qualitative Research Checklist (CASP, 2014; Kitto et al, 2008)

[a]Data analysis and interpretation described and if any control measures used

2.4.2   Synthesis of recommendations

The findings of the studies in this section's literature review were interpreted and synthesised using the meta-ethnographic approach (Noblit & Hare, 1988). This inductive approach involved interpreting and translating the concepts relevant to the focus of this research followed by an analysis and comparison of the translations.

The synthesis of the included studies identified that there were multiple enablers and barriers to engagement. Barriers that were identified at the individual level included low levels of knowledge and poor physical health. Barriers that were related to social influences included perceived negative self-identity or were dependent on community/external parties (other elements such as cost of attending a program). The final synthesis of the translations and recommendations can be found in summary form in Table 2.3.

While these studies provided detailed findings about the barriers and enablers to engaging in falls prevention, it is unclear which enablers were more important and if there was a factor central to facilitating a positive change towards the desired behaviour. In addition, there were few recommendations made regarding encouraging older adults to initiate and maintain engagement in falls prevention programs. Importantly, although some researchers focused on how falls prevention messages should be delivered there is limited published evidence and guidance regarding a framework on how to engage with older adults regarding falls prevention on a population level. A workable strategy using health education to encourage engagement will be discussed in the following Section 2.5.1.1

Table 2.3 **Synthesised Summary of Older Adults' Views and Recommendations Derived from the Studies in Table 2.1**

Elements	Views (Barriers)	Recommendations from studies (Enablers)
Knowledge	Lack of knowledge about falls prevention. Unfamiliar with the term "falls prevention". Inaccessible and unappealing information Falls inevitable with ageing	Information from a variety of sources besides general practitioner. Information in different languages. Information that falls can be prevented. Information to address fears and beliefs e.g. fear of falling, low self-efficacy. Foster high self-efficacy
Social norms Social influence	Social stigma associated with falls	Promote positive self-identity and benefits of participating in fall prevention programs such as maintenance of independence. Emphasise positive social experience of participating e.g. fun, motivating, trusting social atmosphere
Social identity	Identity of physical incompetence and aging (Negative self-identity)	Interpersonal, organisational and community level of support to influence older adults' decision to participate. Partner with a peer who had a positive experience
Relevance	Not personally relevant	Promote and communicate life-enhancing benefits such as maintenance of independence and control
	Perceived low personal relevance of falls prevention	
Low motivation	Falls are beyond personal control Rationalise away risk such as it's a trip and not a fall	Promote and communicate life-enhancing benefits such as maintenance of independence and control
Generic information	Mismatch in expectation, not client-focused to needs of older adults	Finding out what older adults prefer and are willing to accept to address their needs and empower them. Tailored information instead of "one size fits all" advice
Others	Poor health; Limited mobility; Possess a limiting health condition	Not described in any of the studies
	Poor transport options; Cost and convenience	Convenient scheduling/reasonable pricing/good access to transport

2.4.3   Section summary and critique of findings

Previous research has found that older adults have low levels of knowledge and poor understanding about the problem of falls and falls prevention (Hill, Hoffman, Beer, et al., 2011; Managing Innovation, 2000; Snodgrass, Rivett, & Mackenzie, 2005). Studies have highlighted that some older adults choose not to engage in falls prevention strategies despite having an awareness of the possibility of falling. Factors contributing to this may include a low personal relevance and motivation (Managing Innovation, 2000). Given the accumulated body of evidence about what works in falls prevention, there appears to be a problem with the communication between researchers and health professionals, or with older adults themselves that would promote older adults' engagement in falls prevention programs. Moreover, recommendations for improving engagement and uptake of falls prevention strategies by older adults appear to be insufficiently comprehensive and generally unstructured. Such a largely unstructured approach differs substantially from the coherent framework of implementation strategies offered by behaviour change theories that will be described in the following section. When considering the complexity of the problem of older adults' low levels of engagement in falls prevention, incorporation of a theoretical framework may facilitate the translation of evidence-based falls prevention interventions into practice. The aim of the present research then, is to design, develop and evaluate a program guided by a theoretical framework and a review of the literature to identify the enablers and barriers to engagement in falls prevention, in the light of relevant adult learning principles, to be presented in Chapter 7.

2.5   Providing Education-based Interventions to Reduce Falls

This section will critically review the evidence for providing education-based interventions for reducing falls. Studies from hospital settings will be included as these provide evidence for how the design of falls prevention education might be applied in community-based settings. Since peer education is the focus of the research conducted for this thesis, a discrete review of peer-led education for falls prevention will be presented in Section 2.6.3.

2.5.1 Rationale for providing education for older adults as an intervention to reduce falls

In the previous sections, a gap between the research evidence and its translation into practice regarding the target population (older adults) was identified. Research evidence demonstrating low levels of engagement, uptake and adherence by older adults in falls prevention was discussed. Barriers and factors limiting engagement in falls prevention strategies were also identified, particularly low awareness or knowledge and low perceived personal relevance. This research proposes that education in falls prevention is a feasible means of addressing the barriers identified and meeting the needs of community-dwelling older adults.

Any health-related education program should essentially use an established health behaviour change theoretical framework as a guide to its design, development, implementation and evaluation. Likewise, an education program for older adults should follow prevailing pedagogical principles for adult learners. This section will describe and discuss relevant framework(s) and principles as well as provide the rationale behind the adoption of the chosen theories to guide the design, development, implementation and evaluation of the falls prevention education program. Finally, the efficacy of falls prevention trials that used education as an intervention will be presented.

2.5.1.1 Health education

In this section, an initial introduction regarding what constitutes health education and health behaviour as applied to falls prevention education will be considered. A review of frequently used theoretical frameworks for designing and providing health education programs as well as a discussion of their strengths and limitations will be undertaken. Subsequently, the rationale for and a justification of the chosen theoretical framework driving the design and evaluation of the intervention used in this research will be provided.

Health education has been described as any planned combination of learning experiences designed to engender motivation towards voluntary behaviour conducive to health in individuals, groups or communities (Glanz, Rimer, & Viswanath, 2008; Green & Kreuter, 2005; Simonds, 1976). Health behaviour has been described as any behavioural activity that seeks to maintain or improve health and well-being (Conner

& Norman, 2005). However, other researchers have proposed that the working definition of health behaviour should consider not only an individual's observable action but also their mental state and personal attributes (Gochman, 1997). Accordingly, attributes such as beliefs, values, perceptions and expectations, which contribute towards health behaviour are also to be considered determinants of behaviour (Glanz et al., 2008; Gochman, 1997). Thus, these aspects ought to be taken into consideration when designing health education falls prevention programs.

It has been suggested that providing health information and education in various forms does not automatically result in health behaviour change (Conner & Norman, 2005), even if the information provided results in an increase in health knowledge (Green & Kreuter, 2005). A thorough understanding of the target recipients and their needs has been found to be fundamental if the delivery of health education is to be effective, that is, result in a change in health behaviour (Rossi, Freeman, & Lipsey, 1999). Researchers (Randolph & Viswanath, 2004) have recommended that a prior understanding of the target recipients' health and social characteristics and behavioural determinants, such as beliefs, is crucial for delivering effective health education. To enhance the likelihood of behaviour change, it has also been recommended that health education be delivered using cognitive psychosocial principles within a defensible theoretical framework (Conner & Norman, 2005; Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996; Randolph & Viswanath, 2004). Use of theories to inform the design and development of health education interventions ought to facilitate its effectiveness, ease of evaluation, reporting of findings and replication of the intervention (Craig et al., 2008; Michie, Johnston, Francis, Hardeman, & Eccles, 2008). However, a systematic review demonstrated that only a minority — 53 out of 235 (22.5%) — of published health research implementation studies from 1976-1999 explicitly drew upon theories of behaviour change (Davies, Walker, & Grimshaw, 2010). A similar trend was shown in a meta-analysis of interventions (studies published between 1990-2008) to improve health-related behaviour change (physical activity and healthy eating), namely, that theory was not used widely and that the extent of use was not well-developed (Prestwich et al., 2014). Though Prestwich et al. (2014) reported that 56.3% of studies explicitly reported the use of theory, only 26.8% used such theory to develop the interventions and only 28.9% discussed their results in terms of their theoretical framework.

2.5.1.2 Behaviour change theories

A theory is a systematically organised body of knowledge about understanding a phenomenon or topic (van Ryn & Heaney, 1992). In the present context, it should be understood as providing a coherent "road map" (Rimer & Glanz, 2005, p. 5) for designing health education research. As such, it offers evidence-based insights into the influences of health behaviour and mediating causal pathways towards behaviour change (Improved Clinical Effectiveness through Behavioural Research Group (ICEBeRG), 2006; Rimer & Glanz, 2005; Rossi et al., 1999). Four theories have been used widely and shown to be effective in the area of health education, peer education, and research involving older adults and/or falls prevention to measure components of health-related behaviours (Haines et al., 2011; Hill, Etherton-Beer, & Haines, 2013; Lorig, Gonzalez, & Ritter, 1999; Lorig et al., 1999; Yardley, Donovan-Hall, Francis, & Todd, 2007). Three theories that are frequently used behaviour change theories have been extensively applied and evaluated in the literature. These are the Health Belief Model (HBM), Theory of Planned Behaviour (TPB) and Social Learning Theory. These three theories have consistently been shown to be amongst the most frequently used theories in health behaviour change (Glanz et al., 2008; Michie et al., 2014; Painter, Borba, Hynes, Mays, & Glanz, 2008). The fourth is the COM-B model which is an implementation theory developed recently (Michie et al., 2011).

First is the Health Belief Model. This is a cognition-based theory for explaining, predicting and influencing acceptance and uptake of health-related behaviour from a set of belief patterns (Rimer & Glanz, 2005; Rosenstock, 1966; Rosenstock, Strecher, & Becker, 1988). The HBM is one of the most widely used theoretical models for designing and evaluating health education interventions (Glanz et al., 2008). HBM proposes that people are most likely to engage in behaviour to reduce a health risk if they believe they are susceptible to that risk, the consequences are serious, and the benefits of taking action outweigh the cost (Janz & Becker, 1984). There are six major constructs that are conceptualised as informing an individual's motivation to change their behaviour to reduce a health threat (Table 2.4). These relate to the individual's perception and cost-benefit analysis of the health threat (Abraham & Sheeran, 2005; Rimer & Glanz, 2005; Rosenstock, 1966). While a cognitively-based theory conceptualising how an individual perceives a health threat provides

insights into explaining determinants of behaviour, some researchers have suggested that HBM is limited because there is no standardised conceptualisation of the model and its constructs. Additionally, the HBM does not consider the other influences of health behaviour such as social, affective or emotional aspects (Abraham & Sheeran, 2005; Champion & Skinner, 2008).

Second is Bandura's Social Learning Theory (1977a), later refined as the Social Cognition Theory (2001), which has been more recently conceptualised as an extended cognition-based theory (Rimer & Glanz, 2005). Besides considering cognitive factors, Rimer and Glanz (2005) propose that environmental and personal factors also influence behaviour. The core construct of this cognition-based theory, *perceived self-efficacy*, is a "conviction that one can successfully execute behaviour required to produce the outcomes" (Bandura, 1977a, p. 193). Essentially, self-efficacy is an individual's belief in his/her own effectiveness to cope in each situation. Self-efficacy has been deemed a major determinant for adopting and sustaining target health promotion behaviours (Bandura, 1977a, 2000; McAlister, Perry, & Parcel, 2008). While self-efficacy has been shown to influence participants' behaviour (Booth et al., 2000; Barbara Resnick, 2001), other researchers have found that it is not the only determinant of behaviour. Other proposed determinants have included sociodemographic status (such as age); perceived risk, lack of knowledge, perceived barriers (such as pain during physical activity) and physical opportunity (physical and mental health) (Clark, 1999; Conn, 1998; Grembowski et al., 1993; Resnick, 2001).

Similar to HBM, the third theory, the Theory of Planned Behaviour (TPB) is also a cognitive-based theory designed to explain the psychological determinants that influence an individual's processing of information and predicts an intention to engage and perform a behaviour (Ajzen, 1985). Intention is central to this theory and Ajzen (1991) described intentions as motivational factors that explain the level of resolve people possess in performing a behaviour. The theory proposes that intentions precede behaviour, and are determined by attitudes towards the behaviour, social network and one's self-belief, to the extent to which one has control over the behaviour. Apart from attitudes and self-belief, the third determinant is the existence of both internal and external factors. Internal (intrinsic) factors include the individual's skills, knowledge, and resources; whereas external (extrinsic) factors are barriers and dependence on

others. Intrinsic and extrinsic factors will be elaborated in Section 2.5.1.3.1: Adult learning. Overall, the theory proposes that the more favourable the determinants of behaviour, the more the likelihood of an individual's intention to perform the behaviour (Armitage & Conner, 2001). Similar to HBM, TPB theory does not address the influences of emotional processes or impulsivity. It has been argued that although TPB theory has been used to explain prediction of behaviour change, it does not demonstrate how to change the identified behavioural determinants (Michie, 2008). While TPB is one of the most frequently used behaviour change theories, a systematic review of 30 published studies (including 14 RCT studies) concluded that TPB was rarely used to design, develop and evaluate interventions (Hardeman et al., 2002).

Fourth and final is the COM-B model. COM-B is an acronym for Capability, Opportunity and Motivation affecting Behaviour. The COM-B model was originally developed from a consensus meeting of behavioural theorists who reviewed existing theories of behaviour (Michie et al., 2011). It has subsequently undergone further testing and development (Cane et al., 2012; Cane, Richardson, Johnston, Ladha, & Michie, 2015; Jackson, Eliasson, Barber, & Weinman, 2014; Steinmo, Fuller, Stone, & Michie, 2015). It is a theory that translates the concepts to practice in that it provides strategies, identifies important factors such as barriers, suggests mediating causal pathways for potential behaviour change, and offers a basis for evaluation of outcome measures (Improved Clinical Effectiveness through Behavioural Research Group (ICEBeRG), 2006; Rimer & Glanz, 2005). The COM-B model hypothesises that behaviour is influenced by three core constructs and any required change in health behaviour will be dependent on changing any of these constructs (Michie et al., 2014), namely,

- Capability. Physical (skill, strength, stamina) or psychological (knowledge, comprehension, reasoning) capacity to perform the behaviour

- Opportunity. External factors that prompt enactment of the behaviour. Physical opportunity (time, financial resources, cues) or social opportunity (cultural environment)

- Motivation. Processes that energise and drive behaviour. Reflective processes (evaluation, plans) or automatic processes (emotions, habits, impulses)

The COM-B model requires a prior understanding of the target recipients of the intended behaviour change intervention at the initial design stage. The COM-B model can then be used to identify which determinants of behaviour (constructs) need to be changed once the target behaviour change has been determined (Jackson et al., 2014). The constructs are seen as dynamic by the designers of the COM-B model, that is, they may interact with and influence each other or the target behaviour (Michie et al., 2014). After identifying the pertinent constructs, the COM-B model can be expanded and used jointly with the Theoretical Domains Framework in practice. The latter is a framework that has 128 explanatory constructs identified from 33 behaviour change theories.

While the Theoretical Domains Framework allows for researcher or educator benefits, barriers to its use include that users may require training or a background in behavioural theory to understand how to apply the health psychology concepts (Francis, O'Connor, & Curran, 2012). Despite its application across a range of settings, it has been noted that in a review of 21 Theoretical Domains Framework based studies, that 17 of them utilised the Theoretical Domains Framework primarily in conceptual design and implementation of health professionals' behaviour change in clinical or professional settings (Francis et al., 2012). None of the studies included used the COM-B model or the Theoretical Domains Framework and their constructs directly applied to an intervention to be delivered to older adults in the community by volunteers instead of health professionals (Francis et al., 2012). Health professionals may be able to conceptualise health psychology concepts more easily than lay volunteers.

A brief summary and comparison of the four behaviour change theories discussed in this section is presented in Table 2.4.

Table 2.4   Summary and Comparison of Four Theories: Insights to Determinants of Behaviour Change for Falls Prevention

Name	Health Belief Model	Social Cognition Theory	Theory of Planned Behaviour	COM-B and TDF
Brief summary	People are likely to engage in behaviour to reduce a health risk if they believe they are susceptible to the risk, the consequences are serious and benefits of engaging in the behaviour outweigh the cost	Environmental and social factors can influence behaviour	Intention precedes behaviour and is determined by three constructs	Aims to understand behaviour in the context it occurs. Behaviour change is influenced by changing any or combination of its three constructs
Constructs	Perceived susceptibility Perceived severity Perceived benefits Perceived barriers Cues to action Self-efficacy	Perceived self-efficacy Outcome expectancies	Attitudes Subjective norm Perceived behavioural control	Capability-physical; psychological Opportunity-physical; social Motivation-reflective; automatic
Relationship between constructs	Variable, dependent on the behaviour measured and health context. Perceived benefits and barriers are strongest predictors	Not described	Not described	Been described as interactive, dynamic amongst the three constructs and behaviour but extent not described nor investigated
Benefits and challenges to use	Extensive use throughout health fields of research to design and measure interventions. Does not consider affective/emotional aspects or influences on behaviour	Evoked by personal mastery, observation or modelling, persuasion, and emotion. Does not consider other aspects such as physical capacity as determinants of behaviour	Effective to predict and explain behaviour but not commonly used to design, develop and evaluate interventions	Provides the hypothesis to change behaviour. Is inclusive of affective/emotion construct. Users require training to understand complex coding involved and assumes researcher has resources to implement all aspects of behaviour from individual to organisational level

COM-B: Capability, Opportunity, Motivation-Behaviour Model; TDF: Theoretical Domains Framework

Changing an established health behaviour or engaging in a new health behaviour is a complex process which is not only dependent on factors related to the individual concerned, but also to other factors as highlighted by the major theories of behaviour change discussed in this section. While HBM, TPB and Social Cognition Theory have provided evidence-based insights into influences on behaviour, predicting behaviour and suggesting potential mediators for behaviour change, they have some limitations in their theoretical and conceptual coverage. They are mainly cognitive-based theories and have been conceptualised using cognitive constructs such as knowledge, beliefs and attitudes. Researchers have suggested the underlying concepts of these health theories is that they ascribe people's behavioural decisions as being motivated by practical yet simplistic cost-benefit analysis (Buchanan, 2000). As such, the concepts do not reflect crucial constructs of health behaviour such as habits or emotional influences that can drive people's behaviour, as seen in the barriers and enablers of older adults' uptake of falls prevention strategies, described in Section 2.4. Therefore, these theories are limited in meeting the needs of this current study that requires the knowledge and causal mechanisms (techniques) to guide and inform the design and implementation of an intervention.

The COM-B model and Theoretical Domains Framework combination renders a pragmatic yet comprehensive and coherent conceptual coverage of influences on behaviour (Cane et al., 2012). Together with their strategies to translate concepts to practice, validated framework, and validated evaluation measures, they are particularly advantageous for the implementation needs for the studies in this research (Cane et al., 2012; Francis et al., 2012; French et al., 2012). Their combination can be used at the individual or group level (Michie et al., 2014). This view is supported using the COM-B and Theoretical Domains Framework approaches in a wide range of medical related clinical behaviour implementation research discussed earlier, such as midwives advising smoking cessation behaviour, and health professionals' adherence to low back pain guidelines (Beenstock et al., 2012; French et al., 2013).

In summary, all the theories discussed contribute to the review and critique of research exploring education interventions in falls prevention in the later section of this chapter. However, for the present research, the COM-B model together with the Theoretical Domains Framework will be used within an overarching behaviour change

framework as it allows for the development, design, implementation and evaluation of a peer-led falls prevention education intervention, which will form the second phase of this research.

2.5.1.3 Overview of the principles underpinning the provision of adult education

Although it is beyond the scope of this thesis to review all research evidence pertaining to adult learning and educational theories, the principles relevant to falls prevention in older adults are worthy of consideration. Those principles for evaluating the instructional design of falls prevention education interventions will be discussed. This includes peer-led falls prevention programs. The following section briefly examines how adult learning and teaching strategies could be used to facilitate falls prevention education.

2.5.1.3.1 *Adult learning*

Learning is a complex behaviour (Merriam & Bierema, 2014) and can be defined as a process that "leads to a change in human disposition or capability that persists over a period and is not simply ascribable to processes of growth" (Gagné, 1985, p. 2). The learning process, and hence learning outcomes, may be influenced by physical, psychological, social and cultural dynamics (Merriam & Bierema, 2014). Learning itself may lead to a change in affective dimensions (attitude or emotion), psychomotor or overt dimensions (physical skill or capacity) or cognitive (knowledge) capacity (Anderson, Krathwohl, & Bloom, 2001). Hence, learning will be reflected in "how we think, feel and act" (Merriam & Bierema, 2014, p. 41).

Investigation into learning and teaching has found that because children and adults learn differently (Inhelder & Piaget, 1958), understanding the model of *andragogy* may be useful (Knowles, 1970; Knowles, Holton III, & Swanson, 2005). Andragogy has been defined as the "art and science of helping adults learn" (Knowles, 1970, p. 38). There is no universal theory that encompasses the myriad of influences on how adults learn or that include all the types of learning (Fenwick & Tennant, 2004; Merriam, 1987), and as such, multiple perspectives have been found to contribute to adult learning (Fenwick & Tennant, 2004; Merriam, 1987).

Knowles and Associates (1984; 2005, p. 63) have suggested that there are six crucial assumptions regarding the characteristics of adult learners. Briefly, these are:

1. The need to know. Adults need to know the reason and value for learning something

2. Self-directed in learning. Adults develop a self-concept of being responsible for themselves, hence, are self-directed learners

3. Prior experience. Adults bring a wealth of experience to their learning compared to youths

4. Readiness to learn. Adults engage in a learning activity when they see it has personal relevance and hence, develop a drive to solve their real-life issues

5. Orientation to learning. Adults are task or problem-centred when learning, using their learning to help them deal with life issues

6. Motivation. Adults are intrinsically motivated

By understanding how adults learn, educators can more effectively plan and design instruction, incorporate efficacious learning strategies and provide appropriate resources to foster both learning processes and outcomes for adults (Foley, 2004). This is important for facilitating learning, for as was shown in Section 2.4.1, many older adults have low levels of interest in learning about falls prevention as they see this as not being personally relevant. Moreover, as previously discussed, studies have found that older adults have reported that the information provided to them was often unclear, used unfamiliar terms and was unappealingly presented (Bunn et al., 2008; Dickinson, Machen, et al., 2011; Hill, Hoffman, Beer, et al., 2011; Snodgrass et al., 2005).

Although valuable, ongoing research in the field of education has found that the andragogical model does have certain limitations of which the researcher needs to be aware. Specifically, researchers have concluded that it cannot control for factors such as the adult learners' extrinsic motivation; information processing capacity in learning; the personal influence of the educator; and the capacity for self-reflection by adults (Abela, 2009). Nor can it predict potential influences (e.g. personal or societal) on the adult (Merriam & Bierema, 2014). Such factors are largely motivational in nature. Motivation has been defined as "a hypothetical construct to explain the initiation, direction, intensity and persistence of goal-oriented behaviour" (Good &

Brophy, 1990, p. 360). Gagné (2005) has concluded that learner motivation be considered in designing the instruction of a program.

Motivation can be either intrinsic or extrinsic in nature (Merriam & Bierema, 2014). *Intrinsic motivation* is seen as the self-desire and drives to seek and accomplish an activity solely for the inherent satisfaction of the activity itself rather than an external pressure or reward (Ryan & Deci, 2000). One of the factors that may engender intrinsic motivation for learning is fostering a sense of competence or self-efficacy as previously discussed (Ryan & Deci, 2000). In contrast, *extrinsic motivation* is accomplishing an activity to achieve outcomes external to the individual such as recognition or approval from others (Gagné, 2005; Merriam & Bierema, 2014). Wlodkowski (2008, pp. 46-47) further theorised that there are four main motivational conditions that need to be addressed during adult learning, namely, (i) inclusion, (ii) developing attitude, (iii) enhancing meaning, and (iv) engendering confidence. Wlodkowski (2008) proposed that addressing these conditions in an instructional design plan can enhance the learning experience and ultimately, should evoke intrinsic motivation within the learners. This is particularly relevant to the present research as studies (Section 2.4.1 Factors influencing older adults' engagement and uptake of falls prevention strategies) have shown that low personal control, confidence to manage the risk of falling (deemed inevitable) and low motivation to learn are barriers to generating intrinsic motivation to engage in falls prevention actions.

Table 2.5 presents a combined summary of key findings from the work undertaken by Knowles & Associates (1984), Merriam & Bierema (2014) and Wlodkowski (2008) as far as these relate to the principles of motivation and adult learning; design and concepts of an adult education program; and concepts as applied to falls prevention for older adults. Such a summary provides, from an andragogical perspective, the theoretical underpinning of the present research. This will further be complemented by insights from the work of Bloom (1956).

Table 2.5   Summary of the Research of Knowles & Associates, Wlodkowski, Merriam & Bierema Applied to Falls Prevention Education

Principles of motivation and adult learning	Design and concepts of an adult education program	Concepts as applied to falls prevention for older adults
Recognise adults are self-directed learners	Introduce and connect with target audience attractively and clearly	Take account of older adults' previous experience of falls
Encourage adult learners to draw on relevant prior experience as a valuable resource	Provide an opportunity for multidimensional sharing	Ask about prior history or knowledge about falls in an interactive manner
Readiness to learn is related to a need to know	Clearly identify the learning objectives and goals for the session	Respect older adult as a learner not as a student
Learning should be problem-centred		Aim to provide knowledge but also to cultivate the skills, foster self-efficacy and influence positive attitudes towards falls related behaviour
Adults learners are intrinsically motivated	Assess learners' current expectations, needs, goals, and previous experience	
Create a comfortable physical/psychological climate conducive for adult learning	Emphasise the purpose of what is being learned and its relationship to the learners' personal lives and current situations	Tailor the falls information to meet goals of the adult and build on their previous experience with falls prevention
Create a climate of respect among adults (inclusion)		Be explicit about the benefits of falls prevention
Engender an awareness and feeling of connection among adults (inclusion)	Clearly state or demonstrate the benefits that will result from the learning session	To use demonstration, pictures, video, or checklists as learning aids during falls prevention program
Maintain learners' attention (enhance meaning)	Build a positive attitude and develop self-efficacy	Scaffold complex learning by starting with initial introduction to prevalence of falls and progressing to management of falls risks in several stages
Develop self-efficacy for learning (attitude)	Provide variety in modes of presentation style and learning materials	
Evoke and sustain learner's interest (enhance meaning)	While instructing, use scaffolding knowledge, humour and analogies to assist learning	Present falls prevention in a positive tone to undertake and engender confidence in patient/client that they can learn and engage in falls prevention
Formulate content that will satisfy learning needs	Use goal-setting methods	Educators to share personal stories and insights relating to falls prevention that older adults can also relate to
Engender competence with transfer	Foster the intention and capacity to transfer learning	
	Provide positive closure at the end	

Bloom's two-dimensional taxonomy of the cognitive domain is another perspective recognised as contributing to a better understanding of how individuals process information cognitively and organise knowledge (Anderson et al., 2001; Merriam & Bierema, 2014). The categories of Bloom's taxonomy are organised in a hierarchical continuum of complexity or abstraction (Bloom, 1956). The cognitive process dimension comprised of six categories on a continuum: Remember (least complex), Understand, Apply, Analyse, Evaluate, and Create (most complex). In a falls prevention program, which aims for behaviour change including planning or creating an intention towards change, the challenge is for an educator who may often be a health professional, to help the older adult process and integrate cognitive information towards at least the level of analysis on the continuum. Otherwise, an older adult may understand and retain the information, but not know how to apply the knowledge learned in a meaningful way. Similarly, another aim could be to progress the older adults' knowledge dimension closer towards the more abstract end of the scale, where greater use is made of metacognitive strategies (Table 2.6).

Table 2.6   Bloom's Knowledge Dimension Applied to Falls Prevention Education

Categories of knowledge	Explanation in the context of providing falls prevention education to older adults
Conceptual knowledge	Encompasses an understanding of the interrelationship and function of the basic elements within the structure of the phenomenon; e.g. nature of falls, falls risk factors and strategies that are known to reduce falls
Procedural knowledge	Encompasses knowledge "how to do something", e.g. a series or sequence of steps to assess personal falls risk factors, completing a home risk checklist
Metacognition knowledge (higher level of abstraction)	Encompasses self-awareness, self-reflection and cognition, e.g. problem-solving strategies to manage one's falls risk factor such as how to modify my home environment to make it safer

Adapted from Anderson, Krathwohl, and Bloom (2001)

2.5.1.3.2   *Strategies for teaching adults*

When providing older adults with a health education program, it is important to keep in mind the overall principles of working with an adult learner. That is, that learning should be undertaken in a conducive environment, remain positive in focus, and be interactive and meaningful (Findsen & Formosa, 2011). As discussed earlier, any information provided should be well-designed, preferably tailored to a specific

audience and be available in various formats (Coulter & Ellins, 2007; Hill, Lowe, & Ryan, 2011). A systematic review of studies involving health behaviour change reported that by providing tailored information, participants demonstrated better retention of information and improved health outcomes (Ryan & Lauver, 2002).

It has also been posited that appropriate pedagogical skills can help in imparting information and actively engaging learners (Merriam & Bierema, 2014). In addition, rich resources such as manuals, books and audiovisual aids have been shown to be a minimum requirement for pedagogy and facilitating the learning of adult learners (Knowles et al, 2005; Spector, Merrill, Elen, & Bishop, 2014). Such resources can provide an enriched learning experience that promotes communication, accommodates transfer of information from the educator to the learners, and aids retention (Dale, 1969; Dale, 1970). Strategies proposed for educators to assist learners and tailor learners' experience include scaffolding knowledge, providing experiential learning, engaging in role-modelling and considering sensory preferences. The strategy of *scaffolding*, pioneered by Vygotsky (1978) has been described as "assisted learning" (Wlodkowski, 2008, p. 183). This process can be described as educators gradually assisting an individual learning to perform a task beyond their personal capacity, until an independent performance has been demonstrated (Jaramillo, 1996; Sanders & Welk, 2005). The educator can tailor the teaching styles, and provide prompts at an appropriate time, amount and pace to suit the individual(s) to build a bridge to new knowledge and foster learning (Wlodkowski, 2008). There is also a social dimension to adult learning (Merriam & Bierema, 2014). Bandura (1977a) proposed that learning occurs by interacting with a teacher or by listening to information presented, but also when an individual interacts with the social environment. Vygotsky (1978) further proposed that influence from educators and collaboration with more competent peers, such as expert models, can guide the individual's socio-cultural learning experience to a higher level of learning outcome (Jaramillo, 1996). Previous qualitative studies have found that older adults are passive about seeking falls prevention information (Lee, McDermott, Hoffman, & Haines, 2013) which suggests that social initiatives could facilitate their engagement in falls prevention. The application of scaffolding and pedagogical skills could potentially improve learning regarding falls prevention, as researchers have found that some falls prevention information imparted was unclear in providing the rationale and benefits of

engaging in falls prevention to stimulate older adults' motivation (Dickinson, Machen, et al., 2011; Yardley, Donovan-Hall, et al., 2006). Finally, it is essential that learning styles are taken into consideration when teaching adults. Learning styles are reflected in how people use their senses to perceive and process information (Fleming & Baume, 2006; Merriam & Bierema, 2014). Frequently cited learning styles that have been described (Fleming & Baume, 2006) are:

- Visual - a preference for information in pictorial, graphical or pattern mode
- Aural - a preference for information by hearing or listening mode
- Read/write - a preference for information in the printed word mode
- Kinesthetic - a preference for information and learning by experiencing with all senses including tactile and by application

Systematic reviews in a variety of health areas have found that high quality online education programs as well as video and personalised classes are more effective for education of people with health conditions, but this has not been trialed in falls prevention. Other fields of health, such as cancer care, have explored modes of learning that were effective in patient education and information dissemination. A systematic review of 16 cancer care studies of 2,318 participants, of which 15 were RCT studies, found video-recording or written summaries improved participants' recall of information and improved satisfaction following medical consultations (Pitkethly, Macgillivray, & Ryan, 2008). Other systematic reviews in cancer care found that multimedia such as video and interactive technology increased participants' knowledge (Gysels & Higginson, 2007; Ryhanen, Siekkinen, Rankinen, Korvenranta, & Leino-Kilpi, 2010). Furthermore, another systematic review investigating different presentations of video-assisted patient education found that modelling seen in enacting specific scenarios was more effective than didactic video presentation in facilitating behaviour outcomes (Abu Abed, Himmel, Vormfelde, & Koschack, 2014).

However, exploration into the use of learning style and preferences for sensory modalities has been limited in falls prevention research. Falls prevention online learning websites were assessed and found to be lacking in providing tailored information, had low credibility and poor coverage of falls-related information (Whitehead, Nyman, Broaders, Skelton, & Todd, 2012). The following section will describe the studies in more detail, but as previously discussed education interventions

in falls prevention involved handing out generic falls prevention printed material, such as pamphlets, which is not an optimal tailoring of the information to be presented (Chang, Huang, & Jung, 2011; Huang, Liu, Huang, & Kernohan, 2010; Rucker et al., 2006). In contrast, a RCT that evaluated falls prevention education using a DVD-media compared to written workbook, found that those participants in the DVD group had significantly increased knowledge and were more confident to engage in falls prevention strategies (Hill et al., 2009). Researchers from areas of falls prevention and cancer care have recommended that the needs and requirements of users be investigated to improve the capacity to provide tailored information in future, and determine which target audience may be suitable for exposure to a specific type of media (Thygesen, Nicolaisen, & Mogensen, 2015; Whitehead et al., 2012).

In summary, some individuals may have a strong preference for one learning style whilst other individuals may be multimodal in their approach to learning (Fleming, 2007). While it may not be possible to address all learning styles and preferences during an education session, educators should be aware of diverse learning preferences among the audience for processing information during the design and development of instruction for an education session (Fleming & Baume, 2006).

2.5.1.3.3   *Effect of ageing on adult learning*

The central components of adult learning require both integrating sensory input and memory including cognitive processing of learned information. With ageing, the physiological decline in visual and hearing capacity may affect sensory feedback for learning. These changes should be factored into health education programs, such as those that provide falls prevention education for older adults. Over 68% of adults over the age of 80 will have cataracts and over 35% will suffer some form of visual impairment (Rosenthal & Fischer, 2007). The visual capacity such as the ability to detect contrast, colour discrimination, sensitivity to glare or perception of speed have been shown to decline with age (Schieber, 2006). It has also been reported that over 20% of those in their 70s have hearing impairment (Bjorklund, 2011). While intelligence remains generally intact, there is a decline in memory capacity as one ages. *Memory* is the ability to store information for use when needed (Bjorklund, 2011). There is some evidence that older adults tended to become relatively slower and less efficient in both cognitive processing of learned information

(memory) and their capacity to perform multiple tasks simultaneously for higher level executive function, such as reviewing options and decision-making (Old & Naveh-Benjamin, 2008). Therefore, these changes should also be taken into consideration when designing health education for older adults. Concurrently, older adults frequently experience a general decline in health with ageing. Over 85% of people aged 65 and above suffer one or more chronic diseases (Bjorklund, 2011). Together with related medication, these can also affect cognitive abilities including memory and learning capacity. However, research has shown that there are factors that can attenuate these age-related effects on older adults' learning experiences. Factors such as fostering personal interest and relevance in the topic, capitalising on rich life experience, good instructional design, and applying pedagogical skills can help overcome such barriers to learning and potentially motivate older adults to achieve successful learning outcomes (Bjorklund, 2011; Merriam & Bierema, 2014).

2.5.1.3.4   Section Summary

In summary, key education and adult learning principles, as well as pedagogical skills are relevant when providing older adults with education, including falls prevention education. Such relevancy lies in improving and retaining their knowledge and potentially overcoming age-related physiological changes. Accordingly, programs designed to provide falls prevention education for older adult learners should draw on these principles of design to improve effectiveness. The intent should be to provide education to better engage the older adult learner, raise the levels of awareness and knowledge, and motivation to promote eventual engagement and uptake of falls prevention strategies. These will be discussed further in the next section regarding evidence for providing falls prevention education. The present research will design a peer education program (intervention) that will incorporate these theories, skills and strategies. This program will be described in Chapter 7.

2.5.2   Studies evaluating the provision of patient-directed education for falls prevention

This section will provide a review of the literature that has examined the provision of falls prevention education for older adults, including the theoretical structure and concepts used to design the education interventions in these studies. Very few trials

have evaluated the provision of falls prevention education as a single intervention in community-based research. Hence, those trials conducted in hospital settings will also be included. Trials that have evaluated the provision of falls prevention education that specifically used a peer-led approach will be reviewed in Section 2.6.3.

2.5.2.1 Systematic review of the evidence for providing falls prevention education for older adults

The focus of this section is to examine the evidence from systematic reviews and meta-analyses or studies that have investigated falls prevention education as a single or part of a multifactorial intervention in two separate settings (hospital or community-based). A systematic search of the electronic databases was undertaken for relevant studies published from January 1995 to April 2016. Databases searched were CINAHL, Medline, and EMBASE. Key search terms included 'falls prevention' combined with 'education' initially, or variations dependent on the database searched. Systematic or literature reviews written in the English language and using these descriptors were also searched. The search strategy is presented in Appendix D, Table D.1. Figure 2.2 illustrates the studies/papers reviewed at each step of the review. Studies were included if they met all the following criteria:

- They investigated training and educating older adults regarding falls and falls prevention as a single strategy intervention or part of a multifactorial intervention
- Participants were older adults who were aged 60 years and over

Studies were excluded if any of the following criteria applied:

- They were investigating training and education regarding falls prevention for older adults who lived in residential-based care
- They investigated staff education regarding falls prevention
- They investigated non-education interventions
- They were not written in English
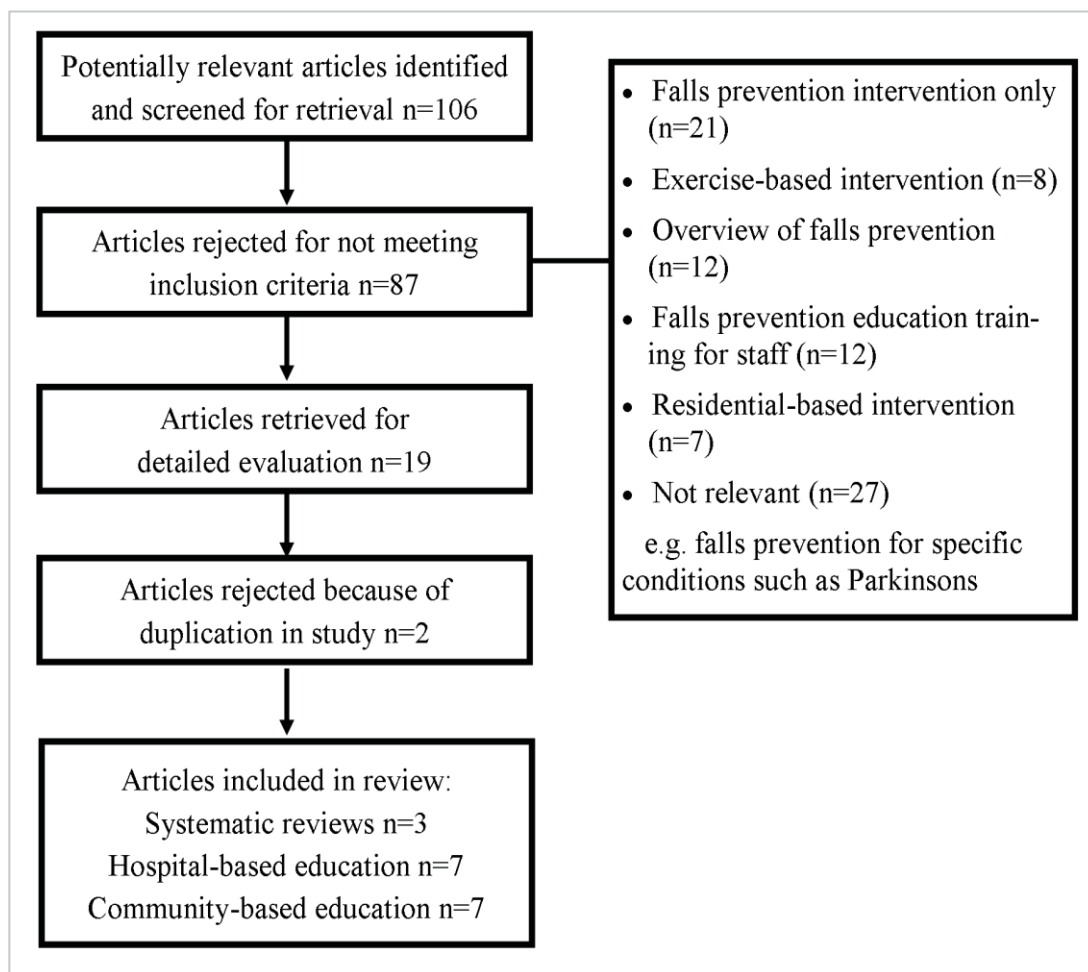
Figure 2.2   Flowchart of the Search and Selection for Articles Included in the Review of Providing Falls Prevention Education for Older Adults

The search strategy yielded 106 papers that were screened for eligibility in terms of inclusion criteria. On that basis, 87 papers were rejected and 19 were retrieved for evaluation. Two papers were found to be a duplication of the same study, thus reducing the number of eligible studies to 17.

Of the 17 studies, seven were conducted in hospital-settings and seven in the community. Three were systematic reviews that included falls prevention education in their evaluation (Chang et al., 2004; Gillespie et al., 2012; Lee, Pritchard, McDermott,& Haines, 2014). The systematic reviews will be discussed in Section 2.5.2.2; the community-based studies identified from the systematic reviews will be discussed in Section 2.5.2.3; and the hospital studies in Section 2.5.2.4. A full description of the community-based studies' characteristics is presented in Appendix D, Table D.2.

2.5.2.2 Systematic reviews examining the effect of providing education on falls

One of the key challenges in the field of falls prevention education research is that there is scarce evidence about design and delivery of relevant educational interventions. Only a small number of systematic reviews have examined the effect of providing education on falls outcomes. In comparison, when reviewing the research evidence in the field of cancer and diabetes education, these areas of health have more extensively investigated the potential benefits of providing health education. For example, systematic reviews into the effectiveness of a pre-operation education program for cancer patients (Waller et al., 2015) and cancer-related fatigue (Du et al., 2015) were examined. Fourteen studies were identified for the former review and 10 studies for the latter. These systematic reviews differentiated their findings according to the mode of delivery (face-to-face or group basis); strategies used (written or audio-visual) and education-related outcomes (knowledge, satisfaction or anxiety). Furthermore, these authors also provided evidence for the use of a theoretical framework and identified gaps for future research in their conclusion. Similarly, systematic reviews into the effectiveness of education in self-management of diabetes (Thongsai & Youjaiyen, 2013) and diabetic foot ulcer care (Dorresteijn, Kriegsman, Assendelft, & Valk, 2014) differentiated their findings according to different healthcare settings (community or residential care facilities). Evidence was then presented in detail regarding their interventions' content, dosage and whether primary or secondary outcomes were achieved.

However, regarding falls research, after database search and extraction, a systematic review and meta-analyses (Chang et al., 2004) found 40 falls prevention studies in older adults, but only two evaluated an education intervention as a primary component of the studies. Chang et al. (2004) did not specifically differentiate the studies' findings regarding the studies' mode of delivery, education strategies used, assessment tools, outcomes, nor elucidate the reader about the key issues in the education component of their review. Similarly, the second, more recent systematic review of 159 studies (79,193 participants) (Gillespie et al., 2012) evaluating the evidence for falls prevention interventions amongst community-dwelling older adults combined only four studies in the sub-group analyses which evaluated education (2,555 participants) (Dapp et al., 2011; Huang et al., 2010; Robson, Edwards,

Gallagher, & Baker, 2003; Ryan & Spellbring, 1996). This is in comparison with their sub-group analyses of exercise interventions where pooled data from of 59 studies (13,265 participants) (Gillespie et al., 2012). The community-based studies identified in the review will be discussed in the following section about falls prevention education in community settings.

The third systematic review specifically investigated the effectiveness of falls prevention education for older adults during their hospital stay or after their discharge (Lee et al., 2014). Nineteen studies were identified for meta-analyses and eleven studies were included for qualitative synthesis and critical narrative analysis (Lee et al., 2014). Their review found patient education in falls prevention to be effective in reducing the rate of falls [risk ratio 0.77, 95%CI (0.69 to 0.87)] and the number of fallers in hospital [risk ratio 0.78, 95%CI (0.7 to 0.87)] (Lee et al., 2014). This review is of better quality when compared to the earlier two systematic reviews in falls prevention education because the authors acknowledged the heterogeneity of the interventions in their findings and this was reflected in their analysis and reporting. The meta-analyses conducted were based on intervention factors such as healthcare setting, mode of delivery, educational strategy used and content/dosage of intervention. Consistent with other findings in the earlier section, the authors of this review (Lee et al., 2014) reported that only a few studies used theoretical models to guide their education interventions. One recommendation included using video-based multimedia in delivering falls prevention messages. Unfortunately, most of the studies in this review were hospital-based and it was not reported which education components of the post-discharge studies were delivered in hospital and which were delivered after discharge.

2.5.2.3 Summary of studies that investigated falls prevention education in community settings

Studies that evaluated the provision of falls prevention education in a community setting are summarised in Table 2.7. A detailed presentation of the characteristics of these studies is found in Appendix D, Table D.2. Community-based studies identified in the systematic review conducted by the candidate (detailed in Table 2.7) mainly delivered education as a provision of written brochures containing falls prevention information (Lin, Wolf, Hwang, Gong, & Chen, 2007; Rucker et al.,

2006), health information such as nutrition (Kim, Yoshida, & Suzuki, 2013) or exercise information (Chang et al., 2011), as a potential means of reducing falls. The content of the information was not specifically related to falls in some of these studies and appeared to use a generic non-tailored approach in the education component of their interventions. As highlighted earlier in Section 2.5.1.3.2 (Strategies for teaching adults) and reported by educational research studies, the use of written education brochure material alone and/or with minimal verbal interaction has been found to be insufficient and of less benefit in preventing falls compared to a multimedia and intensive feedback education approach (Haines et al., 2011; Tzeng & Yin, 2009). The use of multimedia is superior to written information in that it appeals to various learning styles (Dale, 1970; Merriam & Bierema, 2014). Compared to a generic approach as used in these studies, researchers have previously proposed that education interventions be underpinned by theories and be tailored to a group or the individual to be more effective in improving motivation and facilitating behaviour change (Brawley, Rejeski, & King, 2003; Kreuter, Oswald, Bull, & Clark, 2000; Kreuter & Wray, 2003; World Health Organisation, 2007; Yap & Davis, 2008). Finally, these studies did not provide information about the dosage of their education component nor elaborate on the content and design of the education material which is integral to measuring outcomes robustly and for reporting of the intervention such that it can be replicated.

Another study evaluated a 15-week exercise and education program conducted in the community by health professionals on either a group or home-basis (Haas & Haines, 2014; Haas, Mason, & Haines, 2014). In evaluating the program, the researchers found that very few of the older adults could recall the falls prevention education component of the program and concluded that the didactic approach used was insufficient for engaging participants. Unsurprisingly, it was found that only a few older adults adopted the recommendations offered. As discussed (Section 2.5.1.3.1 Adult learning), adult learners have a readiness to learn when they see relevance, are goal-oriented and like to draw on their prior experience to facilitate their learning (Knowles & Associates, 1984; Merriam & Bierema, 2014). These researchers recommended an alternative pedagogical approach such as using a goal-setting technique to increase knowledge and to influence behaviour change (Haas & Haines, 2014). In contrast, another randomised trial community-based falls prevention education study that also

included a home visit and teaching exercises to the older adult participants reduced falls significantly by 31% in their intervention group participants (Clemson et al., 2004). Their positive outcome was achieved by using a cognitive-behavioural approach, strategies to enhance adult learning including group interaction, practice, and encouraging participants to make an action plan.

Further community-based studies were identified (Dapp et al., 2011; Huang et al., 2010; Ryan & Spellbring, 1996) from the large systematic review (Gillespie et al., 2012). These studies found falls prevention education intervention not to be significantly effective in reducing falls-related outcomes. None of the four studies explicitly referred to adult learning principles or used educational theories, and two of them (Huang et al., 2010; Ryan & Spellbring, 1996) did not state any theoretical framework in guiding their education intervention component. As discussed in Section 2.5.1.1 (Health education), a theoretical framework is important in facilitating behaviour change and adult learning. One study's falls prevention education program was framed around the negative consequences of falling and did not foster personal relevance (Ryan & Spellbring, 1996).

In comparison, those community-based post-discharge studies (Hill, Hoffman, Beer, et al., 2011; Hill et al., 2013) identified in the systematic review (Lee et al., 2014) that were designed with theoretical models and conducted with multimedia and/or workbooks, with tailored one-on-one interaction with a health professional, had a positive impact on the community-dwelling participants. One of these studies was a pilot trial's education intervention design that was tested for pedagogical efficacy in meeting falls-related education and health behaviour outcomes prior to the conduct of the study (Hill et al., 2009). A related study by the same researcher (Hill et al., 2013) found that the group receiving intervention education increased their level of knowledge regarding falls prevention strategies (71%) when compared with the control group (29%). Another study, a pilot randomised trial of tailored multimedia falls prevention education using adult learning principles and guided by a theoretical framework, was found to be effective in significantly raising the patients' level of knowledge, motivation, self-confidence and self-perceived risk of falls as well as other health outcomes measures after discharge from hospital (Hill et al., 2013).

Table 2.7   Studies Providing Falls Prevention Education for Older Adults in the Community

Studies	Educational Intervention	Theoretical Framework Used	Comments
Ryan 1996[A]	*Content: Standardised falls prevention education program Emphasised threat of falling. Activities to address intrinsic and extrinsic risks. Cost-effectiveness by demonstration of device. Delivery: Face-to-face or group discussion	✗	Inconclusive findings of pilot study due to small sample size reported. Falls prevention messages were standardised; negative (threat-based), and were not personally relevant. None of the participants sought medical intervention for falls-related injuries
Clemson 2004	*Content: Falls-related knowledge and preventive strategies. Delivery: Cognitive-behavioural approach. Adult learning principles e.g. group interaction; practice	✓	Design and implementation of education intervention such as content and dosage were explicitly stated. Used validated outcome measures. Intervention group showed significant reduction falls compared to the control group
Rucker 2006	*Content: Falls printed educational material (reduce falls environmental hazards & optimise health e.g. medication review). Delivery: Telephone call (advice)	✗	Generic standardised information following evidence-based falls prevention guidelines. No significant difference between intervention and control group (fear of falls and recurrent falls)
Lin 2007	Content: Home education- pamphlet (exercises, use of walking aids, environmental improvements); Home Safety assessment and modification; Home exercise Delivery: Home visit	✗	Generic standardised falls prevention information provided in education. No significant difference in falls rates between the three groups
Huang 2010[A]	*Content: Tai Chi, Education (medication, nutrition and maintaining a safe environment)-brochure. Education and Tai Chi. Delivery: Discussion with videos of topics and photos	✗	Significant difference between three intervention groups (Ed, Tai Chi and Ed and Tai Chi) in reduction in falls rates compared to the control group
Chang 2011	Content: Exercise education program. Delivery: Telephone monitoring and Self-management	✗	Generic standardised information following evidence-based exercise and falls prevention guidelines. Significant difference in falls risk between intervention group compared to control group

Studies	Educational Intervention	Theoretical Framework Used	Comments
Dapp 2011[A]	*Content: Health education (health maintenance, cardiovascular risk prevention, cancer screening, vaccinations). Delivery: Health Appraisal Approach by doctor, medical team directed goal-setting, group sessions or home visits	✓	Individualised checklists but based on medical team-directed goal-setting for each individual; tailored recommendations and feedback; content was mainly health related and not specifically falls-related. Dosage was not stated. Significant increase in preventive care use index (e.g. uptake of vaccination, blood pressure check) and health behaviour index (proportion of favourable health behaviours)
Hill. 2011a[B]	*Content: Multimedia education package comprising empowering participants to reduce their falls risk. Delivery: Health Belief Model. Individualised tailored education from health professional	✓	A total of 629 falls prevention strategies were identified by participants. Of this, the 2 intervention groups identified 71% (445) of the falls prevention strategies compared to control group that identified only 29% (184) strategies
Hill 2013[B]	*Content: Raise awareness, knowledge about falls and falls prevention, motivational content. Delivery: Health Belief Model & Adult learning principles. Written and video materials & individualised tailored education by trained health professional prior to discharge, action plan developed	✓	Intervention group significantly more knowledgeable, confident and motivated than control. Significant increased self-perceived risk of falls, perceived falls injuries and likelihood return to functional activity
Kim 2013	Content: Strength and balance exercises vs education (nutrition, cognitive function, oral hygiene) Delivery: Exercise class	✗	No significant differences between exercise and education groups in repeated and injurious falls
Haas 2014	Content: Exercise skills training and education program (falls risk, behavioural changes, consequences of action or inaction). Delivery: Information-Motivation-Behavioural Skills model with goal-setting strategy (face to face individual) to increase motivation and self-efficacy	✓	Didactic approach used in education. Reported poor recall of education component by participants and poor uptake of recommendations. Recommended goal-setting technique

Note. ADL=Activities of Daily Living; Ed= education

[a]Hill, Hoffman, Beer, et al (2011)

[A] Studies that were part of the systematic review by Gillespie et al. (2012)

[B] Studies that were part of the systematic review by Lee et al. (2014)

*Intervention was compared against a control group

2.5.2.4 Provision of falls prevention education as an intervention for reducing falls in hospitals

A limited number of RCTs have been conducted in hospital settings that have included patient education (Ang, Mordiffi, & Wong, 2011; Cumming et al., 2008; Dykes et al., 2010; Haines et al., 2006; Healey, Monro, Cockram, Adams, & Heseltine, 2004). The following RCTs have evaluated patient education in falls prevention either by completing a primary or subgroup analysis in hospital populations (Table 2.8). These falls prevention education programs were delivered either as a single intervention (Haines et al., 2011; Hill et al., 2009; Hill et al., 2015) or as part of a multiple intervention (Ang et al., 2011; Dykes et al., 2010; Haines et al., 2006). Four of the studies in Table 2.8 used theoretically-driven models in their interventions and were found to be effective either when measured using falls-related outcome or improving participants' awareness of falls risk, knowledge about falls prevention or engagement in falls prevention strategies.

The study conducted by A-M. Hill et al. (2015) showed several significant positive effects. This cluster RCT could measure and demonstrate that the use of theoretical and adult learning principles led to participants taking appropriate falls prevention actions in hospital. A large RCT (n=1206) providing tailored multimedia falls prevention education designed using the Health Belief Model and behaviour change concepts, reduced falls in the intervention group by 49% (4.01 per 1,000 patient-days)(adjusted hazard ratio 0.51; 95% confidence interval 0.28-0.93) compared to the control group (8.72 per 1,000 patient-days) (adjusted hazard ratio 0.43; 95% confidence interval 0.24-0.78) in a cognitively intact older adult patient group whilst in the hospital (Haines et al., 2011). The cognitive status of these participants was screened using the Short Portable Mental Status Questionnaire where scores of 7 of 10 and above were considered to indicate that participants were cognitively intact. However, this study, which used a three group randomisation, demonstrated that using multimedia education (DVD and a written workbook) to provide falls prevention information showed no significant effect on falls outcomes (Haines et al., 2011). Only the group that received tailored follow-up to assist them to personalise the information and make an action plan had reduced falls incidence.

Table 2.8   Theories and Principles Applied in the Design of Hospital-Based Falls Prevention Education Trials and Effectiveness of Their Outcome Measures

Studies	Theories or principles applied	Intervention	Effectiveness (outcome measures)
Haines 2006	Threat appraisal; Protection Motivation Theory; Goal-setting and review	One-on-one education sessions with an occupational therapist and information booklet	Significantly lower fall incidence in intervention group patients. Increased awareness of falls risks
Hill. 2009	Health Belief Model	Education program either with DVD or a workbook	Intervention group patients showed significant increase in knowledge. Those with DVD education had higher perceived risk of falling, higher self-efficacy and motivation
Dykes 2010	No theory used	Tailored education using health information technology program and Falls Prevention Tool Kit software	Significant lower rate of falls in intervention group patients
Ang 2011	Education principles to increase awareness of risk of falling and knowledge of falls prevention strategies	Tailored education program	Decrease in fall incidence rates in intervention group patients
Haines 2011	Health Belief Model	Education program either with multimedia with health professional or written material only	Intervention with multimedia and health professional education reduced falls in patient subgroup (cognitive intact)
Hill 2015	Health Belief Model and adult learning principles	Multimedia education package with health professional follow-up	Intervention group patients had significant reduction in falls, injurious falls and fallers

Importantly, this study's findings underscore the BCT involving participants developing an action plan to personalise the information and message in the design of their education program. Overall, these findings support the work of Dale (1970) and Fleming & Baume (2006) introduced earlier in Section 2.5.1.3.2 (Strategies for teaching adults) regarding multimedia-based education to accommodate the different learning styles.

However, these research trials listed earlier in Table 2.8 were conducted in a hospital setting. Although they demonstrated the benefits of using theory to design

and deliver their interventions, the interventions were individually tailored and presented using an intensive face-to-face mode of delivery by trained health professionals. Therefore, the findings from these trials may not be as applicable for falls prevention education which is provided to older adult groups in a community setting. However, the findings from those hospital-based falls prevention education studies do demonstrate that the use of theory could be extended to the design of community-based falls prevention education studies.

2.5.2.5 Challenges in providing falls prevention education

Overall, there is a paucity of studies investigating educational interventions for older adults in falls prevention. Besides the scarcity of evidence about the efficacy of educational interventions, there appears to be a problem with the methodology of trials conducted in this field of research. Apart from some exceptions, mainly in the hospital-based studies, most of the other studies have not been designed with an explicit theoretical, educational or pedagogical framework in mind, or with health behaviour change concepts being clearly articulated. As discussed in the earlier section, research has found that some older adults have been found to possess low levels of knowledge and motivation and feel that falls prevention is not personally relevant. Barriers to engaging in falls prevention strategies were also identified. Accordingly, an intervention should be designed using theoretical models, encompass adult learning pedagogical principles and behaviour change concepts to optimise adult learning, improve knowledge, and enhance motivation, to provide maximum likelihood of achieving an engagement with the target health behaviour topic. The challenge remains to determine whether falls prevention education is a viable means of reducing falls by providing more compelling evidence through well-designed and rigorous investigations.

2.6 Providing Peer Education for Falls Prevention

Peer education has been used as a health education approach for providing older adults with falls prevention education. This section will critically review the evidence for the efficacy of peer education programs in the area of health, emphasising evidence for programs pertaining to older adults. This section will include a systematic review of studies that have used peer approaches for delivering falls prevention education.

2.6.1 Definition of peer and peer education

Articulating a clear definition of a peer facilitates an understanding of the peer role and assists in objectively evaluating peer-led education interventions. Peers have been described as groups that share common characteristics, circumstances, and experiences (i.e. 'peerness') instead of just being characterised as possessing a single characteristic (Shiner, 1999; Simoni et al., 2011). However, other researchers have found that the description of who constitutes a *peer* has not been addressed well in the research literature (Doull, O'Connor, Welch, Tugwel, & Wells, 2008), and some have stated that there is no consensus of who a peer is in the literature (Shiner, 1999; Simoni et al., 2011). This is supported by numerous studies (Dale, Caramlau, Lindenmeyer, & Williams, 2008; Dennis, 2003; Dorgo, Robinson, & Bader, 2009; Doull et al., 2008; Garcia, Metha, Perfect, & McWhirter, 1997; Lobo, McManus, Brown, Hildebrand, & Maycock, 2010; Lorig, Hurwicz, Sobel, Hobbs, & Ritter, 2005; Simoni et al., 2011; Solomon, Secker-Walker, Flynn, Skelly, & Capeless, 2000; South, Meah, Bagnall, & Jones, 2013; Turner & Shepherd, 1999; Webel, Okonsky, Trompeta, & Holzemer, 2010) which have shown that there is considerable variation in approaches, roles, modalities and settings of peer interventions, as shown in Table 2.9.

Table 2.9   **Definitions of the Characteristics of Peers and Peer-Led Interventions in the Literature**

Characteristics	Descriptors
Terminology	Volunteer walk leader; community health educator; lay volunteer worker; peer leader; peer mentor
Approach	One-to-one (individual), one-to-group basis or combination
Roles	Peer mentoring; peer support peer counselling; peer education
Focus	Providing emotional, appraisal or informational support
Modality	Face-to-face; telephone; online email; internet
Setting	Hospital; community; clubs
Age groups and Context	Youth mental health
	Older adult falls prevention
	Pregnant women and smoking
Experience or area of Interest	*HIV; cancer; smoking; physical activity for older adult; chronic disease

*HIV: Human Immunodeficiency Virus

While a peer has been described as someone with shared characteristics (Shiner, 1999; Simoni et al., 2011), other studies and reports have defined a peer differently, including by traits such as someone whom the peers trust (United Nations, 2003) or as accepted by their peers (Australian Injecting & Illicit Drug Users League, 2006). Overall, research suggests that a peer may be defined by three elements (Simoni et al., 2011; South et al., 2013). Firstly, the peers share relevant common characteristics with the target group, such as age, even though some other characteristics may vary between the peer and the group, such as ethnicity, gender, socioeconomic status, culture, religion or education. The second element is that the peer experience is valued by the organiser of the peer education program and the peer-led role is an integral component of the intervention being tested. These characteristics enhance the capacity of peers to share, relate and empathise with their target groups in a way that non-peers were unable to do (Doull et al., 2008). The third element is that the peer educators are engaged as volunteers (i.e. have a non-formal role) and have not received formal vocational education for their role.

There is also no single definition regarding the term "peer education" in health. A comprehensive review of studies investigating peer education in the area of health, alcohol and drugs found variations in use of the term peer education, and reported that in most cases, the term was not clearly defined (McDonald, Roche, Durbridge, & Skinner, 2003). Peer education has been described as an "umbrella" term (Shiner, 1999, p. 557) used to describe a range of interventions and learning approaches, where both the educator and the peer(s) share an affinity with a characteristic such as age or experience. In healthcare, peer education has been described as a method to communicate health information, increase knowledge and awareness of a topic, impart values and facilitate behaviour change with their peers (Sciacca, 1987; South et al., 2013). In addition, it has been recommended that peer education should encompass skill-building and making informed decisions, which differentiates peer education from other peer interventions (USAID, 2010). Other researchers have stated that peer education may be differentiated from other peer interventions by examining the focus of the delivery (Shiner, 1999), with peer delivery seeking to empower the participants, providing skill development as well as achieving desired outcomes (Madden, 2005). This involves a process of training motivated volunteers to impart knowledge and share attitudes, beliefs and skills with their peers

(Stakic, Zielony, Bodiroza, & Kimzeke, 2003). Therefore, peer education in health can be viewed as a session or a series of sessions, delivered by a trained lay volunteer to impart health information and skills but also to influence the health-related behaviour of the audience.

2.6.2 Rationale, benefits and challenges of peer-led education in health

Studies reviewing peer-led health education conducted in younger populations have identified benefits for both the peer educators and for the organisation (Quine, 2006; Turner & Shepherd, 1999). Such benefits have provided a rationale for and justification of the peer education approach in healthcare (Table 2.10).

Table 2.10   **Benefits, Justification and Rationale for Peer-Led Education in Health from Studies Involving Younger Populations**

Psychosocial benefits	Organisational benefits
Empowering for peer educators	More cost-effective method
Beneficial for peer educators	More successful than professional-led education programs
Peer educators are positive and credible role models	More acceptable education option for some groups when other education is not
Reinforce learning through ongoing interaction	Ability to reach marginal social or cultural groups
Peer educators experience enhanced self-esteem	Uses an established means of sharing information

Socio-cognitive theories highlight the cognitive processes but also the influence of social support on an individual's behavioural intentions (Ajzen, 1985; Bandura, 1977a; Bandura, 1977b; Michie et al., 2011). Within these theoretical frameworks, trained peer educators have the potential to impart information and skills to enable older adults to weigh up the perceived costs and benefits of engaging in health behaviours, such as falls prevention activities.

Peer-led education has been used in a broad range of health areas to address a diverse range of conditions among differing populations. Peer-led education programs have been found to be effective in facilitating behaviour change among people living with chronic health conditions (Foster, Taylor, Eldridge, Ramsay, &

Griffiths, 2007; Lorig et al., 2005; Quinones et al., 2014), those with mental health problems (Cook et al., 2010), patients with various forms of cancer (Helgeson, Cohen, Schulz, & Yasko, 2001) and people with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) (UNAIDS, 1999).

A systematic review of 25 randomised clinical trials (n = 8,942 participants) of peer-based interventions found moderate positive changes across seven health-related behaviour outcomes including increasing physical activity, reducing smoking and increasing condom use (Webel et al., 2010). The studies adopted either a one-to-one peer buddy, group-based peer, or a combination of peer approaches, and time spent delivering peer-based interventions ranged widely from 5.3 minutes to 150 minutes. The review highlighted that peer-based approaches were adaptable and could be applied to real-life situations. However, a limitation of the review methodology was that several studies were excluded because they did not contain direct measures of behaviour change such as dose of intervention (e.g. time spent), or instruments used to derive their outcomes were not reported (Webel et al., 2010). The authors concluded that the evidence regarding the efficacy of the peer-based interventions was mixed and suggested that a more rigorous methodology (e.g. quantification of dosage) be applied when designing and conducting future studies.

A systematic review (Foster et al., 2007) of 17 studies using lay leaders (peers) to educate and promote self-management of chronic conditions (including arthritis, diabetes, hypertension and chronic pain) demonstrated positive outcomes amongst 7,442 participants (aged 44 to 79 years). Fourteen of the studies were based on the self-efficacy theory, one study used theory of reasoned action, and another study used social support as its theoretical basis while the remaining study did not mention any theoretical framework. Modest short-term improvements were found in participants' self-efficacy, self-rated health, cognitive symptom management and frequency of exercise, but not in psychological health, quality of health and use of healthcare services. As discussed earlier in Section 2.5.1.1 (Health education), there is an increased likelihood of behaviour change when interventions are delivered using theoretical frameworks. However, the studies included in this review did not report whether they incorporated adult learning principles or educational aspects such as pedagogical skills and training, into the design or implementation of their programs.

There is limited appreciation that designing, developing, implementing and evaluating a peer education program is a complex process (Karwalajtys et al., 2009; Simoni et al., 2011). While there are benefits of peer education in health as described, there are also challenges in using such an approach. This is because educational interventions such as the intervention evaluated in this thesis is deemed complex. Educational interventions require rigorous design and evaluation at multiple stages to find out which active ingredient (behaviour change component) of the intervention (Michie et al., 2011) is responsible for the findings (Medical Research Council, 2000; Murray, 2002). Moreover, explicit role definition of peer educators in a program is important because this can affect its fidelity and training of peer educators (South et al., 2013). A study in peer education in community cardiovascular health awareness for older adults elaborated that when the peer educator's role and aims of the program were not explicit, a variation in understanding and consequently, variations in implementing the program can occur impacting on program fidelity (Karwalajtys et al., 2009). However, a systematic review of peer education studies (health promotion) has reported that the peer educator's primary role in forming the basis of the program design was limited or was not explicit in how the role differentiates from those of professionals (Simoni et al., 2011; South et al., 2013). In addition, there are challenges with recruitment, retention and training of peer educators (Peel & Warburton, 2009; Vernon, 2010). Issues regarding the uncertainty about the content of training and how the training of peer educators should be conducted including who trains the trainer were raised in a review of peer education in falls prevention (Peel & Warburton, 2009). Furthermore, there is also a challenge of retention and inherent attrition risk that is higher when the peer educators belong to the older adult cohort who can become unwell.

In summary, though there are challenges in using peer education, the theoretical rationale, and benefits of this approach provide a generalised justification for this type of education as a feasible intervention to promote health behaviour change (Milburn, 1995). However, these justifications have been mainly drawn from peer education studies involving younger people and most of the studies have yet to show conclusive evidence supporting the efficacy of peer education on health outcomes (Turner & Shepherd, 1999). Moreover, none of the empirical evidence in the systematic reviews applied to falls prevention and only few study designs were based

on behaviour change theory or education concepts. There have been limited studies that have evaluated the effect of using peer education for facilitating behaviour change in falls prevention. Nevertheless, peer education has consistently been described as a promising approach in influencing health behaviour and researchers have strongly advocated for further evaluation of its processes and efficacy (Milburn, 1995; Peel & Warburton, 2009; Simoni et al., 2011; Turner & Shepherd, 1999).

2.6.3 Peer education conducted for older adults in the area of falls prevention

There is limited empirical research that has evaluated the efficacy of peer education in falls prevention among community-dwelling older adults. A systematic review was conducted to examine the theoretical basis and justification for providing peer education for falls prevention education for community-dwelling older adults. The aim of the review was also to compare the differences in the interventions, their effectiveness and challenges faced in conducting research in this area.

2.6.3.1 Peer-led falls prevention education for community-dwelling older adults: A systematic review

A range of electronic databases was searched for relevant studies published between 01 January 1980 and 15 April 2016. These were CINAHL, Medline, EMBASE, Ovid Nursing and Ovid Journals. The search terms included MeSH terms and others in the electronic databases as well as others in the search for grey literature. The reference lists of articles found in the search were also checked for potential relevant studies or papers. The search strategy is presented in Table 2.11. Key words used were variations dependent on the database searched: health promotion/patient education/health education combined with peer/peer group and falls.

Table 2.11   Search Strategy Conducted in the Process of Systematic Review (Peer-Led Falls Prevention Education Studies)

Electronic database and search terms used

CINAHL search terms
  S1 (MM "Patient Education+")
  S2 (MM "Health Promotion")
  S3 (MM "Accidental Falls/ED/PC")
  S4 (MM "Peer Group") OR (MM "Peer Counseling")
  S5 peer*
  S6 (S1 or S2 or S3) and (S4 or S5)
  Limiters - Published Date: 19800101-20160415

Ovid Nursing search terms
  1. exp health education/
  2. exp health promotion/
  3. exp accidental falls/
  4. peer*.mp.
  5. (1 or 2 or 3) and 4

Medline and Embase search terms
  1. exp *health education/
  2. exp *health promotion/
  3. exp *Accidental Falls/pc [Prevention & Control]
  4. peer*.mp.
  5. (1 or 2 or 3) and 4

Journals@Ovid and Medline In-Process & Other Non-Indexed Citations search terms
  1. Peer*.ti
  2. (educat* or fall* or promot* or prevent*).ti
  3. 1 and 2

Other search terms used in non-scholarly websites for grey literature included:
  Lay; peer; accidental falls, elderly; older people; health education; health promotion
Search was limited to those studies available in the English language.

2.6.3.1.1   *Inclusion and exclusion criteria*

The inclusion and exclusion criteria for the studies in the review are presented in Table 2.12. Studies were included only if they used a one-to-group format for the intervention and a trained volunteer peer educator to impart falls prevention information.

Table 2.12   **Inclusion and Exclusion Criteria of Studies in Systematic Review (Peer-Led Falls Prevention Education)**

Inclusion criteria	Exclusion criteria
Types of studies	
RCT, non-RCT.	
Types of participants	
Older adults 60 years and over in age	Adults below the age of 60
Living independently in the community	Those older adults living in residential aged care facilities or requiring long-term health care and those hospitalised
Types of intervention	
Trained older adult volunteer (peer)	A one peer-to-one peer format intervention
Providing education to peers	Non-education intervention or fitness program
In a one peer-to-one group format	
Content is falls prevention	

2.6.3.1.2   *Data extraction*

Initially, article titles and abstracts were checked for relevancy according to the inclusion criteria. The articles were also checked for duplicates and if they involved the same study. The articles that passed the initial screening were retrieved for detailed evaluation for eligibility by two independent researchers. Subsequently, the methodological quality of the studies in those articles was evaluated in terms of the modified Downs and Black checklist (Downs & Black, 1998; Eng et al., 2007). This is a checklist to review methodological quality in randomised (RCT) and non-randomised controlled trials (non-RCT) studies. The checklist has been tested for validity and reliability (Downs & Black, 1998; Eng et al., 2007). It rates a study against the criteria of reporting (aims, outcome measures, participant profile, intervention, findings), external and internal validity (bias), internal validity (confounding) and presence of power or sample size calculation of the study, with a total possible Quality Index Score of 28. A higher score indicates a relative higher methodological quality but no acceptable score rating of the checklist has been advised (Eng et al., 2007).

2.6.3.1.3   *Results*

The search strategy yielded 70 papers that were screened for eligibility in terms of inclusion criteria. Sixty-one papers were rejected and nine papers were retrieved for evaluation. Five papers were found to involve the same study. Overall, only four papers (Allen, 2004; Deery et al., 2000; Kempton et al., 2000; Robson et al., 2003) were included in the review. Figure 2.3 illustrates the procedure at each stage of the screening and reviewing process. A summary of the included studies that evaluated the effect of providing peer education in the area of falls prevention health-related education is provided in Table 2.13.
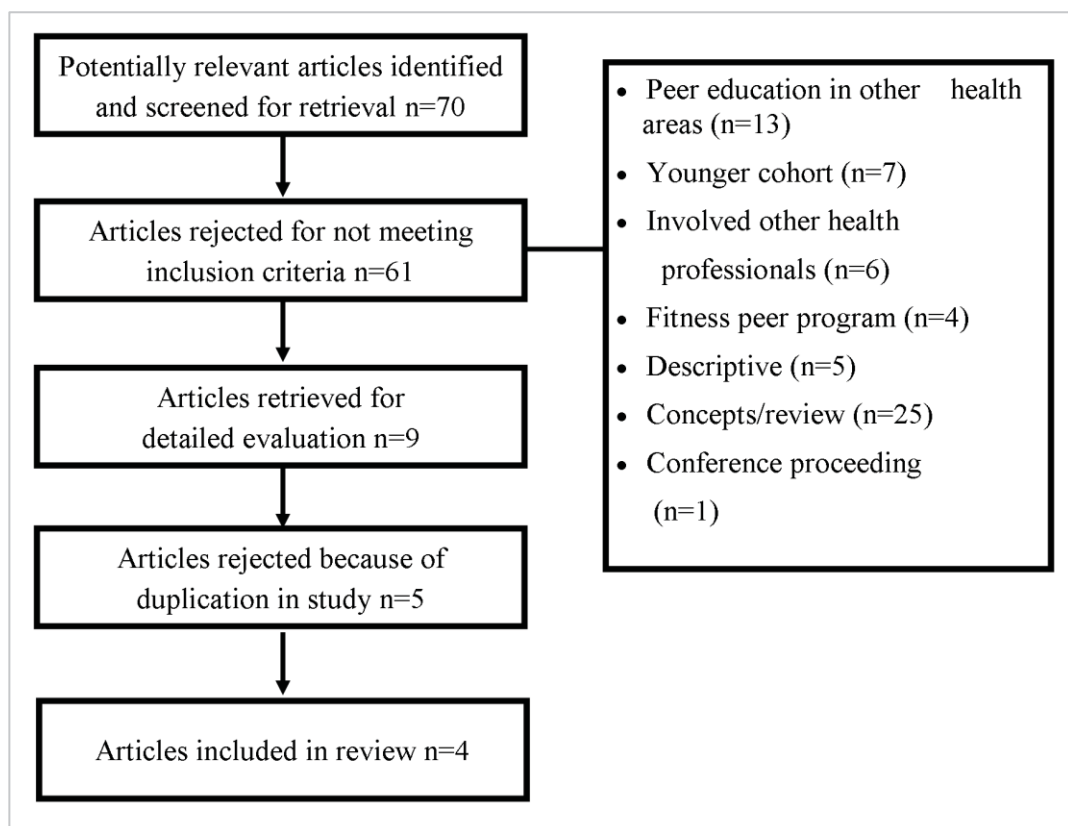
Figure 2.3   Flowchart of the Search and Selection of Articles Included in the Review of Peer-Led Falls Prevention Education Studies

Table 2.13   Evaluation and Rating of the Previous Peer-Led Falls Prevention Studies for Community-Dwelling Older Adults

First Author	Design	Sample Description (n)	Quality Index score	Program Description and Outcome measures	Results	Comments
Allen 2004	Quasi-experimental	Control Nil 521 (48% response) for initial questionnaire 50 for 2nd questionnaire	4/28	Positive Action on Falls" program in UK. One info session. 10 Peer Educators Baseline and follow-up questionnaire 6-8 months, focus groups after 2-4 weeks post-info. To raise awareness and assess own risk of falls and change behaviour as per Kirkpatrick model. 57 groups, totals 1,100 people	90% in focus group approved presentations in terms of providing falls education. Follow-up 26% made changes	Poor response in follow-up questionnaire Has defined term "peer" Used Kirkpatrick (1979) model
Deery 2000	Non-RCT	Control 142 Female: 76.7% Male: 23.3% Intervention 149 Female: 79.4% Male: 20.6%	14/28	Up & About" program in Victoria, Australia. 90 mins info sessions by Peer Presenters to groups of 15-20 people Outcome measures at baseline, three and 12 months' follow-up. Pre-post questionnaire to assess knowledge, attitudes and behaviour. Knowledge on falls prevention, risk factors and home modification	Intervention group took up more falls prevention action but no difference in falls outcome compared to Control group	Selection bias Home hazards only

First Author	Design	Sample Description (n)	Quality Index score	Program Description and Outcome measures	Results	Comments
Kempton 2000	One study intervention out of a series forming a larger study	Control 1131 (67.9%) Intervention 1314 (66%)	19/28	"Stay on Your Feet" program North Coast, NSW 1992-1995. Multifactorial, multi-strategic falls intervention program. Involved raising awareness via media, community education (peer) and policy development Formative, Process and Outcome evaluation. Pre-Post Telephone interview survey over an 18-month period. To assess falls-related knowledge, attitudes, risk factors and behaviour	Significant increase in knowledge that falls are preventable, risk of falls and awareness of footwear safety. 20% lower age standardised rate of fall-related hospital admission in Intervention group compared to Control group. Non-significant difference in rate of falls between 2 groups	No sub-group analysis of peer community educator involvement
Robson 2003	RCT	Control 236 Female 80.1% Male: 19.9% Intervention 235 Female: 82.1% Male 17.9% Average Age 75 years old Inclusion criteria: a) able to walk assisted for 20 minutes b) get up from and down to floor themselves c) no health problems that made it difficult for them to function	21/28	Steady As You Go" program in Canada. 2x 90 mins, one month apart. Health education and exercise Baseline pre and post telephone survey at 1 month and 4 months follow-up. To assess rate of falls, risk of falls and identify hazards in community	Intervention group significantly reduced in 8 out of 9 risk factors. (8 risk factors were: paying attention, taking risks, footwear, footcare, vision, hazards at home, balance and leg strength. Risk factor medication was not significantly reduced Rate of falls was lower in Intervention Group but not significant	Used Health Belief model and Social Learning Theory Training of senior facilitators not specified Manual and video provided to Intervention group participants

2.6.3.1.4   Quality of the studies

The studies examined were found to have moderate methodological issues. All the studies except one scored less than 70% when rated with the Downs and Black checklist. Only one study with a score of 75% (Robson et al., 2003) defined a fall in their study, specified inclusion criteria used and stated use of theoretical models in the design of the program and training of peer educators.

The strength of all four studies was that they evaluated the effects of the peer-led education by following up participants after the delivery of the intervention. The follow-up periods ranged from three or four months (Deery et al., 2000; Robson et al., 2003), six to eight months (Allen, 2004), and 12 months (Deery et al., 2000). However, the attrition rate affected the numbers assessed at the final follow-up. Loss to follow up was reported in two of the studies and varied, ranging from 90% (Allen, 2004) to 44% (Deery et al., 2000), while the attrition in the other studies was not reported. Three of the studies (Deery et al., 2000; Kempton et al., 2000; Robson et al., 2003) compared the effect of the intervention with a control group that strengthened confidence in the findings about the efficacy of their intervention. Table 2.14 presents the strengths and limitations of these studies in summary form.

The included studies evaluated the effectiveness of their outcomes by conducting a process evaluation of the program with their stakeholders. However, these evaluations were reported anecdotally (Allen, 2004; Robson et al., 2003). They sought qualitative feedback from participants about how well the presentations delivered the message and found a high level of consensus (90%) amongst participants (Allen, 2004). The researchers also found the self-reporting of more social contact, enjoyment, and positive feeling of the program (Robson et al., 2003). These findings indicated that the program had a positive impact, which would therefore facilitate engagement with the messages delivered. However, the studies did not explicitly measure outcomes of falls-related knowledge, skills and behaviour change.

Table 2.14   Overview of Previous Peer-Led Falls Prevention Studies for Community-Dwelling Older Adults

First author	Definition of peer	Design uses Theoretical Framework	Behaviour change assessed	Peer educator training program provided	Intervention described	Control group	Follow-up
Allen 2004	✓	✓	✗	✓	✗	✗	✓
Deery 2000	✗	✗	✗	✗	✓	✓	✓
Kempton 2000	✗	✗	✗	✗	✗	✓	✓
Robson 2003	✗	✓	✗	✓	✓	✓	✓

Note: In all studies, there was no assessment of intervention fidelity.

One study demonstrated that the older adults who received the peer education program (intervention group) maintained a significantly greater knowledge of strategies that prevent falls at 12-month follow-up (Deery et al., 2000). The intervention group also took more action to prevent falls when followed up at three months and 12 months (Deery et al., 2000). In another study, which also delivered a peer education program, the intervention group reduced their risk of a fall after receiving the program as measured by a falls risk screening tool (Robson et al., 2003). The falls risk tool included items which measured home hazards; vision modification or improvement; and more appropriate safer footwear (Robson et al., 2003). However, these improvements were not statistically significant when compared to the change in the control groups. Reported reasons for the lack of effect of the intervention included the short follow-up period (Robson et al., 2003); low power of the study (Deery et al., 2000); differences in baseline between intervention and control groups (Deery et al., 2000); use of self-report; and poor recall during data collection (Deery et al., 2000). It was thus suggested that peer education in falls prevention may be ineffective (Deery et al., 2000). However, none of the studies explored other methodological and theoretical issues that may have influenced how the education worked to affect and impact on the falls-related outcomes. As highlighted earlier, some barriers to uptake of falls prevention strategies previously identified have included that older adults may have low levels of knowledge and motivation in this area. Moreover, researchers in adult learning and behaviour change have recommended that any learning in education

should scaffold learners' knowledge but also cultivate learners' motivation and foster their self-efficacy (Merriam & Bierema, 2014; Wlodkowski, 2008). There should also be consideration regarding the effect of ageing on learning. However, it is not clear if the interventions evaluated in these peer-led studies incorporated such factors to address the older adults' knowledge and motivation to achieve the desired health behaviour change.

All the studies in the review reported limited use of behaviour change or education theory(s) to guide the steps from design, implementation and finally evaluation of the program. As previously discussed, a theory-driven intervention has been advocated because use of a framework provides cumulative knowledge to aid in developing and evaluating interventions (Noar & Zimmerman, 2005). Behavioural interventions should provide a description of the content and dosage of their delivery and most importantly, the active component(s) of their interventions intended to facilitate behaviour change (Michie & Johnson, 2012).

In the studies reviewed, there was also limited information reported about the validity and reliability of the questionnaires used to evaluate program outcome measures. It was not stated if the questionnaires used for evaluation in all the studies were psychometrically validated, reliable or pilot-tested. In addition, only two studies (Deery et al., 2000; Robson et al., 2003) described the duration and content of their intervention such as timing of presentation and resources provided to their participants (Michie & Johnson, 2012).

There were elements of inconsistencies in one study (Allen, 2004) between the aims of the study (peer educators being provider of information and change agent); and their reported results (percentage of older adults who report their falls to health professionals). That is, the results did not reflect the aims stated at the start of the study. There appeared to be an emphasis on an environmental home hazards approach of falls prevention education rather than including other evidence-based strategies such as exercise or vision improvement (Allen, 2004; Deery et al., 2000; Kempton et al., 2000). As mentioned in Section 2.3.2.1, there is strong evidence for engaging exercises in minimising the risk of falls.

There was no report of the peer-led studies' intervention or program fidelity. It could be that these interventions did not facilitate behaviour change in the intended manner of their delivery (program fidelity). Fidelity is the use of methodological strategies to monitor and to maximise the extent in which the treatment (intervention) was "implemented as intended" (Moncher & Prinz, 1991, p. 247). Fidelity enhances the reliability and validity of behavioural interventions (Borrelli et al., 2005). This can involve checklists and/or feedback processes such as monitoring and feedback of peer educators' presentations to determine whether the intervention was delivered as planned, with potential impact on outcomes. Program fidelity conducted as part of this research will be elaborated further on in Chapter 7, Section 7.8.1.

These limitations in the design and evaluation of falls prevention peer education programs limit the evaluation, interpretation, and potential generalisability of their findings (De Vaus, 2014; Portney & Watkins, 2009). It also limits potential replication of the program for further evaluation.

2.6.3.2   Limitations of the current research

This section will discuss the limitations of the peer-led falls prevention studies in the previous section, in the context of health behaviour change, adult learning principles and concepts related to peer education including definition of their peer and peer-led education used, as highlighted in Section 2.6.1 (Definition of peer and peer education).

At the pre-conceptualisation stage, it was not clear whether peer education was a method of delivery that the community-dwelling older adults (target audience) preferred for receiving falls prevention education. The studies reported that the peer programs were initiated based on theoretical rationale and perceived benefits of peer education. However, the researchers did not state if they explored whether this approach was preferred by their target audience. As discussed previously in Section 2.4, there exists a less than optimal level of engagement of older adults in falls prevention (Nyman & Victor, 2012) partly because there are perceived barriers towards engagement and uptake of the falls prevention strategies. Peer education can be an invaluable approach because peer educators can be role models and a social influence to enhance engagement in falls prevention (Peel & Warburton, 2009). Had

the researchers involved older adults at the design stage of the research, the content and design could be explored from the perspective of the target recipients or consumers (older adults) themselves. Accordingly, the peer education program could be optimally designed to enhance the relevance of the program content and feasibility of the peer-led approach.

At the design stage, three of the studies did not provide a description or definition of a peer educator, how they recruited their peer educators, or the design of the training program for peer educators (e.g. duration and content). Only one study (Allen, 2004) provided a definition of a peer. As mentioned in the earlier Section 2.6.1, researchers have recommended that peer be defined by degree of peer influence (Simoni et al., 2011). As highlighted in previous sections, behaviour change theory should be used to provide an evidence-based coherent body of knowledge and the steps for the design and implementation of behaviour change interventions (Craig, Dieppe et al., 2013; Craig et al., 2008; Improved Clinical Effectiveness through Behavioural Research Group (ICEBeRG), 2006). Only one study (Robson et al., 2003) mentioned the use of theoretical conceptualisation and a framework that informed the design of their primary intervention, but explanatory detail was not reported. Importantly, details about the choice of theory, as well as how the theory was integrated into the instructional design, for their peer educators to deliver the content, were not provided.

In a comprehensive literature review, Peel and Warburton (2009) concluded that certain aspects of the peer-led approach could be a viable means of delivering falls prevention information to older adults to increase their awareness of the risk associated with falling, and improve their knowledge of falls prevention strategies on the basis of behaviour change theories and findings of previous studies (discussed in Section 2.5.1.2 Behaviour change theories; Section 2.6.2 Rationale and benefits of peer-led education in health). A peer educator may be a positive role model; an individual promoting empowerment; an opinion leader encouraging social acceptance and one possessing the capacity to influence opinions of the target group (Peel & Warburton, 2009). It was also suggested that peer educators could promote self-efficacy and be agents for health behaviour change (Peel & Warburton, 2009). Therefore, a peer-led approach could capitalise on these promising considerations to influence older adults in falls prevention. One of the peer-led studies (Kempton et al., 2000; Vernon, 2010)

described training their peer educators in areas of public speaking and falls prevention content but there was no further information or justification for the approach taken. Allen (2004) mentioned the use of the Kirkpatrick model (Kirkpatrick, 1979) for training purposes and for evaluation of the program, but no details about how the model was incorporated into the study were provided. None of the studies reported design features that facilitated tailoring the education to the older adult participants' different falls prevention needs or learning styles. There was also limited reporting about what strategies peer educators utilised to promote and tailor education and engagement with the falls prevention message; enhance adult learning; or foster behaviour change to achieve stipulated outcomes in the peer-led studies. As mentioned in Section 2.5.1.3, instructional design for adult learners should integrate the principles of adult learning (Knowles & Associates, 1984; Merriam & Bierema, 2014), including fostering personal relevance and capitalising on the older adults' rich experience, as well as addressing their motivation (Wlodkowski, 2008) and appealing to their different learning styles (Fleming & Baume, 2006) in presentations. Additionally, the studies investigated did not report on how their peer educators' credibility or social influences were established amongst the peer recipients of the education.

The peer studies reviewed suggested as part of their evaluation, that the peer educator could be an empowering role model (Allen, 2004; Garner et al., 1996; Kempton et al., 2000) or engender strong rapport (Deery et al., 2000) with participants. Indeed, positive social influences and learning experience can facilitate engagement of older adults in falls prevention, as highlighted by the qualitative research evidence in the Section 2.4.1 (Bunn et al., 2008; Dickinson, Machen, et al., 2011; Dollard, Barton, Newbury, & Turnbull, 2013). Peer educators' life experience amongst contemporaries who share similar experiences was mentioned as a study strength (Allen, 2004), but limited data was provided to support this insight. There was also limited evaluation obtained by seeking the peer educators' feedback about their experience of delivering the program. In conclusion, little is known about what behaviour change component was used (sometimes described as the "active ingredient") (Michie et al., 2011) or how the delivery contributed to the observed outcomes and there is scant information about the interventions or program fidelity and the challenges faced by peer educators.

In summary, extensive investigation has shown peer education to be an effective approach to improve knowledge and motivation and facilitate positive behaviour change in other areas of health such as cancer, diabetes and other chronic conditions. Hence, this approach could also be a viable means of providing falls prevention education. While there is strong evidence for achieving theory-driven interventions behavioural outcomes such as improving knowledge and motivation, studies conducted in falls prevention have not, in the main, used theories nor behaviour change concepts in the design, development and evaluation of their interventions. There is also strong evidence from the field of education that it is important to utilise adult learning principles and proven pedagogical skills to effectively engage older adults in learning. Currently, there is uncertainty about whether peer education is a viable approach, either alone or as part of other falls prevention programs, for providing older adults with falls prevention education. It is, therefore, important that rigorous methodology be used to design future studies to evaluate the impact of a peer-led falls prevention education program. These will be described in Chapter 7 and Chapter 8.

2.7   Summary of Research Gap

Falls prevalence among older adults is a significant physical, psychosocial and economic problem. While there is good evidence about the risk factors that contribute to falling, and established, effective evidence-based strategies to minimise these risks, there has been limited translation of this evidence for falls prevention strategies into practice. This gap between the research evidence and translation of this evidence into practice exists, partly because there is limited uptake and adherence to these strategies by older adults themselves. Barriers to uptake are in part due to some older adults' low levels of awareness about falls risk, knowledge about falls and motivation to take up falls prevention strategies.

Health education could be a means to bridge this gap by raising older adults' knowledge and motivation about falls and falls prevention. However, health education design and implementation should be underpinned by theoretical framework(s), health behaviour change concepts, adult learning principles, and pedagogical considerations to facilitate engagement with the messages provided and potential uptake of strategies

recommended. However, health education studies in falls prevention have not consistently applied these considerations. More rigorous research trials are needed.

Peer education, a form of health education, is a potential valuable approach to raise the awareness, knowledge and motivation of older adults regarding falls prevention. Other community-based health-related peer education studies have shown that this approach can be effective. However, there is a dearth of studies that have investigated peer-led falls prevention education, in particular the one-peer-to-group presentation format. Besides the scarcity of studies, previous studies' education interventions have largely not been designed or implemented with conceptual considerations as suggested, nor evaluated in terms of fidelity as well as effectiveness in facilitating behaviour change. Understanding and evaluating the effectiveness of an education intervention in bridging the gap in knowledge and facilitating behaviour change should be a precursor to assessing falls-related outcomes.

Therefore, the purpose of this research is to provide a peer-led falls prevention education program designed with these underlying conceptual considerations in mind and to determine its impact on community-dwelling older adults' beliefs, knowledge, motivation and intention to engage in falls prevention strategies. Lessons gleaned and challenges faced from this research will further improve our understanding of how peer-led falls prevention education should be delivered. The findings can be used to promote initiatives to enhance the engagement of community-dwelling older adults in this area and encourage uptake of falls prevention strategies. These initiatives have the potential to reduce the personal, physical, psychosocial burden and economic costs of falls and falls-related injuries in this population.

2.8   Research Aims

The primary aim of this research was to design a peer-led falls prevention education program and evaluate its impact on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. The peer educators were older adult volunteers who shared an affinity with the age group of their audience. These peer educators were trained to provide falls prevention education as well as impart skills and foster motivation among other older adults in a community group setting.

The secondary aims of the research were to:

1. Explore the perspectives of a group of peer educators about their role in delivering peer-led falls prevention education for community-dwelling older adults

2. Examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information

3. Evaluate peer educators' presentations of falls prevention education for community-dwelling older adults against established criteria that were consistent with adult learning principles, the framework of health behaviour change, falls prevention guidelines and recommendations for providing falls prevention information by experts of various areas of specialisation

4. Evaluate the effectiveness of delivering a contemporary peer-led falls prevention presentation incorporating adult learning principles and behaviour change strategies on community-dwelling older adults' beliefs and knowledge about falls prevention, their motivation, and intention to engage in falls prevention strategies compared to delivering an existing peer-led falls prevention presentation

Chapter 3

Research Methods

3.1   Chapter Outline

This chapter provides an overview of the design and methodology of the studies included in this thesis. The structure of the thesis including research design, overview of methods used in each study and research aims; ethical considerations, research setting and participants, data collection and procedure, and finally data analysis are described.

The specific methods for each study will be described in detail in the relevant chapter. The methods for Study 1 (peer educators-focus groups and interviews); Study 2 (community-dwelling older adults-community forum); Study 3 (experts-expert review questionnaire); and Study 4 (quasi-experimental trial) are described in Chapter 4, 5, 6 and 8 respectively. Chapter 7 will describe the design and development of the peer-led falls prevention education program (intervention) in Study 4.

3.2   Research and Thesis Structure

3.2.1   Research design

A mixed methods research design was utilised across the four studies described in this thesis. This involved both qualitative and quantitative research approaches (Morse, 2010) across the two phases of this research. The rationale for this approach was that peer-led falls prevention is a topic that can be considered complex and multi-faceted (Irwin, 2008). In addition, as discussed Chapter 2 Section 2.6.3, there is a dearth of peer-led falls prevention studies and many key aspects of this topic are either not known or have not been explored adequately for the design, development and evaluation of a new contemporary peer-led education program. Moreover, this approach has been deemed the most efficacious method of evaluating complex interventions (Campbell et al., 2000; Medical Research Council, 2000; Murray, 2002; National Research Council, 2002). The use of a mixed methods design allowed for triangulation, comprehensiveness, corroboration, reframing, and enhancement of the research topic to be realised (Johnson & Onwuegbuzie, 2004; Liamputtong, 2013).

Mixed methods research has been deemed a form of *triangulation* in research design (Creswell, 2012). Denzin (1989, p. 236) described triangulation as "the use of multiple methods" to enhance the rigour in findings and minimise intrinsic bias in the research topic, and elaborated on three types of triangulation. According to Denzin (1989), data triangulation involves using different data sources to provide the findings in an investigation; investigator triangulation is when investigators or researchers evaluate the same research findings independently but collaborate following discussion and consensus. Further triangulation of findings can be provided by using different research methods (method triangulation) such as focus groups, interviews, and questionnaires (Denzin, 1989). Each of these types of triangulation were utilised in the various studies within this thesis. According to Creswell and Plano Clark (2011), a mix of quantitative and qualitative research approaches provides insights to various aspects of the research to enhance comprehensiveness in understanding of the topic. The mixed methods design aimed to increase breadth and depth in the understanding of aspects of the falls prevention topic being investigated, and can also provide corroboration of the findings and potentially lead to a reframing of

paradigm(s) in this area (Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie, & Turner, 2007).

Whilst there is a rationale and benefits for adopting a mixed method approach as detailed, literature has raised issues arising from using such an approach. This will be highlighted briefly in Chapter 9 Section 9.5.

3.2.2 Overview of research methods used

This research was conducted in two phases. Phase 1 involved three studies informing the status of peer-led falls prevention programs in Western Australia (WA), and seeking to understand older adults' preferences with respect to seeking and receiving falls prevention information. Phase 2 involved evaluation of a newly developed peer-led falls prevention education program. Figure 3.1 summarises the overall design of the research.
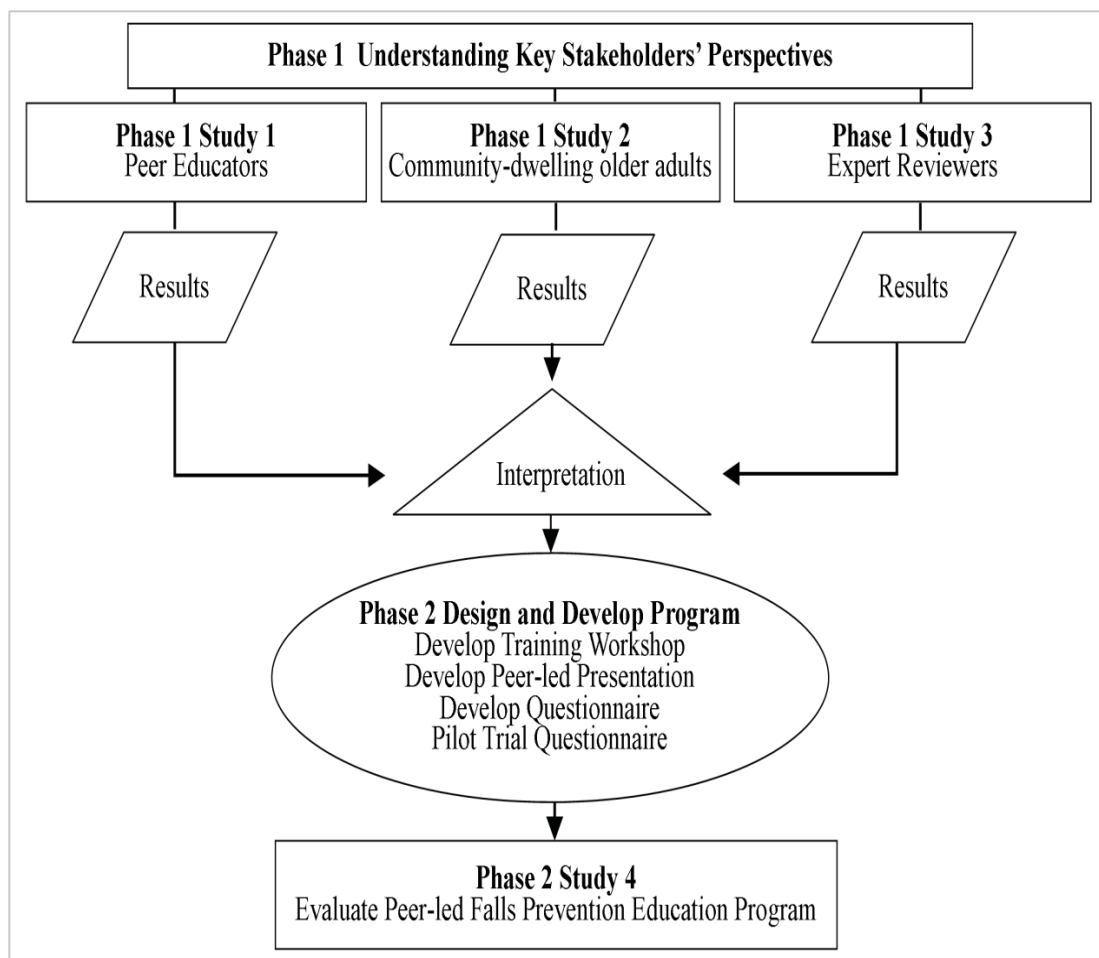
Figure 3.1   **Mixed Methods Design of Research**

Phase 1 of the research used the "concurrent" form of mixed methods design (Creswell, 2012, p. 540). This design involves different research methods (qualitative or quantitative approach) for various components of the research that were run simultaneously (Creswell, 2012). Although the studies were conducted concurrently, each of their data sets was kept separate throughout the phases of data collection and data analysis but were synthesised jointly at the interpretation stage.

During Phase 1 of the research, the three concurrent studies were:

Study 1. A qualitative study that explored older adult peer educators' perspectives about their role in delivering peer-led falls prevention education for community-dwelling older adults;

Study 2. A qualitative study which examined the views and preferences of community-dwelling older adults regarding seeking and receiving falls prevention information, using a novel "World Café" approach; and

Study 3. A mixed method study that asked experts from the fields of falls prevention, education, health promotion and psychology to review, critique, and rate the delivery of an existing peer-led falls prevention education program.

The results from the three concurrent studies provided a basis for understanding older adults' preferences about falls prevention education and provided practical feedback for the research team. Drawing on the results of these studies, a contemporary peer-led falls prevention education program was designed, developed and evaluated in Phase 2. This comprised mainly a peer-led presentation and a workshop for training new peer educators. During Phase 2, a final study was conducted which was:

Study 4. A quasi-experimental trial which evaluated the effectiveness of delivering a contemporary peer-led falls prevention education presentation on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies compared to the existing peer led falls prevention presentation.

An overview of the research methods used for the studies conducted in Phases 1 and 2 is presented in Table 3.1. In summary, the various studies used a mix of qualitative and quantitative approaches to comprehensively address the research aims. Further details on these methods are included in each chapter.

Table 3.1   Overview of the Research Methods Used in the Research Project

Method	Phase 1			Phase 2
	Study 1 (Chapter 4)	**Study 2 (Chapter 5)**	**Study 3 (Chapter 6)**	**Study 4 (Chapter 8)**
Design	Inductive constant comparative	Community forum	Within-stage mixed model (mixed methods)	Quasi-experimental
Data collection and procedure	Focus group Semi-structured interviews	World Café community participation	Expert Review Questionnaire	Pre, post and one month post-intervention Participant Questionnaire
Statistical analysis	Thematic analysis	Thematic analysis	Correlation (ICC) and thematic analysis	Generalised Estimating Equation modelling and Deductive content analysis
Sampling	Purposive	Convenience	Purposive	Convenience

ICC: Intraclass Correlation Coefficient

3.2.3   Research aims and studies in the thesis

Figure 3.2 provides an overview of the structure of this thesis. It outlines the research aims and the studies that address them and their corresponding chapter.
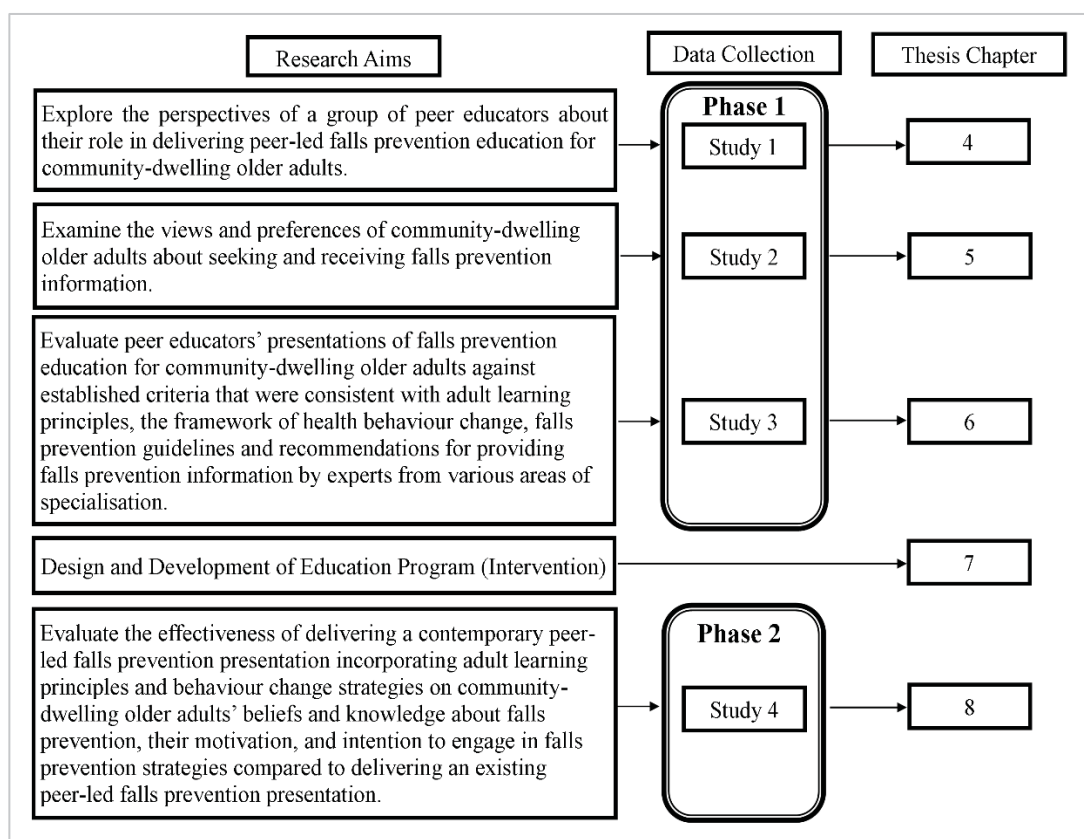
Figure 3.2   Structure of the Thesis

3.3　　Ethical Considerations of the Research

3.3.1　　　Approvals

All the studies conducted for the research were approved by The University of Notre Dame Australia's Human Research Ethics Committee (Appendix A) and were assessed to have met all the requirements as stated in the National Statement on Ethical Conduct in Human Research 2007. Participation information sheets were provided to all potential participants of all the studies. Written consent was obtained from all participants before commencement of each study. Drawing from the University's Human Research Ethics Committee guidance and the National Statement on Ethical Conduct in Human Research (2007), these general conditions were applied; that the:

- Participant information sheets provided information about the purpose and benefits of the research, ethical approval status, what participation entailed including duration and procedure, any foreseeable risks, and contacts of the research team and university research office. These were provided in plain language to all potential participants across the studies

- Participant has understood, had the opportunity to clarify any questions and was satisfied with the information provided

- Individual's participation in the research was voluntary and they understood there was no obligation to participate

- Individual has the right to withdraw from participation at any time without prejudice or adverse consequences

- Strict confidentiality with regards to the information gathered in terms of storing, coding, disposal and sharing, including publishing of the findings, except in instances of legal requirements, was maintained

- Individual has the right to refuse to be recorded in the studies where there was audio-taping (Phase 1 Study 1 focus group and interview), photography (Phase 1 Study 2 community forum), or video-taping (Phase 1 Study 3 expert review). Written consent was obtained prior to audio-taping in Study 1, photography in Study 2 and video-taping in Study 3

Phase 1

Study 1: Reference 013061F, Approval date: 06 May 2013 (Appendix A.1)

Study 2: Reference 014128F, Approval date: 11 August 2014 (Appendix A.2)

Study 3: Reference 014100F, Approval date: 16 June 2014 (Appendix A.3)

Phase 2

Study 4: Reference 014134F, Approval date: 14 August 2014 (Appendix A.4.1) and
Reference 015013F, Approval date: 05 March 2015 (Appendix A.4.2)

The study's community organisation ICCWA also provided support and authorisation (Appendix B) dated 8 March 2013, 06 May 2014 and 01 August 2014 covering the period of research and data collection.

3.3.2   Data management

Each participant was allocated a number code to facilitate re-identification of the data. Copies of transcripts or questionnaires were immediately transferred to the University and placed in a locked cabinet with restricted access. All electronic data and data analysis were stored in a password-protected electronic folder in the University computer system that was accessible to the principal researcher only.

3.4   Research Setting and Participants

3.4.1   Community organisation and partner

This research was conducted in Western Australia in collaboration with a community organisation - Injury Control Council of Western Australia (ICCWA) https://www.iccwa.org.au/.   This is a not-for-profit community organisation that focuses on providing education, promotion and resources directed towards injury prevention and community safety in Western Australia.

3.4.2   Community engagement officer

ICCWA's community engagement officer is a qualified health promotion professional who manages their peer-led education programs.   The community

engagement officer recruits interested older adults who are keen to volunteer for the peer-led falls prevention education presentation as well as other volunteer activities. There were several means of recruiting volunteers for these roles. Avenues of recruitment included via the Volunteering WA https://volunteeringwa.org.au/ recruitment database, and volunteer resource centres located throughout Perth metropolitan area. Other means can be via ICCWA's website, recruitment postcards at exhibitions, Stay on Your Feet® community newsletter or via word-of-mouth. The community engagement officer conducted the training for peer educators, and provided support and resources for the peer educators to deliver their falls prevention presentations in the community. The community engagement officer also conducted publicity to the broader community about their peer-led falls prevention programs to older adult groups. The officer also organised and coordinated the schedule of presentations with interested older adult groups.

The community engagement officer was also a key liaison person in disseminating information about the various studies, including inviting peer educators to participate in the focus groups and interviews (Study 1); assisting in media releases for the community forum (Study 2); inviting peer educators to volunteer for video-recording for the expert review (Study 3) and coordinating presentation schedules with peer educators (Study 4).

3.4.3 Existing peer-led falls prevention program and presentations in the community

Falls prevention is a key focus of the community organisation ICCWA and part of this involved running Stay on Your Feet® falls prevention programs in the Perth metropolitan area since 1998. For this purpose, ICCWA's existing peer-led falls prevention presentation revolved around the 'Nine Steps to Stay on Your Feet®' program (Appendix E) since 2003. The nine-step program originated from the falls prevention sectors in NSW and from the Falls Prevention Health Network Executive Advisory Group. The program comprised of nine steps older adults can take to prevent falls. These steps were in the order of "be active, manage your medicines, manage your health, improve your balance, walk tall, foot care and safe footwear, regularly check your eyesight, eat well for life, and identify, remove and report hazards". Peer educators were provided with the Stay on Your Feet® Speaker's kit of associated DVD

or video-tape, booklet and flyers to use during presentations to aid in conveying the falls prevention message to the community.

Since 2003 to 2014, over 60 peer educators had been trained to deliver the 'Nine Steps to Stay on Your Feet®' program. They delivered one hour presentations throughout the community in WA. The duration of the presentation was pre-determined based on the preferences of the community groups' schedules, the capacity of ICCWA to provide volunteers and informal feedback from the peer educators. Training sessions were conducted as needed, with the opportunity for further training at volunteer meetings. Training for the volunteers of the existing peer-led falls prevention program varied and can range from one or two days. Day One usually included an introduction to ICCWA, and their rights and responsibilities as a volunteer such as reimbursement, and insurance. Day Two involved training for their role as a peer educator to deliver the program. This covered content-related information and how to deliver the nine-steps, detailed in a 52-page manual. This manual has been updated as needed over the years and the most recent version was in 2013. This manual covered:

- 35 pages of information such as statistics, risk factors and strategies related to the nine-steps
- 5 pages of suggestions on how to deliver a clear falls prevention message such as awareness of verbal and non-verbal communication
- 1 page of introduction to adult learning principles
- 7 pages of guidelines for planning and managing a 'Nine Steps to Stay on Your Feet®' program/presentation

Subsequently, the format of the existing peer-led falls prevention presentation (average duration of one hour) to community groups of older adults included:

- An introduction
- Stating the statistics in falls-related issues and why falling is an issue
- Playing the DVD in the Speaker's kit
- Going through each of the nine steps to stay on your feet
- Questions and conclusion

Much of the content of the training manual and presentation focused on presenting the facts about falls and falls prevention. The 'Nine Steps to Stay on Your Feet®' community booklet was handed out to each older adult at the end of the presentation.

3.4.4 Volunteer peer educators (Phase 1 Study 1)

A purposive sample of peer educators involved with the existing peer-led falls prevention programs was invited to participate in Study 1. The peer educators were older adult volunteers who were trained to deliver falls prevention presentations to raise awareness of falls prevention to older adults living in the community. These peer educators were older adults of English-speaking background. They ranged in age from 65 to 85 years and older. Most of them were retired and possessed diverse working experience before retirement. Each peer educator received training from the community organisation's community engagement officer, primarily to fulfil their role in delivering falls prevention education to other older adults. They received reimbursement for any cost outlay incurred during the course of their work as a peer educator (e.g. travel, car parking), but did not receive formal payment for the role they undertook. Each peer educator provided about eight to ten falls prevention presentations per year.

3.4.5 Community-dwelling older adults (Phase 1 Study 2)

A convenience sample of Western Australia's community-dwelling older adults who volunteered to attend the World Café community-based participatory research forum was used. The forum was open to adults aged 60 years or older who live in the community (including those in retirement villages or independent living units, but excluding those who live in residential care facilities such as nursing homes). Community-dwelling older adults who could participate in conversation and discussion were included.

Efforts were made to recruit forum participants from as diverse backgrounds as possible to ensure a broad demographic representation in terms of age, gender, education and socioeconomic background. Recruitment of participants was publicised in various media formats and sources targeted for older adults to reach out to diverse groups of people in the community. The publicity campaign was initiated two months prior to the event with staged fortnightly media releases. Fortnightly announcements

and a pre-event interview on radio (http://chirb.it/xpHw2n) were scheduled. The event was publicised in free community newspapers, newsletters (includes electronic version) and flyers (Appendix H). In addition, publicity emails were released by the research team and community organisation's network. Online publicity such as an event website (http://engagehealth.co/), e-flyers and social media sites were established. Outreach via talks at local older adults' community groups and health professionals' events were organised. Finally, consumers' interest group members such as the Health Consumers Council, Arthritis Foundation of WA; health-related groups such as the Department of Health Network Bulletin; seniors' groups such as Retirees' WA, National Seniors' Association in WA, Probus clubs and independent living retirement villages, were contacted.

The research team could estimate the number of potential forum participants prior to the event as interested members of the community were requested to call or email the research team to express interest in attending and for catering purposes. Seventy-three older adults participated in the World Café forum held on 29 October 2014.

3.4.6   Expert reviewers (Phase 1 Study 3)

Experts from several areas of specialisation relevant to this study were identified using convenience and snowballing techniques, and invited to participate in the review. These experts were from areas of education, health promotion, falls prevention and psychology. There are various views on who can be deemed as an expert (Shanteau, 1992a). An *expert* is not the same as being experienced (Lampert & Clark, 1990, p. 22). Importantly, an expert has domain knowledge and cognitive skills (Shanteau, 1992a). That is, they possess both an extensive and up-to-date content knowledge of a specific domain area but also the logical thinking and insight that comes with experience (Shanteau, 1988, 1992a). At the same time, experts possess tacit knowledge (Wagner & Sternberg, 1985). *Tacit* knowledge is "knowledge that usually is not openly expressed or stated….is not directly taught or spoken about, in contrast to knowledge directly taught in classrooms" (Murray, 2002; Wagner & Sternberg, 1985, pp. 438-439). It has been suggested that experts interpret incoming data differently from novices (Berliner, 1988). An expert can monitor, understand and interpret events with greater insight (Sabers, Cushing, & Berliner, 1991). In their analysis of problems, experts appeared to involve higher-order pattern recognition, and

use resources which are available (Berliner, 1986, 1988; Chi, 2006; Shanteau, 1988). Compared to a novice, an expert's evaluation goes beyond just descriptive terms (Berliner, 1988). However, an expert may also be deemed as one by job titles or be selected by their peers within the profession based on recognition of the individual's ability "to perform at the highest level" (Shanteau, 1992b, p. 255).

In summary, based on traits, an expert has been described as possessing a holistic and coherent understanding of a complicated system of concepts and principles and their interrelationships compared to a novice (Hmelo-Silver & Pfeffer, 2004). In this study, an *expert* is seen as "an individual with special skills and knowledge with extensive experience within a context-domain…." (Chi, 2006, p. 24). Besides the understanding of what an expert entailed, there were two criteria for expertise in this study. Firstly, the experts should possess a relevant postgraduate academic qualification and secondly, they were currently practising in one or more of the areas of specialisation identified. A final purposive sample of 10 experts (nine from Australia and one from UK) agreed to participate as an expert reviewer in the study.

3.4.7 Quasi-experimental trial: Community groups who received the peer-led presentations (Phase 2 Study 4)

The group participants who attended these falls prevention presentations were community-dwelling older adults over the age of 60 years who belonged to community-based groups in the Perth metropolitan area such as Probus clubs (http://www.clubsofaustralia.com.au/Probus/Clubs-in-Western-Australia.html), Department of Veterans' Affairs (http://www.dva.gov.au/Pages/home.aspx), and Men's Sheds (http://www.mensshed.org/home/.aspx). Inclusion criteria comprised being aged 60 years or older, having attended a peer-led falls prevention presentation during the research Phase 2, and having the capacity to complete a questionnaire. Older adults who were living in residential care facilities or who were hospitalised were excluded.

Group sizes of community-dwelling older adults who attended falls prevention presentations were varied. The group size can range from small (6-15 persons), medium (15-40 persons) to large (40-100 persons). According to feedback from ICCWA, approximately 10% of peer-led presentations delivered were to small groups, 60% to medium groups, and 30% to large groups of older adults.

ICCWA's falls prevention presentations were delivered mainly to their target population which are older adults from predominantly English-speaking community groups. Though there are adaptions of their presentations and resources to suit older adults from other cultures, ICCWA has limited capacity to deliver presentations to non-English speaking or other cultural groups on a broader scale.

3.4.8 Consumer involvement in research: Role of community-dwelling older adults

Older adult involvement and participation as consumers in research is increasingly recognised as an important means to enhance the quality in health research and its outcomes (Cancer Australia, 2016; National Health and Medical Research Council (NHMRC), 2004; National Health and Medical Research Council (NHMRC) & Consumers' Health Forum (CHF), 2005). Older adult consumers bring unique insights based on their lived experience, including social and emotional issues that are of importance to the present research. Therefore, by involving older adults, the research process and decision-making should be more sensitive to their needs and preferences. Hence, outcomes of greater relevance and improvement in uptake by older adults are likely to be achieved.

Several frameworks regarding community participation have been proposed (Arnstein, 1969; Basch et al., 2012; Hill & Draper, 2011; Telford et al., 2004). The framework used in this research is the Ladder of Participation that is a continuum of low to high level of consumer involvement (Arnstein, 1969; McKenzie & Haines, 2011; McKenzie & Haines, 2014). It is beyond the scope of this thesis to discuss all the levels of consumer participation, so only the level *consultation* that is relevant to this research will be described. Consultation has been defined as "asking consumers for their views and using their views to inform decision-making" (Nilsen, Myrhaug, Johansen, Oliver, & Oxman, 2006, p. 4).

3.5 Data Collection and Procedure

This section describes the instruments used in both the qualitative and/or quantitative approaches of each study and the rationale for the techniques or instruments chosen. Further details can be found in the relevant chapter of each study.

3.5.1   Peer educators' focus groups and semi-structured interviews (Phase 1 Study 1)

Study 1, described in Chapter 4, was an exploratory study to gain an overview and insight to existing peer educators' perspectives on falls prevention programs where there was little published research. This study had two stages with their respective components: (1) a core research method of focus group interviews; and (2) subsequent semi-structured interviews, as a supplement component to elicit additional and more in-depth perspectives (Morse, 2010).

For the first stage and component, focus group interviews were conducted (Davidson, Halcomb, & Gholizadeh, 2013; Liamputtong, 2011). Each focus group interview was approximately one and a half hours in duration. It has been suggested that the ideal focus group should range from four to 10 participants and that three to five interview sessions should be conducted (Liamputtong, 2011). However, these factors can be flexible dependent on the constraints of the research study (Liamputtong, 2011). In the preparation stage, the primary researcher undertook Masterclass training in qualitative research of focus group and interviews. Focus groups were conducted by the primary researcher with two experienced qualitative researchers.

A focus group interview question guide was used (Appendix F). This comprised of 13 questions designed with the research aims in mind, but in collaboration with an expert qualitative researcher and the community engagement officer (Section 3.4.2). The questions are described in Chapter 4. This was followed by an explanation of the aim of the interview; ground-rules of the interview; the process of audio-taping; ongoing note-taking and an assurance of confidentiality. Each interview started with an introduction by participants including their name, their background and how they started as a peer educator. In this study's focus groups, the facilitator's role was to stimulate an open conversation and interaction amongst the participants. This was achieved by using probing questions to further explore and encourage the participants to share their beliefs, attitudes and experience as peer educators and of the program. Throughout the interview session, the facilitator ensured everyone had the opportunity to contribute to the conversation around each question. On occasions, the facilitator clarified or paraphrased participants' responses to check for accuracy in understanding. Nearing the end of each focus group interview, the facilitator briefly summarised the responses to each interview

question and provided an opportunity for additional responses. A debrief with a question guide was conducted between the primary researcher (facilitator) and the note-taker at the end of each focus group interview for the purpose of discussion regarding significant moments observed and to evaluate which participant would be appropriate for the subsequent interviews.

Following the focus group interviews, stage two of data collection used semi-structured interviews as a supplement component to the study (Morse, 2010). Two participants drawn from the earlier focus groups were chosen for the interviews. Each semi-structured interview was up to one hour in duration and was an opportunity for the researchers to explore the participants' perceptions in more depth to gain a richer understanding of the falls prevention program being investigated. The semi-structured interview was structured using a combination of conversational strategy within an interview question guide approach (Patton, 2002). The initial interview guide for the first participant consisted of ten questions (Appendix G) that were explored during the interview. These questions, derived from the focus group discussions, were open-ended to elicit more in-depth responses from the participant.

Subsequently for the second participant, the interview guide questions were expanded to 14 questions (Appendix G). These questions were modified from the basis of the feedback from the first participant's interview and by the research team. Each semi-structured interview ended with the main points summarised by the interviewer as well as a final verification by each participant.

Post-participation, a shopping voucher ($25) was provided to each participant of the focus group and the interviews to thank them for their participation. The community organisation offered to reimburse the participants for their travel expense because they were mostly pensioners and had volunteered their time to travel to attend the focus groups and interviews.

3.5.2 World Café community-based participatory forum (Phase 1 Study 2)

Study 2, as described in Chapter 5, was an explorative qualitative study conducted using a modified World Café approach (Jones et al., 2013). The World Café approach has been described as a staged, designed, "conversational process" with

a shifting network of interaction and special café format seating arrangements to create informality (Aldred, 2009; Jorgenson & Steier, 2013, p. 391). It is an interactive collaboration of insights and knowledge exchange of views on issues through constructive dialogue in large groups (Fouche & Light, 2011). This process is viewed as being respectful of people and their capacity to contribute, and seen as a mechanism for achieving a sense of community empowerment for those involved (Aldred, 2009; Brown & Isaacs, 2005).

The World Café approach is distinct from a focus group. The World Café format can be applied to a minimum of 12 participants and up to a maximum of 1,200 participants (People and participation project, 2012). Hence, there is potential to obtain a wider perspective with a larger group (People and participation project, 2012) through the World Café approach compared to more conventional focus groups (Krueger & Casey, 2009). The World Café approach requires a maximum of half a day consultation meeting and has also been reported to be easier to organise (Takahashi, Nemoto, Hayashi, & Horita, 2014) compared to the other community-based participatory methods such as Open Space Technology (Owen, 2008), Future Search (Weisbord & Janoff, 2010) or the Appreciative Inquiry (Watkins, Mohr, & Kelly, 2011). Moreover, the World Café approach has been evaluated to be more effective than another method known as Large Group Facilitation approach in improving the knowledge and understanding of the participants (Fullarton & Palermo, 2008). Studies in health research have used this approach successfully in engaging their target stakeholders (Broom, Brady, Kecskes, & Kildea, 2013; Jones et al., 2013) and with older adult participants (Emlet & Moceri, 2012; Stockigt, Teut, & Witt, 2013).

The World Café forum involved recruiting and bringing together a large group of community-dwelling older adults to meet and discuss a series of topics. The conduct of the forum followed the World Café's seven integrated principles (Brown & Isaacs, 2005; Fouche & Light, 2011). Briefly, these are:1) set context; 2) create a hospitable space; 3) explore the questions that matter; 4) encourage everyone's contribution; 5) cross-pollinate and connect diverse perspectives; 6) listen together for patterns, insights and deeper questions; and 7) harvest and share collective discoveries (Brown & Isaacs, 2005, p. 40) (Table 3.2). Care was taken to ensure the forum was conducted in a safe, accessible and comfortable venue for older adults.

Table 3.2   **Falls Prevention Community-Based Participatory Forum Using the World Cafe's Seven Principles**

Principle	Summary	Application to Study (Falls prevention)
1. Set context	Purpose Participants Parameter	Purpose: "Community Café" theme for forum Participants: Older adults Parameters: • Location- convenient, easy to locate. Central with public transport • Resources - time and budget, equipment, supplies and furnishings • Role of café table facilitators & etiquette • Main facilitator
2. Create hospitable space	Safe, inviting, warm, friendly, informal space A café learning environment	• Set the room to look and feel like a café • Theme of café • Small tables • Music, coffee/tea, informal attire, hand-drawn graphics • Café greeters welcome participants in the foyer • Name tag-first name only
3. Explore questions that matter	Café assumptions and café etiquette	• General introduction • Introduce café forum assumptions, ground rules and etiquette • Orientation to Sticky Post-it Notes, resources
4. Encourage everyone's contribution	"Provide the opportunity for participants who are more reflective, or who learn visually, to contribute through attentive listening, drawing on table cloths or making verbal offering later in the conversation" - Brown and Isaacs (2005) pp. 102	• Use Sticky Post-it Notes to encourage individual to express their thoughts clearly but as briefly as possible • Others to listen with respect and appreciate others' perspectives
5. Cross-pollinate and connect diverse perspectives	"Intentional architecture of engagement creating the conditions for the arrival of serendipitous discoveries, new patterns of meaning and the voice in the centre of the room" - Brown and Isaacs (2005) pp. 117	• Table facilitators to circulate to other tables at each round • Older adults will remain at the same table
6. Listen together for patterns, insights and deeper questions	Use energising questions. A minute of silence to think and reflect at the start of each topic or question	• Progress to a topic or questions after each round
7. Harvest and share collective discoveries	Member-checking	• Each table facilitator to share discoveries as a whole at the end of the forum session, led by the main facilitator

Based on Brown and Isaacs (2005).

For this study, a modified falls prevention World Café approach (Jones et al., 2013) via the community forum was held to consult and engage older adults themselves about their views on various aspects of falls prevention information. At the preparation stage (prior to the forum), topic areas and questions for the forum were designed by the research team in collaboration with the community organisation and consultation with older adult members of a community group. The list of questions is described in Chapter 5.

At the preparation stage, café table facilitators were recruited from healthcare professional and academic networks. Two weeks prior to the forum, twelve table facilitators were briefed (Appendix I) and were provided with some information about the World Café approach, current falls prevention evidence relevant to this study, the café questions and the schedule of the planned community forum. Each facilitator had the opportunity to choose the question they preferred to facilitate. Community-dwelling older adults who were interested in attending the forum were requested to call the research team's reception to register their interest and to state any dietary requirement.

The World Cafe's conversational process was guided by the topic areas and questions to elicit participant's perspectives. Several "round-robin" small group conversations led by cafe table facilitators explored these areas. Each round of conversation lasted 15 minutes. At the start of each round, the café table facilitator would introduce their topic for discussion and encourage the conversation gradually with probing questions. During each round, the forum participants conversed, discussed and captured their views on individual small pieces of papers or sticky notes provided. Each café table facilitator made notes of the emerging ideas, questions and suggestions. At the end of each round, these notes were collated and placed on a large sheet of paper and the café table facilitators moved onto the next table of participants. In this study's forum, for safety considerations, the World Café approach was modified as forum participants were not required to move and change seating at the end of each group conversation. By the end of the forum's conversational process, the forum's main facilitator led the café table facilitators in summarising the main key points of each question to all forum participants. Evaluation feedback (Appendix J) was elicited from participants at the end of the forum before they departed the venue.

3.5.3   Expert review: Mixed methods evaluation (Phase 1 Study 3)

Study 3, as described in Chapter 6, involved experts from a number of key areas of specialisation including falls prevention and education being invited to participate as an expert reviewer (experts described in Section 3.4.6) of the existing peer-led falls prevention presentations. Experts were asked to review, critique and rate the recording of three peer-led one hour presentations that were conducted in the community.

The measuring instrument used by the expert reviewers was a questionnaire (Appendix L) that was initially developed from reviewing key adult learning literature. The purpose-developed questionnaire included research evidence in adult learning (Knowles, 1970; Merriam & Bierema, 2014), a matrix of adult learning principles by frequency of use (Trompf & Sale, 2001) and the Queensland Occupational Therapy Fieldwork Collaborative online resource (Queensland Occupational Therapy Fieldwork Collaborative, 2005). Subsequently, the matrix of adult learning principles and constructs of the questionnaire items were adapted via discussion and consensus by the research team for this study. That is, the questions addressing each key principle were further modified to integrate current falls prevention findings to the research context involving older adults in the community being investigated.

Validity and pilot trial of the Expert Review Questionnaire

Face validity of the questionnaire was determined by two postgraduate researchers who had experience in designing questionnaires. The face validity questions were as recommended by Dow et al. (2013). These included asking if the questionnaire was user-friendly, if it was easy to understand and if the domains were suitably described. This part of the questionnaire development aimed to identify areas of omission and areas requiring item statement modification.

Furthermore, content validity of the questionnaire was undertaken to determine whether the questions were relevant to the measurement of the concepts being studied (Lynn, 1986). Four individuals with falls prevention expertise, not part of the expert panel, were selected and invited to determine the questionnaire's content validity. The selected experts included falls specialists who have been active in community-based falls prevention education and a falls expert researcher at a local university. Each expert was presented with a copy of the draft questionnaire and

requested to assess and rate the items in terms of content relevance to the study's purpose. Further details of the questionnaire including its reliability can be found in Section 3.6.3 and in Chapter 6.

Two researchers experienced in the area of gerontology and research were then asked to run a pilot trial of viewing a video of the peer-led falls prevention presentation whilst completing the finalised questionnaire.

3.5.4 Quasi-experimental trial of peer-led education program (Phase 2 Study 4)

A pre-test post-test self-administered, semi-structured participant questionnaire was used to evaluate the education program (De Vaus, 2014; Guyatt, Jaeschke, Feeny, & Patrick, 1996).

The questionnaire used a five-option Likert scale. The Likert scale was chosen as it is the most frequently used scale in psychology and education for rating beliefs, opinions and attitudes which cannot be measured precisely (Hartley, 2014). This scale has also been deemed "easier to administer and easier to interpret" than other instruments (Juniper, Guyatt, & Jaeschke, 1996, p. 52) and it measures aspects of "intensity, extremity and direction" (De Vaus, 2014, p. 107). Although there is no agreement in the literature about the number of response options in a Likert scale (De Vaus, 2014; Juniper et al., 1996) a five-option continuum has also been proposed for older adults as it has been reported as eliciting better response rates (Carp, 1989). A five-option scale provides good discriminatory ability (Lee & Paek, 2014) and has been determined to be more reliable compared to fewer options on the scale (Lissitz & Green, 1975). In comparison, a three-option scale may be "insensitive to real differences" (De Vaus, 2014, p. 107).

Striking a balance in the length of a questionnaire should be a consideration during development of the questionnaire (Foreman & Kleinpell, 1990). The Participant Questionnaire completion for Study 4 was kept to a time ranging from five to fifteen minutes, including responses to the open-ended questions in the questionnaire. This was because previous research has found that using a shorter questionnaire improves response, for example, a single-sided questionnaire is preferred to a double-sided questionnaire (Edwards et al., 2009). If the questionnaire

is too long, some older adults may experience physical and cognitive fatigue in completing the questionnaire (Foreman & Kleinpell, 1990). The initial (pre-presentation) questionnaire was double-sided because of the need to gather socio-demographic data but subsequent Participant Questionnaires (post-presentation and one month follow-up) were shorter in length.

In addition, the wording, layout, and format of the Participant Questionnaire underwent several iterations during the validation process before being finalised. This included the questionnaire's "readability" (Flesch, 1948, p. 221). The recommended readability for older adults to ensure that they understand any written information ranges from grade three to eight, and should be kept simple without jargon (Chubaty, Sadowski, & Carrie, 2009; Foreman & Kleinpell, 1990; Sadowski, 2011). The questionnaire was assessed to be at a level of Flesch-Kincaid Grade seven (Flesch, 1948).

The challenge in conducting research with older adults is acknowledged (Fudge, Wolfe, & McKevitt, 2007; McMurdo et al., 2011; Samelson et al., 2008). Non-response rates with questionnaire use and inconsistent responses have been reported to be more serious with adults aged over 65 years compared to younger adults (Colsher & Wallace, 1989; Herzog & Rodgers, 1992). Moreover, a "social desirability bias" (Wallace, Kohout, & Colsher, 1992, p. 131) in studies of older adults may also occur. This bias is a tendency to provide an answer that would appear "socially acceptable" (Wallace et al., 1992, p. 131), for example when responding to questions such as self-perceived rating of health. In addition, older adults as a group have been shown to be less likely to have encountered standardised questionnaire-like scale format compared to younger adults (Wallace et al., 1992). As these age-related changes have the potential to influence performance and data quality (Rodgers & Herzog, 1992), attention and care in the conceptual and methodological stages were addressed through the process of establishing the Participant Questionnaire and evaluating the program (discussed in Chapter 7 and Chapter 8).

Postal questionnaires were used in the final stage of seeking the participants' responses in the intervention trial, one month after attending the presentation. Recommendations from large systematic reviews including one with 292 RCTs of 258,315 participants (Edwards et al., 2002; Edwards et al., 2007; Edwards et al., 2009) have described contact method and other considerations to improve postal

questionnaire response rate. Considerations including notice such as a pre-notification telephone call of an expected questionnaire in the mail; a university sponsorship; mentioning an obligation to respond; and reminders with a second copy of the questionnaire (Edwards et al., 2002; Edwards et al., 2009; Rodgers & Herzog, 1992) have been suggested. Inclusion of a reply-paid envelope, assurance of confidentiality and indications of a university-originated questionnaire further improved response rates (Edwards et al., 2009; Wallace et al., 1992). These considerations were incorporated into the research as detailed in this chapter and in Chapter 8.

During Phase 2, a trial was conducted to evaluate the intervention in Study 4. The overview of the trial is illustrated in Figure 8.1 and described in detail in Chapter 8. The community engagement officer from ICCWA was the key person who recruited and trained new volunteer peer educators who formed part of the intervention, as well as providing support to the existing peer-led falls prevention program and other responsibilities as discussed in Section 3.4.2. Due to limited resources and for pragmatic reasons during Phase 2, the data collection for the control group was conducted first, followed by the recruitment and training of new volunteer peer educators (described in Chapter 7) and subsequently, data collection for the intervention group.

In Phase 2, the pre-data collection stage of the presentation, information about the research such as the Participant Information Sheet detailing the background of the study, aims of the research and involvement, consent form and initial questionnaire were available to the community engagement officer for inviting older adult groups to participate in the research. The Participant Questionnaire (Appendix N) was completed by participants immediately prior to, and then immediately following the peer education presentation. Steps were taken to minimise sample attrition. For the one month follow-up time point, each participant was called and advised about an upcoming questionnaire in the mail that was later sent out with a pre-paid envelope. Participants were also encouraged to contact the researcher if they faced any difficulties in completing the questionnaire. Reminders via mail or a telephone call were sent for those who did not return the questionnaire within two weeks of the deadline.

3.6   Data Analysis

This section describes the chosen approach and steps taken to analyse the data of each study as well as the strategies to enhance the trustworthiness, rigour, validity, and reliability of the findings. Further details can be found in the relevant chapter of each study.

Unless specified, quantitative data in all the studies were analysed using statistical package SPSS® (Statistical Package for Social Sciences, version 22 for Windows). All the qualitative data in the studies were managed using NVivo version 10 for Windows (QSR International Pty Ltd, 2012).

3.6.1   Peer educators' focus groups and semi-structured interviews (Phase 1 Study 1)

Study 1, described in Chapter 4, used the same group of data source (peer educators) but utilised the two different research methods [focus group interviews (core component) followed by semi-structured interviews (supplementary component)]. Data and data analysis for the core (focus group) and supplementary (interview) components were kept separate until they were combined at the final point of interpretation towards a results narrative.

The focus group interview audiotapes were transcribed verbatim by the primary researcher. An inductive analytical approach of the transcripts was applied (Glaser, 1965; Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). This was an iterative process of studying the data, going through the stages of data reduction via coding, interpreting and identifying patterns and progressing towards key themes being agreed upon between at least two investigators.

At the initial stage of analysis, that is data reduction, two independent researchers manually examined and clustered the data into common descriptive key words and phrases that may signify key concept first level codes relevant to the study. A code is a label for a category. These first level codes were further re-examined to identify common relationships or patterns progressing towards more abstract second-level codes or categories. Further iterations were conducted to determine final codes and emerging key themes (patterns). The latter were displayed in a thematic

conceptual matrix. Inferences, interpretations and tentative conclusions were drawn to explain peer educators' perceptions of their role in the falls prevention education presentations for community-dwelling older adults.

During the process through to derivation of the final key themes, various steps were undertaken to enhance the trustworthiness and to broaden the interpretations of the findings (Lincoln & Guba, 1985). Investigator triangulation (Denzin, 1989) at data collection and data analysis of the focus group and semi-structured interviews were planned to minimise primary researcher bias interpretation. At the end of each focus group's data collection, the note-taker discussed immediate significant moments or events with the primary researcher. At the data analysis stage, a second researcher examined, coded and analysed the data independently from the first researcher. Then these two researchers compared and discussed similarities and differences in their coding and categories. This resulted in a wider scope in perspectives of the codes and categories in the preliminary emerging themes.

Using the emerging themes from the focus group interviews (core component) as a pre-determined guide, the qualitative data and content from the semi-structured interviews (supplement component) were examined and compared to reject or affirm the earlier findings as a form of method triangulation (Denzin, 1989). The meaning within the semi-structured interviews was determined by two researchers who reviewed the qualitative data independently to compare the content. The use of the constant comparative analytical approach (Glaser, 1965; Onwuegbuzie et al., 2009) at the final confirmatory stage was another affirmation of the resultant themes and interpretation.

Differences in interpretations were thoroughly explored, discussed and refined with the whole research team until consensus was reached and the final key themes identified (Braun & Clarke, 2006; Miles et al., 2014). The use of member checking with participants at a subsequent meeting was a further step to seek verification of the final thematic outcomes of the study and as a corroboration of the interpretation (Lincoln & Guba, 1985).

3.6.2   World Café community-based participatory forum (Phase 1 Study 2)

Study 2, described in Chapter 5, was a World Café community-based participatory forum attended by older adult participants. Participants' responses to topic areas of discussion raised in the forum were written on small pieces of paper. Table group and forum discussions were also collected on large summary sheets. These were all collected, collated and transcribed. Subsequently, using the inductive thematic analysis approach, two researchers analysed their data independently of each other. The data were initially analysed using descriptive coding and further revised by categorising coded data into common themes or patterns repeatedly over a few cycles (Miles et al., 2014). Then the two researchers discussed their initial patterns to arrive at emerging key themes, and an initial conceptual framework over several meetings. To further enhance the trustworthiness of the findings, a third researcher who was a falls prevention expert from the team, reviewed the emerging key themes and initial framework (Lincoln & Guba, 1985). A discussion of the findings amongst the research team was conducted until a consensus on the final key themes was reached.

3.6.3   Expert review: Mixed methods evaluation (Phase 1 Study 3)

For study 3, described in Chapter 6, statistical analyses were conducted using Stata IC 13 (StataCorp, 2013). Inter-rater reliability of the mean results from the ratings of all 10 experts for each domain was established using Intraclass Correlation Coefficient (ICC two-way random effect model).

Responses from the open-ended items in the questionnaire together with the experts' overall evaluation summary were first imported to NVivo version 10 for Windows (QSR International Pty Ltd, 2012). Thematic analysis of the qualitative data was performed (Miles et al., 2014). Using investigator triangulation to enhance trustworthiness of findings, two researchers conducted the process of coding, data reduction and data analysis independently of each other (Lincoln & Guba, 1985; Miles et al., 2014).

The results of the mixed methods study design's qualitative data were synthesised with the quantitative data simultaneously to present the outcome in a conceptual framework. In addition, the experts' qualitative responses, summary and feedback were collated into a table of recommendations and these were revised through a series of discussions by the researchers.

3.6.4 Evaluation of peer-led falls prevention education program (Phase 2 Study 4)

For Study 4 (to be described in full in Chapter 8), quantitative data were analysed using statistical package SPSS® (Statistical Package for Social Sciences, version 22 for Windows). Data were summarised using descriptive statistics. A p-value $<.05$ was considered significant for all analyses.

For the quantitative data collected, linear mixed modelling (Bryk & Raudenbush, 1987) using the backwards elimination procedure was initially selected to examine the outcomes for the between-group differences of the control and intervention groups over three points of time (pre and post presentation, and one month follow-up) and to determine the significant predictors (at p-value .05). Linear mixed modelling was chosen in this case of repeated measures because the assumption of independence of observations underlying traditional group mean comparison procedures (e.g. ANOVA) was likely to be violated. In addition, linear mixed modelling can accommodate violations of normality and homogeneity of variance. However, linear mixed modelling makes an assumption that the residuals of the model are normally distributed (Bryk & Raudenbush, 1987). The data were assessed to determine if the assumption of normality applied (Bryk & Raudenbush, 1987). If the assumption was violated, the distribution of the data was reviewed. In the case of bimodal distributions, then the data would be dichotomised. Rating of "Strongly Agree" and "Agree" would be recoded to "Agree" or 1 and "Neutral", "Disagree" and "Strongly Disagree" would be recoded to "Disagree" or 0. Consequently, using the significant predictors of the linear mixed modelling, Generalised Estimating Equations (GEE) (Liang & Zeger, 1986) were run instead. Using GEE was advantageous in modelling the relationship between the binary repeated outcome measures (non-normal distribution) and association with multiple independent variables (continuous or categorical covariates) (Williamson, Bangdiwala, Marshall, & Waller, 1996). The independent variables were participants' sociodemographic information. Separate GEE models were run for each of the seven questionnaire outcomes to examine changes over time and between group differences. Estimates for odds ratios (OR) for logistic regression were reported with accompanying 95% confidence intervals and associated p-values.

Deductive content analysis of the qualitative data was used for Study 4 which was conducted in Phase 2. This deductive approach is a process of coding qualitative data according to a pre-determined categorisation matrix constructed from existing data and information available in investigation and subsequently looking at the frequency counts of the categories and subcategories (Elo & Kyngas, 2008; Graneheim & Lundman, 2004). A category was deemed as a group of similar themes, meaning, or concept, and its content was expanded further into sub-categories (Elo & Kyngas, 2008). In this research, new categories were created to accommodate data that could not fit into the pre-determined categories, leading to a refinement of the existing information in the area (Hsieh & Shannon, 2005). Investigator triangulation with two researchers coding the findings was undertaken to enhance the trustworthiness of the findings (Denzin, 1989; Lincoln & Guba, 1985).

3.7   Summary of Chapter

This chapter provided an overview of the methods for the research described in this thesis including the design, setting, procedure and analyses of the research in the community. A mixed methods research design was used across the two phases of this research. Three studies were conducted concurrently in Phase 1. Subsequently, a fourth study was conducted in Phase 2 that consisted of the design, development and evaluation of a contemporary peer-led falls prevention education program.

Chapter 4

Exploring Peer Educators' Views About How Peer-Led Falls Prevention Education Should be Provided for Community-Dwelling Older Adults – A Qualitative Study

4.1   Chapter Outline

This chapter describes Study 1 (Phase 1) which was a qualitative study conducted to explore the perspectives of a group of peer educators about their role in delivering the peer-led falls prevention education for community-dwelling older adults.

4.2   Abstract

A two-stage qualitative inductive constant comparative design was used. In Stage One (core component) focus group interviews involving eleven participants were conducted. During Stage Two (supplementary component) semi-structured interviews with two participants were conducted. Data were analysed in an inductive approach by two researchers independently. Key themes were identified and findings were displayed in a conceptual framework.

Peer educators were motivated to deliver educational presentations and importantly, to reach an optimal peer connection with their audience. Key themes identified included both personal and organisational factors that affect educators' capacity to facilitate their peers' engagement with the message. Personal factors that facilitated message delivery and engagement included peer-to-peer connection and perceived credibility, while barriers included a reluctance to accept the message that they were at risk of falling by some members in the audience. Organisational factors, including ongoing training for peer educators and formative feedback following presentations, were perceived as essential because they affect successful message delivery.

Peer educators have the potential to effectively deliver falls prevention education to older adults and influence acceptance of the message as they possess the peer-to-peer connection that facilitates optimal engagement.

4.3   Background

Peer-led education (see Chapter 2 Section 2.6) is one recommended approach to facilitate translation of falls prevention messages to community-dwelling older adults (Peel & Warburton, 2009; Snodgrass et al., 2005). Behaviour change models suggest that peers could be effective because they are a credible source, provide role modelling and deliver instructions to perform the new behaviour which may be persuasive in promoting positive behavioural outcomes (Michie et al., 2000; Michie et al., 2013). Furthermore, for adults to adopt behaviour change, the health information should be delivered in a manner consistent with adult learning principles (see Chapter 2 Section 2.5.1.3) These principles include recognising that adults are self-directed learners who need to understand the rationale for what they are learning.

Few studies have investigated the impact of peer education on falls outcomes. In one study, 26% of older adults who received falls prevention peer education made changes to reduce their risk of falling (Allen, 2004). In other studies, peer education resulted in uptake of falls prevention actions but there was no significant reduction in falls (Deery et al., 2000; Robson et al., 2003). However, these studies did not explore the views of peer educators about their role in delivering falls prevention messages to an older adult audience and their perceptions about how falls prevention messages can be delivered effectively to promote behaviour change. Previous studies have also not specifically investigated the role and relationship of peer educators and of their coordinating organisation.

Therefore, the purpose of Study 1 was to explore the perspectives of peer educators about their role in delivering peer-led falls prevention education for community-dwelling older adults and subsequently, to inform future refinements for peer education falls prevention programs.

4.4   Study Design and Methods

4.4.1   Study design

A two-stage qualitative inductive constant comparative design (Glaser, 1965; Onwuegbuzie et al., 2009) was used (Figure 4.1). This design was chosen to gain an in-depth understanding of the numerous interpretations from the peer educators about the program in which they were involved. In Stage One, focus group interviews (core component) were used to gain the peer educators' perspectives of their role and effectiveness in delivering the falls prevention message. The emerging categories identified from the preliminary analysis of data obtained from these focus group interviews were further explored in subsequent Stage Two semi-structured interviews (supplementary component) to elicit a broader and more in-depth scope to the preliminary findings (Morse, 2010).
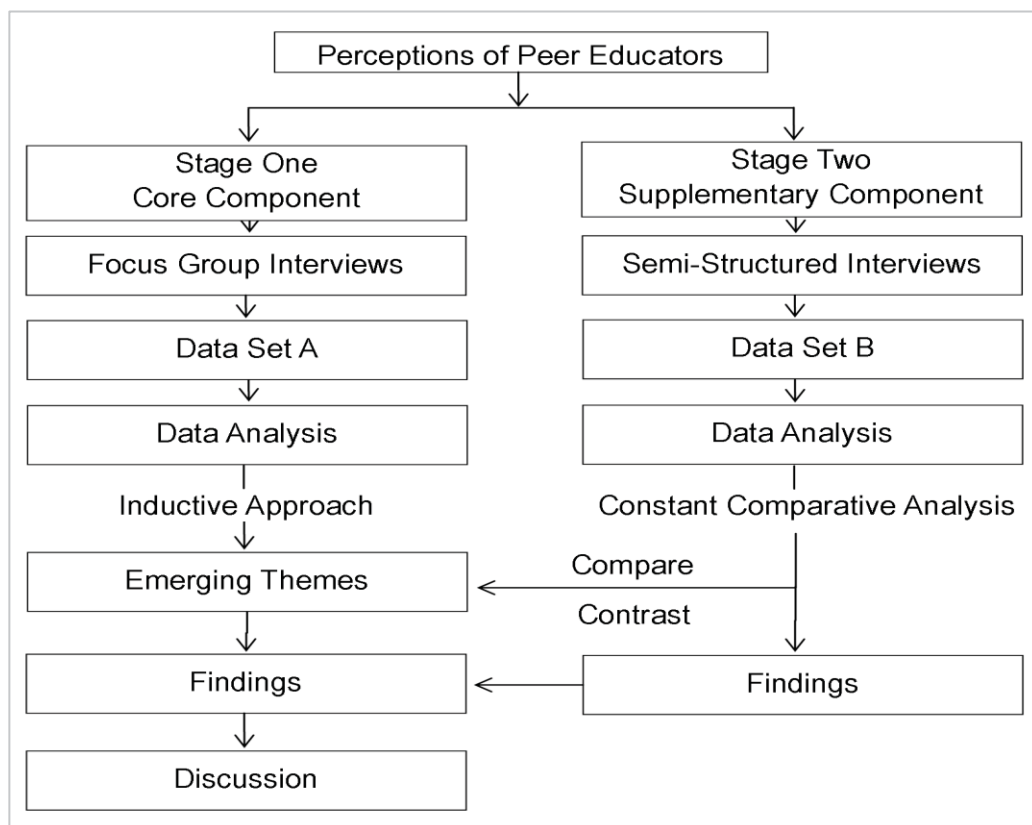
Figure 4.1   Research Design for Exploring the Perceptions of Peer Educators About Delivering Falls Prevention Education to Community-Dwelling Older Adults

4.4.2 Participants and setting

A purposeful sample was recruited consisting of all peer educators who delivered falls prevention presentations to groups of community-dwelling older adults living in Perth metropolitan areas, Western Australia. In this study, peer education was defined as a one-peer-to-one group approach, delivering a one-off session on falls prevention health-related education.

Peer educators in the program are volunteers who are trained to conduct presentations and raise awareness of falls prevention to the broader community. They are mostly retired and highly educated older adults who choose to volunteer to contribute to the community. They form part of a large community organisation that focuses on providing education, promotion and resources directed towards injury prevention and community safety in Western Australia. The community organisation recruits interested older adults who are keen to volunteer for this peer education program as well as their other volunteer activities. Falls prevention is a key focus of the organisation and it conducts training for new peer educators to deliver falls prevention education presentations. The organisation also organises the schedule of presentations and provides support and resources for the peer educators.

4.4.3 Data collection and procedure

Data collection occurred in two stages. In Stage One, the focus group interview technique was used as a method of collecting multiple perspectives in a single short session (Davidson et al., 2013).

All peer educators (n=11) were invited by the community engagement officer to participate in focus group interviews and all accepted. The focus group participants' profile and characteristics are presented in Table 4.1. Eight (73%) of the participants were less than 75 years old and five (46%) had delivered peer education presentations for more than five years. Four (36%) identified themselves having a background in education.

Table 4.1   Demographic Profile of the Focus Group Participants.

Characteristic	n=11 (%)
Age	
65-74 years old	8 (73)
75-84 years old	2 (18)
85+ years old	1 (9)
Gender	
Female	7 (64)
Male	4 (36)
Education	
Secondary	5 (46)
Trade	1 (9)
Diploma	1 (9)
University	4 (36)
Status	
Completely retired	9 (82)
Partly retired	2 (18)
Former Primary Employment	
Education	4 (37)
Health	2 (18)
Business and Legal	4 (36)
Manufacturing	1 (9)
Years as Volunteer Peer Educator	
11 months of less	1 (8)
1-5 years	5 (46)
6+ years	5 (46)

Note: Data Analysis by SPSS Version 22

Two focus groups were conducted in May 2013. Group One was comprised of six participants and Group Two was comprised of five participants. Focus group interviews were conducted at the community organisation's office meeting room where the peer educators meet on a regular basis, thereby ensuring the study's participants would find the surroundings familiar to them and be comfortable. The interviews were also held at dates convenient for the peer educators to maximise participation. At the commencement of each focus group interview, the focus group facilitator (primary researcher) introduced herself and her fellow researcher co-facilitator and note taker, explained the aim of the interview and the process of audio-taping and ongoing note-taking and sought an undertaking of confidentiality. The note-taker sat unobtrusively away from the group. Each focus group interview lasted

about one hour in duration. Refreshments were provided throughout the discussions.
The note taker discussed immediate, significant moments with the primary researcher
while on-site after completion of each focus group interview.

The researcher used an open-ended interview guide that was informed by
research in peer education with older adults in the area of health (Karwalajtys et al.,
2009; Mosack et al., 2012; Vernon, 2010) and by an expert in falls prevention. The
guide was further reviewed by the program training coordinator, thereby ensuring the
trustworthiness of the data within the context of delivering peer-led falls prevention
education. The focus group interview guide (Appendix F) included open-ended
questions related to the following:

- Role of peer educator
- Skills that they perceived as being required in their role as peer educator
- Challenges they faced as a peer educator and strategies they employed to address those challenges
- Factors they felt influenced their effectiveness in delivery of their presentation
- Feedback about how they perceive the support from the community organisation in provision of training and resources in their role as peer educator

Stage Two's supplementary component included two participants who were
invited to participate in a one-on-one semi-structured interview to confirm and further
explore preliminary findings from the focus groups. Their selection was based on
insights they provided during their focus group interviews.

Each semi-structured interview was an hour in duration and was undertaken
in a meeting room at the community organisation. The semi-structured interview
involved a combination of conversational strategy within an interview question guide
approach (Appendix G) (Patton, 2002). The questions were identified from the focus
group findings. They were open-ended and phrased to explore the topics in further
scope and depth with the participant. The interviewer, a physiotherapist experienced
in falls prevention with older people, summarised the main points at the end of each
interview to seek final verification from the participant.

4.4.4　　　Data analysis

Data sets and analyses for the core and supplementary components were kept separate until the analyses were completed, then each analysis was incorporated into the results narrative (Figure 4.1). The data from the supplementary component verified and added scope to the findings of the core component.

4.4.4.1　　　Focus group

The primary researcher first listened to the focus group interview audiotapes before transcribing them verbatim. An inductive analysis of the content of the focus group transcripts was applied to analyse the data (Braun & Clarke, 2006; Miles et al., 2014). Two researchers conducted data reduction and data analysis independently and then met to finalise codes and themes through discussion to arrive to a consensus. This provided investigator triangulation (Denzin, 1989), which aimed to increase the rigour of the analyses. Preliminary emerging themes (patterns) were visually displayed in a conceptual framework (Miles et al., 2014) (Figure 4.2). Subsequently the primary researcher met with the focus group participants to seek verification of the emerging themes. Any differences between the participants and the researchers were resolved by consensus.

Interviews and integration with focus groups

The data from Stage Two's semi-structured interviews were then analysed by the two researchers who independently coded the data and compared emerging themes with those from the focus group interviews as a pre-determined guide. This methodological triangulation was intended to increase the rigour of the findings. The conceptual framework (Figure 4.2) was developed from the focus group interviews and confirmed by the semi-structured interviews.

4.5　　Findings

The analyses identified that peer educators were motivated to present their message and sought to engage in a manner that optimally connected them with their older adult audience. They perceived that this was essential to facilitate acceptance of the falls prevention message. Two main categories were identified as affecting the levels of engagement with the older adults that was achieved; these were personal factors and organisational factors (Figure 4.2).
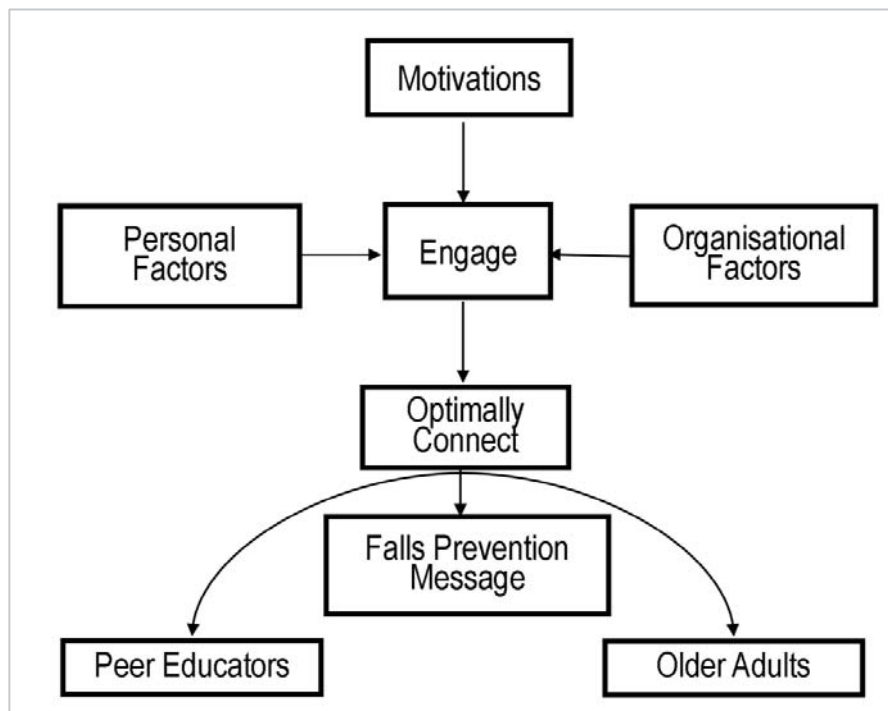
Figure 4.2   **Conceptual Framework Describing Peer Educators' Perceptions of the Mechanism of how they Deliver the Falls Prevention Message to Older Adults**

4.5.1   Motivations

The focus group participants reported that they were enthusiastic to share the falls prevention message with their peers because they perceived through their own experience, including through family and friends that the message was personally relevant "this message has done me a lot of good" (Participant 10) and "I would like to see it succeed as so many people I know have had falls" (Participant 1). They also described strong personal motivation and enthusiasm for volunteering to deliver falls prevention messages as "I considered it was up to me to give something back" (Participant 11). Supplementary interviews with Participant 1 and 5 confirmed the focus group findings regarding motivation to deliver the falls prevention message. They expressed strong beliefs that the falls prevention message was important and was a worthwhile program to be disseminating in the community. One participant shared:

> "I would like to see it succeed because most of the people I know have had falls including myself and some of the factors that come into the talks are so simple to implement it is such a shame if we don't get that message out." (Participant 1)

4.5.2 Personal factors

Personal factors that facilitated message delivery and engagement included peer-to-peer connection and perceived credibility, while barriers included limited access to resources.

4.5.2.1 To engage using the peer-to-peer connection

The focus group participants perceived that as peers they could engage in a peer-to-peer communication with their older adult audience because they could strongly relate to them "we are all one together" (Participant 5). They shared that they felt able and comfortable to encourage their older adult audience with "we can do this" instead of "you can do this" (Participant 5) because of the peer-to-peer connection and as a role model because "I can do it, you can do it" (Participant 11). They described peer-related humour and anecdotal examples during presentations that they used to capture their audience's attention.

Participants 1 and 5 (supplementary interviews) elaborated that they were in a better position to communicate and deliver the message than a younger person because they could connect to their audience as peers "it is that relating, that we are all doing the same sort of things or at the same stage of life" (Participant 5). In addition, they felt that it would be ideal to communicate and emphasise the health, social and emotional consequences of a fall at this older stage of life with "a disruption to your life, and your family's lives, the costs associated with it as well as time and intrusions" but "without actually frightening people" (Participant 1). These two participants also expressed a desire to further engage their older adult audience in their message by goal-setting and action planning with "those who came can take home three points that they then apply to their life and so get benefit from" (Participant 5).

4.5.2.2 To engage with credibility

Credibility was identified as being important in delivering the falls prevention message and there was a strong recommendation that preparation and planning for each presentation was required. The focus group participants advised, "make sure you are familiar with the material and able to answer questions" (Participant 4). They also described being proactive in acquiring hands-on presentation skills through observing

more experienced peer educators. These focus group participants emphasised repeatedly that they required access to current evidence and information for their presentations, as it "can be embarrassing if you are challenged and your data is wrong" (Participant 1). However, establishing credibility was also perceived as "being as good an example as I can be" (Participant 1) and "the need to be role models in terms of how we go about things" (Participant 4).

4.5.2.3   Perceived barriers to engagement

The focus group participants nominated perceived barriers in engaging the audience in the presentations, which they reflected could possibly contribute to the audience's willingness to take on the falls prevention message. They explained that these barriers included the perceived receptiveness from an older adult audience, time limitations for the presentations and access to equipment at the venues.

Anecdotal feedback they received regarding some presentations indicated that the older audience did not think that falls would happen to them in that "they say we're too active that's not going to happen to us so you can get that resistance" (Participant 6). Like the focus groups, the interviewed participants reiterated that an older adults' approach is "it won't happen to me" (Participant 5) or "that was interesting… I don't think they do anything about it" (Participant 5). They were keen to "to make them aware that they are at risk" (Participant 5).   One interviewed participant elaborated on the rationale of the peer educators' desire to address a "younger audience" with comments such as "we are chipping around the edges...we have to get to the younger audience to actually prevent people that start to fall, at 60 or 60ish" (Participant 1). However, this barrier did not lower the peer educators' motivation because "even if you reach one person and stop one person from falling, that's something" (Participant 11).

As older adults, the peer educators also recognised that some of the audience may have age related changes which could affect their ability to understand the presentation and hence receive the falls prevention messages "we must realise the difference in age as to retention levels and ability to perform" (Participant 9). Some participants expressed a degree of uncertainty about the effect of their falls prevention

presentation with comments such as "when you give information handouts whether they take them home and read them" (Participant 3).

4.5.3   Organisational factors

The organisational factors category reflected peer educators' perceptions about how the community organisation provided them support to deliver an effective falls prevention message.   These emerging themes were ongoing training and formative feedback following the peer educators' presentations, resources and equipment for the audience and audience profile.

4.5.3.1   Requirements for support with training and feedback

The participants' views about training were influenced by their life skills, work and personal experience (Table 4.1) before retirement.   Presentations were viewed as a "combination of information and delivery" (Participant 2) and it was perceived that each needed to be optimal if they were to deliver their falls prevention message effectively.   Therefore, the focus group participants expressed strong interest in receiving formative feedback about their delivery.   However, there was considerable debate amongst these participants whether formative feedback should be from the community organisation or from an external party deemed more suitably qualified to assess their delivery.   They further elaborated that feedback on their presentations needed to be constructive in terms of "direction on how you might improve if you need to" or "this area needs to be, like toughened up, changed or altered" (Participant 2). The peer educators were also keen to obtain meaningful feedback from the audience so that they could feel more assured and improve in "getting the message over" (Participant 11).

In addition, the interviewed participants further elaborated and were also consistent in their suggestions about requiring support and expressing a desire to undertake further training for their role.

> "I would like somebody who is a public speaker to come out and sit in on a talk, maybe once a year and give some feedback as to how it is going and how it could be improved so that would be support" (Participant 1).

Other suggested training opportunities included "fine-tune it at volunteer meetings" (Participant 5) and seeking further feedback to upgrade their skills. They thought it could include the audience's feedback from their presentations. Specifically, "if it was something I wasn't doing or wasn't getting the message across and of course, the positive things like they learned a lot" (Participant 5).

Furthermore, the two interviewed participants also suggested that new peer educators could benefit from more training including "a bit more theory" as "the more knowledge they have, the better they can present it" (Participant 5). They considered that having more structure is helpful for those who have not had much prior knowledge or presentations. Flexibility in delivery was identified as being beneficial for those with knowledge and confidence.

4.5.3.2 To support with resources and equipment

Most focus group participants strongly emphasised that the resources (brochures, videos, questionnaires) should be "up-to-date" and at an appropriate level of comprehension for the older adult audience. Again, as older adults, they recognised that "we cannot assume that they can all read and write and comprehend exactly as we do" (Participant 2). A minority of participants identified that the falls message could require tailoring to enhance learning "we've got to sum up that group, we can't deliver the same message, the same way to different groups of people, it is impossible" (Participant 9). These participants suggested that catering to audience's different learning styles could promote the learning experience including the use of resources and equipment as "supporting material in trying to use different senses" (Participant 9). This is because "there are some people that listen but there are some people that are visual and for some people being able to see it makes the impact" (Participant 3). However, the falls prevention presentations were delivered in a broad range of settings in the community and this meant "not every group has the equipment that you are able to use or equipment may not be in working condition" (Participant 7). It was suggested that this barrier could be overcome with flexibility and willingness to adjust "you need to be able to take over and present different parts of the presentation if the equipment does not work when you get there" (Participant 1).

4.5.3.3   To support with appropriate time to present and appropriate audience

The limited time available to present when considering the scope of the falls prevention message was viewed as affecting how well they could engage with their audience as "to get through all of this in 30 minutes' presentation, this is impossible" (Participant 9).

> "If it's at a senior centre, they've got half an hour time between this activity and lunch, all you're doing is just presenting, you're not engaging that audience, you are not getting a transfer of learning taking place." (Participant 9)

There was strong feedback from focus group participants that the falls prevention presentations should "target the audience which is most likely to get a benefit from what we have to say" (Participant 2). They expressed the idea that a "slightly younger audience" (Participant 1) would also benefit more from the message and were "disappointed if they're in their 70s, 80s and 90s which they often are" (Participant 1). Functional ability profile of the audience was another aspect considered important to maximise targeting of the falls prevention messages to an appropriate group of older adults. Focus group participants recognised that their presentations were not targeted to an audience who were highly dependent in their mobility (such as those who are wheelchair bound or may come from a residential care setting).

4.6   Discussion

The peer educators provided important insights regarding what their role entailed. They revealed the spectrum of practical and emotive dimensions they perceived influenced their capacity to deliver falls prevention education effectively to their older adult audience (peers). The conceptual framework suggests the educators perceived that a key aspect of their role was to engage and connect optimally on a personal level with their peers. This has been described as *peer connection* in a peer explanatory model (Klein, Ritchie, Nathan, & Wutzke, 2014) which conceptualises that it is this connection that creates a comfortable space for sharing and learning. The peer educator intuitively recognised the peer connection to engage their peers with the falls prevention message was needed as a precursor because provision of information alone was not going to be effective in achieving behaviour change. The educators

expressed the belief that the peer-to-peer communication and engagement with their peers could improve the level of acceptance and future uptake of falls prevention message and strategies. This belief is supported by health behaviour concepts (Michie et al., 2011) and adult learning theory (Knowles, 1970). Although capability and knowledge are required to change health behaviours, the engagement and motivation of the target audience is an essential component that facilitates uptake of health behaviour (Michie et al., 2011).

These peer educators reflected on their own experience as an older adult in recognising that their peer audience may have had low self-awareness about falls and low levels of motivation to engage with messages about falls prevention. This rationale is consistent with previous findings that older adults often do not see the personal relevance of falls prevention messages (Yardley, Donovan-Hall, et al., 2006). The peer educators identified that their peers in the audience were likely to have the view that falls happen to others and not themselves. This was also identified in large studies that have explored older adults' self-perceived risk of falls (Haines, Day, Hill, Clemson, & Finch, 2014; Hill, Hoffman, McPhail, et al., 2011; Hughes et al., 2008). The peer educators perceived this as one of the barriers to acceptance of their falls prevention message, and this could be the reason they sought more support in addressing these barriers.

Consistent with behaviour change framework and techniques (Abraham & Michie, 2008; Michie et al., 2013; Michie et al., 2011), the peer educators identified strategies to overcome these potential barriers. In addition to provision of information on how to minimise the risk of falls, concepts of persuasion, credibility and modelling in their delivery of the message were identified as ways to influence their peers' perceptions. Furthermore, the peer educators reported managing any prevailing perceived low self-efficacy (Haines et al., 2014) amongst their peers by "role modelling", proposed by the Social Cognition Theory (Bandura, 2000, p. 302). This strategy and others aimed to persuade and to empower their peers' self-belief in their own capacity to succeed in taking steps to reduce their risk of falling. It was also deemed important by the peer educators that they were seen as a credible source to engage their peer which is a concept that is also supported by behaviour change theory

(Abraham & Michie, 2008). To support this credibility, organisational support was viewed as required to provide resources such as up to date falls prevention data.

Research in education (Gorham & Millette, 1997; Skinner & Belmont, 1993) demonstrates that the educator's level of motivation and enthusiastic behaviour may engage and influence the audience positively. Moreover, the peer educators portrayed themselves as adult learners and at the same time exhibited implicit awareness of key adult learning principles (Collins, 2004; Knowles, 1970) in their work. They were self-motivated and self-directed in their learning such as learning from fellow peer educators in buddy-training and seeking formative feedback on their performance. Their insights about how to stay flexible, to tailor the message and seek access to resources in various sensory formats such as video and flyers to meet the audience's different learning needs are consistent with adult learning theory (Brundage & MacKeracher, 1980; Knowles, 1970). These principles have been found to help improve the learning experience and subsequently, improve retention of information (Dale, 1970; Lalley & Miller, 2007). This can subsequently improve transfer in learning and acquiring knowledge and information (Krathwohl, 2002), thus enhancing the opportunity towards achieving behaviour change (Abraham & Michie, 2008).

The peer educators perceived that the community organisation was important in providing a mechanism to train and provide timely formative feedback to enhance the performance of peer educators to deliver the falls prevention message optimally. However, they suggested that there could be value in providing additional tools and processes to empower the peer educators to cultivate their capabilities, and acquire new skills, which would sustain them to continue to deliver the falls prevention message to their peers.

4.7   Limitations

The researcher was deemed an 'outsider' to the peer educators and the community organisation and hence, the peer educators appeared to share and discuss their perspectives comfortably. However, the researcher developed a relationship with these peer educators over the course of this study, therefore some researcher bias may have influenced the analysis. However, the research included a second independent

researcher coding the data (investigator triangulation) and a supplementary component (methodological triangulation) to minimise researcher bias in this qualitative study.

The purposive sampling was intended to seek an understanding of peer education in falls prevention by exploring these peer educators' experience. The limited size of the participant numbers with only two focus groups meant that data saturation or redundancy might not have been reached. Although small, the sample included all peer educators associated with the peer educator program, so was considered comprehensive. These findings relate specifically to one peer education falls prevention program, and may not be generalisable to other falls prevention peer education programs elsewhere in Australia or overseas. Although the findings of this study have drawn attention to issues that are specific to this context of falls prevention education in the community, these findings are congruent with other current research in education, falls prevention and adult learning. This study did not consider the perspectives of the community organisation's staff involved with the peer education falls prevention program, nor those of the audience that attended the presentations. Further research investigating the target audience's perspectives and a formal evaluation of the effectiveness of this type of peer education program to achieve behaviour change and reduce falls is required.

4.8   Summary of Chapter

Older adults who undertake the role of peer educators understand through their own experience that there are enablers and barriers that can influence falls prevention messages being accepted by their peers. By engaging and optimally connecting with their peers, these peer educators aim to influence acceptance of the falls prevention message and subsequent behaviour change. Training, adoption of adult learning principles and timely feedback can affect optimal delivery of the falls prevention presentations.

Chapter 5

How Community-Dwelling Older Adults Would Like Falls Prevention Information Delivered: Fresh Insights from a World Café Forum

This study is already published but is presented as a version of the manuscript and modified to suit integration into the thesis.

Another paper related to this study has also been published:

5.1   Chapter Outline

This chapter describes Study 2 (Phase 1) which was a community-based participatory research forum that was undertaken to examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information.

5.2   Abstract

A community forum using a modified World Café approach was conducted. Participants discussed five topic areas in small groups, under the guidance of table facilitators. Perspectives were captured on paper. Thematic analysis was conducted to identify factors that influence participants' engagement and uptake of information.

Seventy-three older adults participated in the forum covering wide-ranging preferences around falls prevention information. Personal experience was considered the key influence on an older adult's decision to initiate seeking information. While health professionals were often approached, alternative sources such as public libraries, peer educators and seniors' organisations were also favoured as credible sources of information. Older adults proposed falls prevention information should be delivered with a positive tone, coupled with highly valued qualities of respect, empathy and time to listen to foster motivation to engage in recommended activities.

Consumer-focused practical strategies proposed could potentially improve design, communication and dissemination of falls prevention information.   This improvement could enhance engagement of messages and subsequent uptake of falls prevention recommended strategies.

5.3 Background

Enablers and barriers to uptake and adherence to falls prevention strategies amongst older adults are complex (Culos-Reed, Rejeski, McAuley, Ockene, & Roter, 2000). Biopsychosocial factors at the interpersonal, environmental and individual levels affect adherence (Culos-Reed et al., 2000). Interpersonal factors include the individual's social context, and communication with their health professional (Culos-Reed et al., 2000). Environmental factors influencing adherence include accessibility, transport, costs and convenience (Bunn et al., 2008). Studies have suggested that falls prevention messages be delivered positively to facilitate uptake of falls prevention strategies (Dickinson, Machen et al., 2011; Haines et al., 2014; Yardley, Beyer, et al., 2007). Individual factors included: older adults finding falls a threat to their autonomy (Dollard et al., 2012; Host, Hendriksen, & Borup, 2011); not finding falls prevention messages personally relevant; having poor levels of falls prevention knowledge (Bunn et al., 2008; Haines et al., 2014; Hill, Hoffman, Beer, et al., 2011); and not wanting to engage in offered formats for managing concerns about falls (Dorresteijn et al., 2012).

Given older adults' reluctance to engage in falls prevention activities and their perception that falls prevention is not personally relevant (Haines et al., 2014), an understanding of the views and preferences of the community-dwelling older adults in seeking and receiving falls prevention information could improve engagement with falls prevention activities. Older adults have unique insights based on their lived experience so their involvement should be a prerequisite step to designing such messages. Moreover, social marketing concepts in health indicate that a consumer focus is essential to motivate behaviour change (Egger, Spark, & Donovan, 2013). Consumer and community involvement in research has been increasingly recognised as an important channel to enhance the quality of research outcomes (Cancer Australia, 2016; National Health and Medical Research Council (NHMRC), 2004; National Health and Medical Research Council (NHMRC) & Consumers' Health Forum (CHF), 2005). Outcomes of greater relevance are likely to be achieved by identifying and aligning consumer needs with research priorities through consumer and community involvement. A systematic review found that patient resources, such as brochures,

were more relevant and coherent to patients after seeking their views on how such resources should be designed (Nilsen et al., 2006).

Therefore, it was decided to engage older adults as research partners in a community-based participatory research forum (Wallerstein & Duran, 2006). This research model focuses upon the importance of involving consumers and communities in research in meaningful partnerships. The purpose of Study 2 was to examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information.

5.4   Study Design and Methods

5.4.1   Study design

A community forum was conducted using a modified World Café approach (Jones et al., 2013). The World Café approach is an interactive exchange of insights on issues achieved through a "conversational process" among groups (Fouche & Light, 2011, p. 29). To our knowledge, deriving information from a large group through a structured interactive approach has not been used previously to explore falls prevention with older adults.

5.4.2   Participants and setting

A convenience sample was used. Adults aged 60 and above were invited to participate in the falls prevention World Café community forum in Perth, Western Australia. Advice on recruitment strategies specifically targeting community-dwelling older adults, and the design and conduct of the forum, were obtained from a team of people including an expert consultant on community-based participatory research and a large community organisation that provides falls prevention information throughout Western Australia.

The forum was publicised in various media to reach out to diverse groups of community-dwelling older adults. These media platforms included seniors' radio shows, seniors' group meetings, seniors' newspapers, flyers, and health websites (Appendix H).

5.4.3   Areas of discussion for the community forum

The topic areas for the forum were designed by the research team to stimulate discussion and to explore older adults' needs and concerns about falls prevention information, falls-related knowledge, attitudes, practices and any other determinants that surround information preferences. The initial topic wording and questions were refined in collaboration with the community organisation. Subsequently, two older adult community members were also asked to provide feedback about their understanding of the questions. Six questions based on the topics were then piloted with an older adult group and subsequently were finalised after obtaining their feedback.

The six questions and underlying rationale for each question that were used to guide the forum discussion were:

1. What would trigger you to find falls prevention information? (Factors older adults believe trigger their search for falls prevention information)

2. Where would you prefer to go to get falls information? (Understanding older adults' personal approaches and sources for seeking falls prevention information)

3. What makes falls prevention information more meaningful to you? (Understanding and addressing older adults' preferences when designing falls prevention communication strategies in future)

4. Who do you prefer to receive falls prevention information from? What qualities would you like the person to have? How would you feel about a trained older person (like you) presenting falls information? (Understanding older adults' personal experiences and preferences for who delivers falls prevention information to them)

5. How can people over 60 reduce falls? (Understanding older adults' current perceptions about what strategies can be undertaken to prevent or reduce falls).

6. What stories can you share that helped yourself or a friend to avoid falls? (Understanding older adults' perceptions of the problem of falls and falls prevention in general)

5.4.4 World Café community forum procedure

The forum procedure has been described in Chapter 3 Research Methods Section 3.5.2 and more detail can be found elsewhere (Bulsara, Khong, Hill, & Hill, 2016). The forum was run based on World Café's seven integrated principles as described in Chapter 3 (Brown & Isaacs, 2005; Fouche & Light, 2011).

The research team's main facilitator (CB), who was experienced in community participatory research, facilitated the forum. Participants were welcomed by volunteers and invited to sit in groups of six to eight older adults at a table of their choice. Care was taken to minimise sample attrition from the forum. Morning tea was served by volunteers and regular breaks were provided as the forum lasted three hours. The forum commenced with a welcome address followed by a briefing of the context for discussing falls prevention, and an introduction to the aims of the forum by a member of the research team (A-MH). The main facilitator then explained how the forum would be conducted.

Trained café table facilitators (see Chapter 3) led the table conversations, with each round of conversation lasting approximately 15 minutes. During each round, the forum participants discussed their views and committed them to pieces of small paper provided. At the end of each round, these pieces of paper were collated and the table facilitator moved to the next table of participants. At the final stage of the forum, the forum main facilitator led the table facilitators in summarising key responses for each question, which were then presented to the group on large summary sheets. This was an opportunity for forum participants to provide any further input and feedback and served as a form of member checking before the forum concluded. Participants were also requested to provide feedback about the forum by completing an evaluation form (Appendix J) before they departed the venue.

5.4.5 Data analysis

Following the forum, data in the form of participants' comments on 438 pieces of paper, summary sheets and completed forum evaluation forms, were transcribed and imported into QSR NVivo10 (QSR International Pty Ltd, 2012). Data were thematically analysed (Braun & Clarke, 2013) by two research team members who had been present at the forum, with each researcher independently analysing the

data. Data were initially coded and key themes following the questions of the forum were assigned. The two research team members then discussed their initial coding and themes to reach consensus on themes and hierarchy of coding structure. Emerging key themes were displayed as an explanatory model (Miles et al., 2014). A third researcher who was at the forum and had falls prevention expertise then reviewed the emerging themes. Any difference of opinion was discussed among the researchers until agreement was reached. Quantitative responses obtained from demographic data and participants' feedback about the forum were imported into SPSS® (Statistical Package for Social Sciences, version 22 for Windows). Descriptive statistics were used to summarise the data.

5.5   Findings

5.5.1   Participant characteristics

Seventy-three older adults participated in the community forum, of which 86 per cent were female. Participants' mean age was 70 years old (range 60 to 87 years), and 58 participants (80%) were fully retired. More than half of participants (65%) had completed a secondary education, a post high school diploma or a vocational certificate. Based on self-reported postal codes, 53 participants (73%) lived in high socio-economic status areas based on the Socio-economic Index of Relative Disadvantage for areas (Australian Bureau of Statistics, 2013a, 2013b). Forty-three participants (59%) reported that they had not fallen in the past 12 months, while 30 (41%) reported one or more falls in the past year. Forty-eight (66%) participants had not discussed falls with either their general practitioner or any other health professional. Participants' feedback about the format of the forum has been reported elsewhere (Bulsara et al., 2016) (Appendix K). Participants strongly reported that the forum was an empowering experience and 92 per cent reported that the forum covered issues important to them.

5.5.2   Factors that trigger a search for falls prevention information

Feedback from many participants highlighted that personal experience strongly influenced their decision to initiate seeking out falls prevention information. As one participant explained, "it doesn't mean anything to me unless it happens". Primarily,

having personally experienced a fall or near miss was reported as the key reason to start looking for information. Other personal factors that influenced participants' decisions to seek falls information included medical conditions that raised their risk of falling, such as "when my balance was compromised after having chemo" or vertigo.

Triggering factors beyond personal experience included finding out about a friend or relative who had fallen. A forum participant described seeing "friends fall, breaking hips and smashing their knees" and another described witnessing the "distress of a person who has fallen". A smaller number of participants also reported that they decided to seek out falls prevention information after a media or awareness campaign including advertising, such as seeing a poster or pictures about falls, or reading about personal stories in community or seniors' newspapers.

5.5.3   The sources and approaches to find falls prevention information

Participants reported diverse approaches for seeking falls prevention information, although the great majority reported seeking information from health professionals and seniors' organisations. Health professionals, including doctors, allied health professionals and pharmacists were mentioned repeatedly. Other health-focused organisations such as the Injury Control Council of Western Australia (ICCWA), and the Western Australian Government Department of Health were reported.

Alternative sources of information that were seen to be credible sources by participants were seniors' organisations such as Council on the Ageing Australia, retirees' groups and local seniors' centres. Senior-specific interest groups such as seniors' exercise groups, bingo, or seniors' social gatherings, where there were opportunities to discuss health related topics with peers, were frequently reported as important settings for seeking falls prevention information.

Broad groups that deliver services for the whole community were another source favoured by participants for seeking and receiving falls prevention information. One participant stated, "libraries are a good and often-used resource", a sentiment reiterated by many other participants. They suggested that libraries could display posters with pictures and large print to attract attention or provide information through workshops or by disseminating falls prevention leaflets. Local councils, shopping

centres, sporting venues and public transport hubs such as bus or train stations were also reported to be places where reliable information could be sought. Media such as health websites and radio stations that focused on older adult audiences were suggested as sources of information, as were community seniors' newspapers.

5.5.4 Factors that make falls prevention information more meaningful to older adults

Participants indicated they would prefer falls prevention initiatives that included information and practical strategies about how to manage their risk of falls. They also reported wanting to receive up-to-date information regarding other areas, such as knowledge about statistics related to falls (for example, how common falls were), and information about the consequences of falls. They sought falls prevention strategies that were practical, convenient and inexpensive. For example, a local public community centre exercise class was suggested as being more economical and accessible compared to paying for a membership at a private gym.

Participants wanted information that was simple and easy to read, and suggested that resources that were provided focus on visual illustrations and pictures rather than words. Participants preferred receiving information that focused on positive "prevention is better than a cure" recommendations and did not use the negative element of fear to encourage seeking information. They described their preference for positive images by stating that information should include "pictures that help build confidence" as well as depicting an element of "fun and a cheerful presence" rather than images that were associated with limiting physical capacity. One participant highlighted this by stating that messages should "cultivate a drive and motivation to do it [prevent falls]".

5.5.5 The preference for receiving falls prevention information from trustworthy sources

Forum participants reported that they would be receptive to receiving falls prevention information from either health professionals or trained non-professionals. They also favoured information being given by a peer if the person was "properly trained". Peers were older adults who could engender emotional connections by sharing personal stories about their experience, and this approach was strongly

favoured. In the words of a participant, a peer was "someone like us…same age as self, circumstances that you can relate to, similar cultural background". Other participants described the nature of peer relationships. It was suggested that a peer was someone who "can talk from life experience as seniors have difficulty accepting information from someone who is young" and another commented because "they [younger people] don't know what it is to fall".

Regardless of who the person delivering the information might be, participants believed that they should be trained and be competent. Competency was described by the participants as "the need to understand the audience; what do they need? What do they want?" Further to this, they reported that it was important that delivery was culturally appropriate and that the person should be accustomed to working with older adults. Participants also suggested other important attributes: that the person should be patient, be a good listener and possess credibility regarding falls prevention.

5.5.6   Interpersonal communication

While qualifications, training and competency were perceived as important attributes, participants emphasised that the quality of the interpersonal communication between the educator and the older adult was crucial. Specifically, participants noted that it was important that the person be "someone who is understanding and can communicate clearly". They also desired the person to have the skill and ability to deliver messages confidently while being approachable. A forum participant elaborated that their doctor "talks to me like a real human being, draws pictures for me and is accessible. He tells me I can call him anytime. He is friendly, empathetic and patient". Many participants highlighted that it was important that the educator communicate with "respect and empathy, and have time to listen," when delivering falls prevention information, for example:

> Caring, trust and respect before [the] message can be received. Respect is how you listen and have the time to listen.

> Have empathy; try to understand where that person is in their current position…with the horrible realisation that your body can no longer be relied upon.

Highlighting the importance of respect in communication approaches, a participant stated that "respect has gone out the window". Some participants expressed that young people lacked respect for (and knowledge of) older adults and their preferences.

5.5.7 Positive evidence-based perceptions and strategies to reduce risk of falling

Findings from the forum indicated participants' attitudes towards preventing falls differed and they reported engaging in a diverse range of falls prevention strategies. A group of participants in the forum expressed the view that they were proactive and receptive to health information, and felt they were committed to addressing the problem of falls. For example, one participant stated his/her reflection that "After a fall I analysed it, why did it happen? What could I do to change it? How can I avoid it happening again?"

Falls prevention practices described by participants could be broadly subdivided into positive/evidence-based strategies and non-evidence-based strategies. Evidence-based strategies that were identified reflected a focus on healthy ageing and included strategies that were related to vision, podiatry/footwear, home hazards, exercise, medication and appropriate use of aids. Examples of these practical strategies for preventing falls included wearing shoes with a good sole grip; having one's eyesight tested; taking care when wearing bi-focal glasses; getting a review of medication that may affect their balance; and exercising regularly to strengthen muscles and maintain good balance.

5.5.8 Non-evidence-based perceptions and strategies to reduce risk of falling

Many forum participants reported practiing a range of non-evidence-based strategies they considered might reduce their risk of falling. These practices could be grouped under three related domains, which were broadly defined as accepting the limitations of the ageing process, undertaking avoidance strategies primarily based on fear of falling, and finally, avoiding activities that were perceived as requiring the older person to take risks. Participants who suggested that it was important to accept the limitations of the ageing process suggested that this approach to falls prevention was realistic and recognised that the body becomes less robust as one gets older. One participant commented that one should be realistic about one's age and to seek help

when it is needed. Another participant described "feeling old and frail". Another participant described this as having an "awareness of reduced agility" while another stated that you needed to "slow down, accept changes in body".

Some participants were practising strategies that were based on their fear of falling. These participants expressed heightened anxiety and stated that they planned their activities with high levels of caution and restricted their activity. One participant stated she was "so anxious about falling [that I] restrict behaviour too much". Comments included "take it easy don't rush" and "stay vigilant". Avoidance of activities that were assessed by the older person as being risky was also reported as a falls prevention strategy, with some participants intentionally limiting certain activities to accommodate their perceived increased falls risk. Comments included "know your capabilities" and "do not go somewhere perceived dangerous [*sic*]". One participant suggested "don't walk on your own if you are fragile".

5.5.9 Community awareness and an understanding about falls and falls prevention

The forum participants suggested repeatedly that falls prevention "should target the wider population" and desired that education programs should "target all people – not just seniors – should be owned by all". They perceived that falls were "everybody's responsibility". Consequently, several participants suggested that raising broad community awareness and targeting all ages to work together to prevent falls among older adults was important. This seemed to apply to environmental considerations, with many participants suggesting that local governments, transport, trades, town planners and architects of buildings and public venues should be informed about falls prevention for older adults and adopt falls prevention recommendations in their practices. Other suggestions related to this theme were that personal equipment such as walking sticks should be "trendier and decorated" and that older adults needed to be portrayed in the media as "active healthy people".

5.5.10 Themes summarised in an explanatory model

The key themes identified through this World Café approach as likely to influence engagement and uptake of falls prevention information run across all domains at an individual, group or societal level. These themes are reflected in the explanatory model (Figure 5.1).
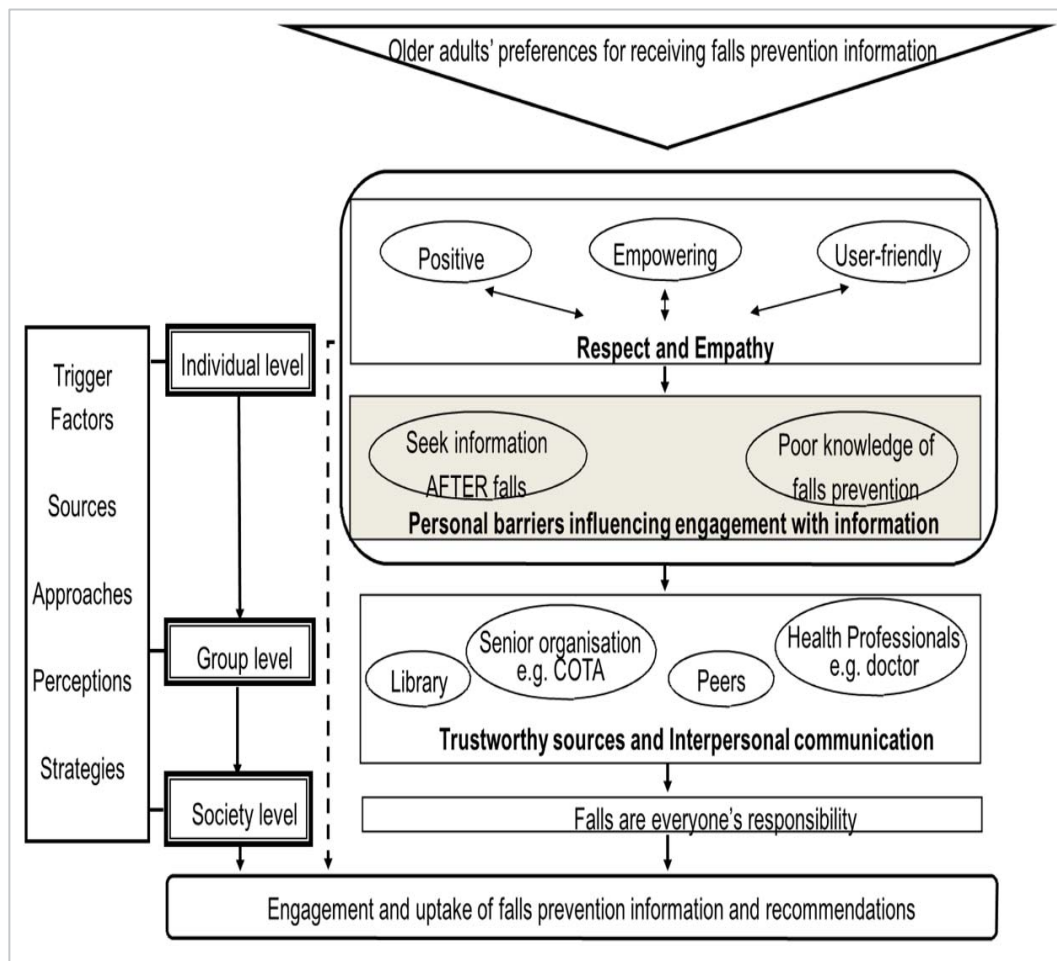
Figure 5.1   Explanatory Model of Older Adults' Preferences regarding Facilitating Engagement and Uptake of Falls Prevention Information

5.6   Discussion

A community-based participatory research forum took a consumer-focused approach to seek older adults' views regarding falls prevention information (Egger et al., 2013). The forum identified older adults' preferences for seeking and receiving information about falls prevention at an individual, group and societal level. Participants commonly reported that they sought information about falls after a triggering event such as having a fall or nearly falling (individual level). This finding assists to explain why previous studies report that some older adults do not see falls prevention activities as personally relevant (Bunn et al., 2008; Haines et al., 2014). One large randomised trial reported that when researchers invited over 40,000 older women to have their balance screened, only 11 per cent agreed to participate (El-Khoury et al., 2015; Lamb & Lamb, 2015). Our results suggest that information about preventing falls and invitations to engage in falls prevention activities may be screened

out by older adults as not personally relevant if they have not had a personal experience of falling. Other research has also shown that many older adults do not think that they are at risk of falls, and do not consider that they would benefit from engaging in falls prevention strategies (Haines et al., 2014). Hence, information may need to be provided in two distinct formats: preventive information for older adults who have not fallen, and comprehensive tailored information for those who have fallen. For the first group, it is necessary to raise awareness about falls as a relevant topic for all older adults, through highlighting such issues as the frequency and impact of falls and falls injuries, and that some falls and serious injuries such as hip fractures can occur in generally well older adults as well as frailer older adults. This may assist in alerting and providing a rationale for older adults to identify with, and subsequently view the information provided. It has also been reported that perceiving that falls could result in injury was a predictive factor in whether older adults engaged in exercise to reduce falls risk after hospital discharge (Hill, Hoffman, McPhail, et al., 2011).

Moreover, since older adults who have not fallen may not seek information from health professionals, using diverse and credible community-based sources or public agencies (group level) may be a feasible means of reaching this sub group of older adults prior to them falling. These older adults could be provided with health promotion-focussed falls prevention information through public libraries (which were described as a preferred source) and seniors' organisations, with the aim to raise their awareness about falls and about the health benefits of engaging in falls prevention strategies such as exercise. These alternative avenues of information dissemination are important, as many forum participants saw no reason to seek information about falls from a health professional if they had not experienced a personal triggering event. Low levels of knowledge about falls prevention may have contributed to this. A substantial number of participants reported practising non-evidence based strategies to prevent falls, such as slowing down, a finding supported by others (Haines et al., 2014; Hill, Hoffman, Beer, et al., 2011). This is a problem for reducing falls at a preventive level among the older population because increasing knowledge and capability is viewed as fundamental to health behaviour change (Michie et al., 2005). Increasing older adults' knowledge about falls and falls prevention has been reported to be an effective means of raising motivation and confidence to engage in falls prevention strategies (Haines et al., 2011; Hill, Hoffman, McPhail, et al., 2011).

Health professionals and doctors have the potential to be effective facilitators in prevention and management of falls in the community or in hospitals or at discharge for those older adults who have already fallen. However, other studies have found that information provided is rarely evidenced-based or presented in an easy to understand format (Dickinson, Horton, et al., 2011; Lee, McDermott, et al., 2013; Tzeng & Yin, 2014). The findings at the forum indicate that it is important that healthcare providers recognise that older adults might be receptive to seek and receive falls prevention information around the time of a fall, but that it is crucial that the information is shared in a respectful and empathetic manner. This is consistent with treating older adults as empowered decision-makers and could improve likely engagement and uptake of falls prevention messages (Nyman, Hogarth, Ballinger & Victor, 2011). Positive rather than negative messages about falls prevention appealed to participants, a finding which is supported by other studies in this area (Bunn et al., 2008; Yardley, Beyer, et al., 2007).

Respect, positiveness and connectedness are consistent with motivational strategies (Wlodkowski, 2008) which aim to enhance engagement with information provided. It has been proposed that using trained peers to deliver falls prevention information could be an effective means of raising older adults' engagement in falls prevention strategies, with benefits seen to derive from the peer-to-peer connection (Khong, Farringdon, Hill, & Hill, 2015; Peel & Warburton, 2009). This may be an avenue where older adults as peers could frame falls prevention messages using personal insights, stories and terms familiar to their peers, an approach that was favoured by forum participants. It can be powerful strategy to deliver messages that creates an emotional connection with the peer audience. Peer-led education programs using peer educators for people with chronic disease including arthritis have been shown to be effective in facilitating participants' self-efficacy and self-management of their symptoms (Lorig et al., 2003; Swerissen et al., 2006). However, there is a need for further studies to evaluate the effectiveness of the peer education approach in falls prevention.

A strong finding from our forum was the participants' assertion that all people should be aware about falls, as "falls are everyone's responsibility". Falls prevention messages should be disseminated to the broader community (society level) to raise awareness and knowledge about the benefit of older adults undertaking falls prevention strategies such as exercise. Broader community awareness may assist in providing older adults with community and social support to engage more readily in falls prevention strategies.

5.7　Limitations

This study has several limitations that may reduce the generalisability of study findings. Older adults who attended the forum were from a generally higher socio-economic background and most of them were females. Additionally, although the location of the venue was considered central, participants were required to travel either by car or by public transport. Hence, these participants may be a more mobile group of those older adults living in the community. They may also be more motivated and proactive to provide their thoughts about falls prevention and at the same time gain information. Nonetheless, 41 per cent of the World Café sample had fallen in the past 12 months, which is reflective of a community-dwelling older adult population.

5.8　Summary of Chapter

The World Café forum generated fresh insights and practical consumer-focused strategies about when older adults seek falls prevention information, what they value and how they perceived that information should be provided. Practical consumer-focused strategies suggested were wide-ranging addressing individual, interpersonal, organisational and policy levels. Service providers and health professionals should be aware that older adults are most likely to seek information after a personal experience of a fall. Health professionals should also recognise the preferences of older adults by sharing this information with respect, empathy and time to listen. Participants also provided alternatives to sharing falls prevention information to engage older adults to take up the recommendations. Finally, the older adults at the forum felt that falls are everybody's responsibility, and future design of falls prevention programs should seek to raise awareness among the broad community population about the risk of falling and available strategies regarding falls prevention.

Chapter 6

Providing Community Peer-Led Falls Prevention Presentations: What do Health, Education and Falls Prevention Experts Suggest?

This chapter is based on a manuscript submitted for publication and under 2nd peer review. This is presented as a version of the manuscript and modified to suit integration into the thesis.

6.1   Chapter Outline

This chapter describes Study 3 (Phase 1) which was a mixed methods design study conducted to evaluate peer educators' presentations of the existing falls prevention program against established criteria, by experts from various areas of specialisation.

6.2 Abstract

A mixed methods study was conducted. Convenience and snowball sampling techniques were used to recruit ten experts to evaluate video recordings of the delivery of three peer-led falls prevention presentations. Each expert viewed three videos and rated them using a questionnaire with open-ended and closed items.

A good level of expert agreement was found across the questionnaire domains for the three peer-led presentations. Although some aspects of the presentations were rated highly, overall, the experts considered the presentations mainly didactic in delivery, not consistently personally relevant to the older adult audience and did not encourage older adults to engage in the preventive strategies that were presented. Five key themes and recommendations for effective delivery of peer-led falls prevention presentations were developed based on the experts' findings. These included recommending that peer educators share falls prevention messages in a more interactive and experiential manner and that uptake of strategies should be facilitated by encouraging the older adults to develop a personal action plan.

6.3   Background

Peer education, which usually involves sharing of information by peers of similar age to participants but with training and/or appropriate experience, is one recommended strategy for bridging the research-practice divide (Chapter 2 Section 2.6). However, it ought to be noted that previous falls prevention peer-led interventions were not designed specifically with behaviour change principles (see Section 2.5.1.2) or adult learning principles (Section 2.5.1.3). An adoption of these theoretical principles in any investigation of adult learning vis-a-vis falls prevention may yield a significantly different outcome in terms of bridging the research-practice divide (Section 2.7).

Accordingly, the purpose of Study 3 was to evaluate peer educators' presentations of falls prevention education for community-dwelling older adults against established criteria that were consistent with adult learning principles, the framework of health behaviour change, falls prevention guidelines and recommendations for providing falls prevention information (Dollard et al., 2012; Haines et al., 2014; Hill, Hoffman, McPhail, et al., 2011; Yardley, Beyer, et al., 2007). Expert opinion was harnessed to evaluate peer-led presentations and to advise on the future development of such presentations for community-dwelling older adults.

6.4   Study Design and Methods

6.4.1   Study design

Three experienced peer educators conducted the falls prevention presentations. These presentations were videoed and reviewed independently by a group of content-relevant experts using a self-administered questionnaire developed for this purpose. Specifically, a "within-stage mixed-model design" (Johnson & Onwuegbuzie, 2004, p. 20) based on the use of a questionnaire containing both open-ended and closed items, was utilised for obtaining data.

6.4.2   Participants and setting

The three peer educators to be videoed were sourced through ICCWA (Chapter 3 Section 3.4.1) that currently, with the help of their volunteer peer educators (Section 3.4.4), provides one hour falls prevention presentations to older adult groups

in the community (Section 3.4.3). One of the three peer educators had health-related work experience while the other two had previous work experience that was non-health-related.

A panel of expert reviewers evaluated the peer-led falls prevention presentations. The basis of the evaluation consisted of rating how well the sessions were conducted, when rated against established criteria consistent with adult learning principles and behaviour change. A priori sample-size estimate was calculated for the measurement of inter-rater reliability between the expert reviewers using a questionnaire devised for this purpose (Table 6.1), and was based on an assumption that the minimal accepted level of reliability would not be below 0.6 and that ideally, the estimate of the reliability was likely to be 0.80 or better. Under these conditions, with an alpha level set to 0.05 and power set to 80%, 10 expert participants was required. This procedure yielded 30 ratings (10 experts x 3 video presentations each).

To obtain the required sample size of expert reviewers, 19 experts from Australia and London (UK) with expertise in one or more of the areas of adult education, health promotion, falls prevention and psychology were identified using convenience and snowballing techniques. Prospective experts were subsequently invited to participate as a reviewer in the study. Of the 10 experts who agreed to participate, nine were from Australia and one from the UK. Two criteria for expertise were established. First, the possession of a relevant postgraduate academic qualification; and second, currently practising in one or more of the areas of adult education, health promotion, falls prevention, and psychology. The expert reviewers had an average 15 years' experience ($SD = 11$) in their area of expertise. Upon agreement, each expert participant's written consent, demographic and professional work information was collected. The research team assured them of confidentiality of all information provided.

6.4.3   Methodology and instrumentation

A "within-stage mixed model" design (Johnson & Onwuegbuzie, 2004, p. 20) which incorporated both quantitative and qualitative data was used to enrich the interpretation and as a methodological triangulation (Johnson et al., 2007; Liamputtong, 2013; Lincoln & Guba, 1985).

6.4.3.1 Quantitative

First, based on relevant literature (Haines et al., 2014; Merriam & Bierema, 2014; Queensland Occupational Therapy Fieldwork Collaborative, 2005; Trompf & Sale, 2001), six key adult learning principles were identified. Subsequently, a 30-item statement questionnaire (Appendix L) was structured into six corresponding adult learning domains. A team of four falls prevention experts was consulted prior to the final questionnaire being generated (Table 6.1). This team was also involved in conducting a pilot trial of the questionnaire to establish face validity and to determine its content validity index (CVI) (Lynn, 1986; Polit & Beck, 2006; Polit, Beck, & Owen, 2007). The results from the researchers who reviewed the scale in terms of content validity were an overall Scale-CVI of 0.96, meeting the acceptable level of ≥ 0.9 (Lynn, 1986). Each of the 30 items met the criterion of Item-CVI of 0.75-0.78 (Lynn, 1986). Consequently, none of the 30 item statements within the six domains needed to be removed.

Second, the final panel of 10 experts (which did not include any of the four experts involved in the instrument validation process) was directed to a secure web-based video link recording of three falls prevention presentations and asked to view and evaluate these as per the finalised questionnaire (Table 6.1). Each expert was first sent an information pack containing documentation associated with the study and detailed notes about the review procedure. Experts then received reviewer training (Appendix M) via a one hour teleconference session with the primary researcher. The purpose of the session was to review the procedure in detail, as well as to clarify any issues regarding the study. Experts were advised to conduct their reviews independently of each other to enhance trustworthiness of findings (Lincoln & Guba, 1985). They were asked to rate their responses to questionnaire items on a five-point Likert-type scale (Strongly Agree; Agree; Undecided; Disagree; Strongly Disagree). The extent of agreement between the experts was evaluated for consistency using ICC.

6.4.3.2 Qualitative

For the six-domain questionnaire, an open-ended item catered for any comments or suggestions at the end of each domain. Each expert reviewer was asked to provide an overall evaluation summary about the presentations, based on their area of expertise. The experts were invited to present feedback that included practical advice for enhancing the delivery of peer-led falls prevention presentations. The

feedback was then discussed and collated by the researchers to provide a coherent compilation of practical recommendations.

6.4.4   Data analysis

Statistical analyses of quantitative data were conducted using Stata IC 13 (StataCorp, 2013) with descriptive analysis of expert reviewers' responses being performed for each item. Items within each domain were summarised and the results presented as means (SD). The mean results from the ratings of all 10 experts for each domain were evaluated for inter-rater reliability using the ICC (two-way random effect model) and reported using 95% confidence intervals. ICC values of more than 0.75 were considered indicative of good agreement and those below 0.75 of poor to moderate agreement (Portney & Watkins, 2009).

Responses from the open-ended items in the questionnaire together with the experts' overall evaluation summary were transcribed. Thematic analysis of the qualitative responses (Miles et al., 2014) was then undertaken to analyse and identify patterns or themes from the data. Investigator triangulation was used to increase trustworthiness of the findings by having two researchers conducting coding, data reduction and data analysis independently of each other (Lincoln & Guba, 1985; Miles et al., 2014). The analysis was an iterative process of reflecting on the coding and identifying patterns. Differences in interpretations were thoroughly explored, discussed and refined with the whole research team until consensus was reached and the final key themes identified. Method triangulation was an additional approach used to enhance trustworthiness of the findings (Lincoln & Guba, 1985). That is, the results of the qualitative data were subsequently triangulated with the quantitative data to draw insights into understanding the factors influencing effective delivery of peer-led falls prevention presentations.

6.5   Results and Discussion

6.5.1   Expert rating of the peer-led presentations

As well as presenting the six questionnaire domains, Table 6.1 lists the median (interquartile range) ratings for each questionnaire item statement across the three videos viewed by the panel of experts.

Table 6.1   Experts (n=10) Rating of the 3 Presentations Against Each Criterion (n=30)

Item Statement	Median[a]	(IQR)
Domain 1: Learners' active participation in the learning process		
1 The participants were positioned such that everyone could join in discussion activities	3.0	(3-4)
2 There was an introduction to falls and an overview of the falls prevention presentation	4.0	(4-5)
3 The peer educator stated what learning goals were to be achieved during the presentation	4.0	(2-4)
4 The peer educator encouraged the participants to ask for clarification during the talk if they required it	2.0	(2-3)
5 The peer educator encouraged the participants to join in structured activities (such as ice-breakers, games)	2.0	(1-3)
6 Individuals were encouraged to discuss topics raised by the other participants	2.0	(2-3)
7 The peer educator asked an appropriate mix of open-ended and closed questions	4.0	(2-4)
8 Participants' activities allowed for differences in learning style to surface by presenting visual, auditory and kinesthetic information	4.0	(2-4)
Domain 2: Consideration of learners' relevant prior knowledge (includes falls prevention)		
9 Possible consequences of falls were discussed with participants	4.0	(4-5)
10 The peer educator encouraged participants to identify their own risk of falls, such as difficulties with everyday activities	4.0	(2-4)
11 The peer educator asked participants to reflect on and discuss their own history of falling	4.0	(2-5)
12 Participants were asked to weigh up the pros and cons of undertaking falls prevention activities	2.0	(1-2)
13 Positive outcomes of undertaking falls prevention activities were presented	4.0	(4-5)
14 Participants were encouraged to discuss and plan towards an implementation of falls prevention activities	2.0	(2-4)
15 Participants were asked to rate their motivation to plan and undertake a falls prevention strategy	1.5	(1-2)
Domain 3: Environment that is conducive to adult learning		
16 Participants appeared to be able to convey their thoughts, opinions or emotions without fear or hesitation	4.0	(4-4)
17 Participants were validated by the peer educator when they made a contribution	4.5	(4-5)
18 Participants appeared to be relaxed in the environment	4.0	(3-4)
19 The physical environment was conducive for learning and interaction (e.g. peer educator's voice level was audible, background noise was minimal).	4.0	(4-5)

Item Statement	Median[a]	(IQR)
Domain 4: Group interaction that facilitates peer learning		
20 Participants were encouraged to engage in peer dialogue	2.0	(1-2)
21 The peer educator asked participants to relate their experience with falls	4.0	(2-5)
22 The peer educator asked participants to relate examples of falls strategies that they have used	2.0	(1-2)
23 Participants shared strategies with the group that they found to have been useful or not useful	2.0	(2-4)
Domain 5: Delivery protocols that are appropriate for adult learning		
24 The peer educator asked participants to identify which points were particularly relevant for them	2.0	(1-3)
25 Participants had sufficient time to complete verbalising their responses	4.0	(3-4)
26 The peer educator repeated key information in a manner that was appropriate to the audience	4.0	(3-5)
27 There was an adequate mix of information provision, participant engagement and opportunity for questions/discussion	2.5	(2-4)
Domain 6: Opportunity provided for reinforcement via practice		
28 The peer educator discussed, distributed resources and encouraged the participants to review them after the session. (For example, handouts, web-links, information where to seek follow-up information)	5.0	(4-5)
29 The peer educator asked the participants to plan their personal response after the presentation. (For example, activities that they may intend to undertake at home afterwards e.g. conduct a check of your house, list of medications, make an exercise diary)	4.0	(2-4)
30 The peer educator thanked participants for attending the session	5.0	(3-5)

Abbreviations: IQR- Interquartile Range (25th-75th).

[a] Score 5- Strongly Agree; 4- Agree; 3-Undecided; 2- Disagree; 1- Strongly Disagree.

Overall, the ICC for the panel of experts for Domains 1 to 5 ranged from 0.76 to 0.88 (Table 6.2) indicating very good levels of agreement. Adult learning Domain 3 (Environment that is conducive to adult learning) and Domain 6 (Opportunity provided for reinforcement via practice) were rated highly by the experts compared to Domain 4 (Group interaction that facilitates peer learning), which was lowest in the rating scale (Table 6.2). For Domain 6 (Opportunity provided for reinforcement via practice), it was impossible to estimate the ICC for all 10 expert reviewers due to incongruence between ratings producing a negative ICC value. On closer inspection of the data, the result was due to three reviewers' ratings [$M = 3.74$ (SD 1.01)] for the three items in this domain being different from the other reviewers' ratings. The mean value of the seven remaining reviewers for Domain 6 was 3.98 (SD 0.79). The ICC for Domain 6 when estimated for these seven reviewers only was 0.72 (95% CI -0.44-0.99).

Table 6.2 **Expert Reviewers' Levels of Agreement for Each Domain of the Questionnaire**

Domain Description	Items	Mean (SD)	ICC	95%CI
1. Learners' active participation in the learning process	8	3.02 (0.65)	0.88	0.44-1.00
2. Consideration of learners' relevant prior knowledge (includes falls prevention)	7	3.08 (0.78)	0.76	-0.97-0.99
3. Environment that is conducive to adult learning	4	4.07 (0.70)	0.81	0.15-1.00
4. Group interaction that facilitates peer learning	4	2.63 (0.91)	0.79	0.04-0.99
5. Delivery protocols that are appropriate for adult learning	4	3.15 (0.76)	0.82	0.17-1.00
6. Opportunity provided for reinforcement via practice	3	3.91 (0.85)	0.72[a]	-0.44-0.99

Abbreviations: SD-Standard Deviation, ICC-Intraclass Correlation Coefficient, CI-Confidence Interval

[a] Rating by seven expert reviewers only

6.5.2   Key themes

Expert reviewers' feedback was examined and five key themes were identified to facilitate effective delivery of peer-led falls prevention presentations. These are presented in the form of a conceptual framework (Figure 6.1).
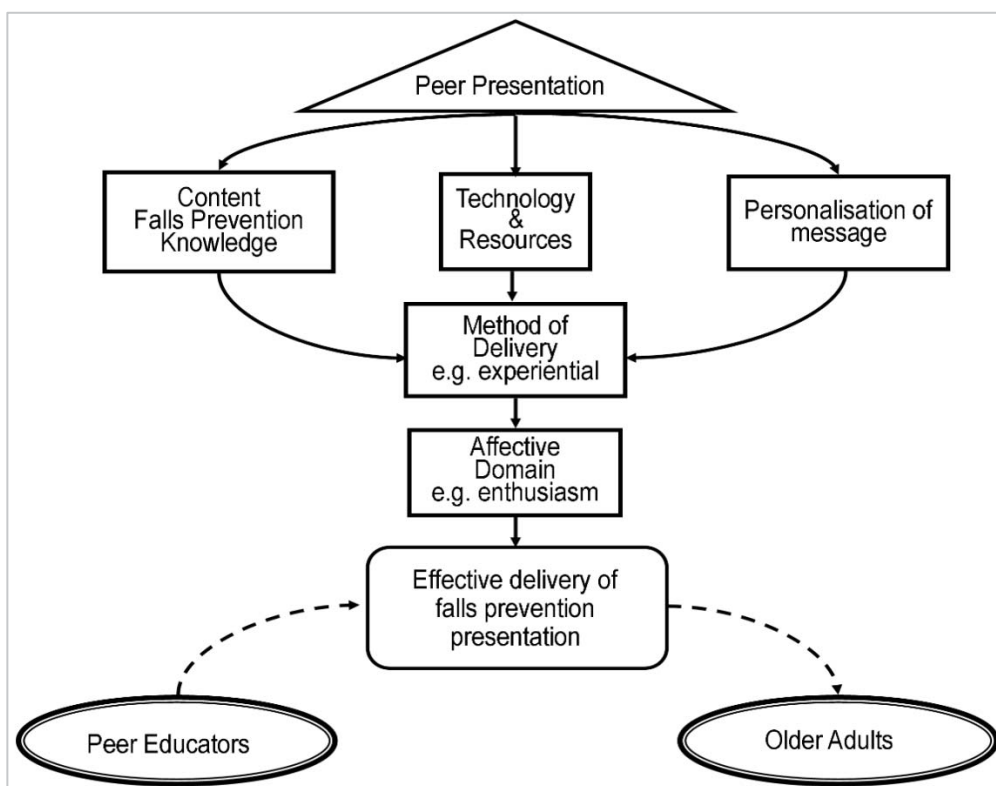
Figure 6.1   **Five Key Themes for the Effective Delivery of a Falls Prevention Presentation: A Framework Based on Expert Recommendations**

6.5.2.1 Theme 1: Method of Delivery.

The expert reviewers strongly concurred that there was little opportunity during the session for exchange of views, discussion or reflection of the older adults' experiences about falls and falls prevention with their peers during the presentations. The experts also agreed that group interaction (Domain 4: $M = 2.63$, ICC 0.79) was limited, including that the participants did not engage much in peer dialogue (Domain 4's Item 20, $Mdn = 2$). The experts agreed that the didactic nature of the presentations meant that the audience most likely failed to engage with the key messages, given that effective falls prevention messages should be 'largely experiential and personal' (Expert 9). Expert 5 indicated that 'the presentation was weighted towards information provision rather than discussion'. Expert 1 concurred: "Lecturing is a bona fide way of presenting information; however, research has shown that it is one of the least effective in terms of aiding retention." The expert panel suggested that greater audience participation and interaction was needed. This was reflected in the lowest rating for 'group interaction that facilitates peer learning' in Table 6.3. Experts 2, 3, 4, and 5 suggested that presenters should use a mix of open-ended or closed questions, or small-group discussions to encourage active learning which has been associated with improved retention of information (Prince, 2004). Such strategies are congruent with facilitating adult learning (Merriam & Bierema, 2014). Expert 3 concluded that interaction is highly recommended to establish interest and importantly, 'to influence engagement and presentation effectiveness'.

Besides interaction, a structured format with a clear framework for the presentations was suggested (Expert 4). It was recommended that each presentation should include a standardised introduction at the start and a lesson closure segment at the end (Expert 9). Experts 1, 3, 6 and 7 stated that lesson closure, including reinforcement of the key take home messages and most importantly, to spur the older adults to make an action checklist is consistent with how adult learners achieve learning outcomes. Such suggestions are also borne out in the literature (Merriam & Bierema, 2014). Moreover, scaffolding what would be covered during the presentation, such as identifying the objectives and the significance of falls prevention to the audience, was recommended. Expert 6 indicated that such a strategy provides opportunity for the audience to ask clarifying questions and obtain further information prior to the content being presented, and this is supported by previous research (Jaramillo, 1996; Pea, 2004).

6.5.2.2   Theme 2: Content of the presentations

A common curriculum with associated resource material was proposed to ensure that presentations were unvarying and covering topics could help 'to make the audience more cognizant of the personal relevance of the information presented' (Expert 6). As one expert indicated,

> So it is not only about preventing falls but improving your overall health, wellbeing and independence. Highlighting the broader benefits is important because some people may think falls aren't important to me (Expert 4).

The experts recommended that the content of the presentations should include key falls prevention evidence, thus facilitating knowledge (capability) as well as developing motivation to implement the recommendations. Concomitantly, consistent with adult learning principles (Merriam & Bierema, 2014), it has been suggested that educators consider drawing on an audiences' prior knowledge about falls prevention as a form of motivation. Experts were undecided as to whether this had been achieved (Domain 2: $M = 3.08$, ICC 0.76). Several experts also advised that peer experience and personal anecdotes could be used judiciously to stimulate motivation, encourage social support (opportunity), foster self-efficacy (capability), and enhance topic focus (Expert 1 and 4), which is consistent with findings of other research (Michie et al., 2013). Expert 6 proposed that using positive messages and highlighting personal benefits would tend to appeal to older adults' preferred identities as 'being physically competent and responsible'.

Expert 1 also indicated that there was little to no discussion about the frequency or consequences of falls (Domain 2's Item 15, $Mdn = 1.5$). Other authors have similarly noted the importance of this aspect, and the use of a range of topics for evidence-based falls education (Evron, Schultz-Larsen, & Fristrup, 2009; Haines et al., 2014; Hill, Hoffman, Beer, et al., 2011; Yardley, Beyer, et al., 2007). Suggestions by the panel of experts for redress included: using statistics to show how commonly falls occur; discussing consequences and costs of falls; highlighting falls risk factors, emphasising the strategies that address falls risk factors; discussing the reasons for and against taking measures to prevent falls (Expert 1, 4, 5 and 7). These suggestions for peer-led falls prevention presentations were consistent with other studies which have

investigated older adults' preferences for receiving falls prevention information (Khong, Bulsara, Hill, & Hill, 2016; McInnes & Askie, 2004; Yardley, Beyer, et al., 2007). The behavioural change literature (Michie et al., 2013) explains that addressing topics such as the ones cited encourages older adults to evaluate the perceived benefits of and barriers to engaging in falls prevention activities while at the same time assisting with developing motivation to change behaviour.

6.5.2.3 Theme 3: Transition of key messages with use of technology and resources.

Use of multimedia resources (such as posters, a checklist, diagrams, demonstrations or kinesthetic stimuli) has been found to create an enriched learning experience (Spector et al., 2014). Experts concurred, as reflected by their lower rating that they were unconvinced that this was achieved (Domain 5: $M = 3.15$, ICC 0.82). Expert 1 stated that video 'enhanced presentations' and could 'keep attention levels high'. The experts agreed that technology and resources should be used to facilitate transition from research theory to practice and that tailoring key falls prevention messages by linking video to their personal action checklist would be advantageous (Expert 10). Having resources to support presentations has also been recommended by peer educators who deliver falls prevention group presentations (Khong et al., 2015).

6.5.2.4 Theme 4: Personalising the falls prevention message with an action plan.

The experts strongly agreed that provision of checklists would likely spur the older adults in developing a personal action plan. However, the experts were limited to observing activities within the video-recording only and not any informal impetus that facilitated engagement that took place beyond recording time. Expert 6 stated that 'It was a good idea to encourage participants to write down their ideas. It would have been good to follow this up with them to make a link between their insights and potential action'. This suggestion may have been made because previous studies have found that older adults may not perceive falls prevention to be personally relevant (Haines et al., 2014; Hill, Hoffman, McPhail, et al., 2011). Therefore, tailoring action plans could personalise the relevant information and so potentially promote a change in health behaviour (Michie et al., 2013; Noar, Benac, & Harris, 2007).

Expert 7 reinforced that:

Information alone does not lead to behaviour change. Encouraging the development of a personalised 'action list' to facilitate behaviour change by asking them which strategies are you going to go away and action?

Expert 9 elaborated:

Talking through recently presented information helps to 'ground' these new data into participants' lived experiences, which in turn can facilitate adult learning through linking theory with experience.

6.5.2.5 Theme 5: Influence of the affective domain during presentations.

The peer educators' warm and enthusiastic approach was considered by the experts to provide a positive learning environment. Experts agreed that attention to the affective domain was a characteristic that subsumed the other four domains. It is 'a very powerful way to create a connection between the presenter, the audience and the material being presented' (Expert 10). Despite conducting the review through a video-recording, the experts were still able to observe the peer educators' use of positive non-verbal language such as the engagement of their hands, smile, participants' names, and eye contact, which were highlighted as positive effects on learning (Expert 3 and 10). Expert 9 stated that:

The presenter conveyed a pleasant, professional and personable approach to the issue of falls prevention. She was very well-spoken. She used humour and anecdotes to establish rapport and trust with the audience. The audience responded to the presenter's approach and participated when asked to.

The expert reviewers strongly concurred that the environment was conducive for adult learning throughout the presentations by providing the highest rating for the domain 'environment that is conducive to adult learning' (Domain 3: $M = 4.07$, ICC 0.81). Expert 8 described the presentations as being held in a 'warm inviting environment'. There was thus broad endorsement of the importance of the affective domain. A comfortable place to share in discussion, to ask questions and to learn, has likewise been identified as important in other research (Kim & Pekrun, 2014) including in a health-related peer-led study (Klein et al., 2014).

In summary, experts advocated that the peer-led falls prevention presentations should be more interactive and experiential; that the content ought to focus on building capability and should be more consistently presented; the message ought to be made more personally relevant; and technology and resources should be used to greater advantage to facilitate translation of research into practice by supporting older adults to take up falls prevention strategies. As such, key theoretical influences on promoting behaviour change identified earlier (Michie et al., 2011) have relevance for peer-led falls prevention presentations, these being, capability, opportunity and motivation.

Subsequently, the experts also made a number of practical recommendations about how delivery could be enhanced. These were collated as final recommendations (Table 6.3).

Table 6.3   **Delivery of Peer-Led Falls Prevention Presentation to Community-Dwelling Older Adults: Experts' Recommendations**

Questionnaire Domain	Experts' Recommendations	Rationale
Learners' active participation in the learning process (Theme: Method of delivery)	Interactive presentation with active learning techniques such as using a mix of open-ended and closed questions, group tasks and pair or small-group discussion to encourage active learning	Learning is an internal process, self-directed enquiry produces the greatest learning (adult learning theory) (Merriam et al., 2014)
	Provide audience with an overview of talk at the start of the presentation	Clear framework of presentation (pedagogical skills; scaffolding) (Jaramillo, 1996; Merriam et al, 2014; Pea, 2004;)
	Invite audience to seek clarification anytime during presentation	
Consideration of learners' relevant prior knowledge (includes falls prevention) (Theme: Content of presentation)	Keep peer/personal anecdotes relevant to falls prevention topic only	Keep presentation and discussion focused on key points of falls prevention topic. Dramatic deviation from the topic to be avoided
(Theme: Personalisation of message)	Use of a standardised and targeted script to encourage consistency of the content including aims and significance of falls prevention	Consistency of presentation and time management enhanced when numerous presenters are involved

Questionnaire Domain	Experts' Recommendations	Rationale
	Encourage audience to reflect and discuss personal experiences regarding falls. Encourage audience to develop personalised action plan	Foster personal relevance of falls prevention information (falls prevention guidelines, health behaviour change)
		(Haines at al., 2014; Michie et al., 2013; Yardley, Beyer, at al., 2007)
Delivery protocols that are appropriate for adult learning (Theme: Technology and resources)	Maintain a positive tone and message via the use of appropriate interactive strategies	Older adults prefer the fostering of a positive social identity (falls prevention guidelines)
		(Dollard et al., 2012; Haines et al., 2014; McInnes et al., 2004; Yardley, Beyer, et al., 2007)
Delivery protocols that are appropriate for adult learning (Theme: Technology and resources)	Incorporate various sensory formats including visual, aural or kinesthetic stimuli e.g. posters, pictures, video, demonstrations or tactile resources	Use variety of technologies in presentation to engage audience (adult learning theory)
	Use resources provided to document personal intention or action plan after the presentation. (e.g. falls prevention booklet and checklist)	To reflect upon and discuss information presented (health behaviour change)
		(Michie et al., 2011; Michie et al., 2013)
Environment that is conducive for adult learning (Theme: Affective domain)	Portray positiveness, enthusiasm and a motivational style	Educator's approach can impact on level of engagement with message (adult learning theory)
		(Merriam et al., 2014)

6.6   Limitations

This study has some limitations. The findings are context-specific and may not be generalisable to peer-led falls education programs in other settings within Australia or overseas. The expert review appraisal was limited to watching an edited video-recording of mainly the peer educator and presentation, with audio feedback from the audience. The real-time ongoing dynamics of any of the three presentations

may be too subtle to be evident on a positionally fixed video-recorder. As such, participants' non-verbal communication cues could not be observed. Finally, although the questionnaire used for the expert rating of peer education provided consistent responses for the first five domains, the incongruent rating observed for the sixth domain ('opportunity provided for reinforcement via practice') suggests that this component of the questionnaire may require further clarification and investigation. Additional rigour could be included into the study by conducting interviews with each expert to clarify further their review comments.

6.7   Summary of Chapter

Study 3 provided new information, gathered from experts, about how peer-led presentations might be structured to effectively deliver falls prevention presentations to groups of community-dwelling older adults. Effective peer-led presentations have the potential to motivate peers to move from comprehending falls prevention messages to developing falls prevention plans and taking relevant actions to reduce their risk of falls. Their evaluations and recommendations were used to inform the design and delivery of the contemporary peer-led education program.

Chapter 7

Design and Development of a Peer-Led Falls Prevention Education Program: A Systematic Approach with Theoretical and Practical Considerations

This chapter is based on a manuscript submitted for publication and under peer review. What follows is presented as a version of the manuscript and modified to suit integration into the thesis.

Khong, L.A.M., Berlach, R. G., Hill, K. D., & Hill, A-M. Design and development of a theory-informed peer-led falls prevention education program to translate evidence into practice: A systematic approach.

7.1   Chapter Outline

This chapter describes the steps taken to develop the peer-led falls prevention education program (intervention) and includes an integration of the evidence from the literature review and the three studies (Study 1, 2 and 3 described in Chapter 4 to 6 respectively) introduced in Phase 1.

7.2 Abstract

The design and development of the program (Phase 2) is described in this chapter. The program, underpinned by a behaviour change theory, also incorporated key stakeholders' feedback and relevant adult learning principles (see Chapter 2, Chapter 4 and Chapter 5). A peer-led falls prevention presentation, a workshop to train new peer educators and the provision of supporting resources were developed. Older adult volunteers were recruited and trained as peer educators to deliver the presentation to older adult community groups. A participant questionnaire was developed to evaluate the outcomes of the presentation. Fidelity considerations were also addressed throughout the design and implementation of the program. The evaluation of the program, which was undertaken with a sample of community-dwelling older adults, will be presented in Chapter 8.

The steps in the program development provide a useful framework for other researchers involved in health education to consider, including utilising qualitative and quantitative data from key stakeholder groups to maximise feasibility and relevance to the target population.

7.3   Background

Research guidelines advocate the use of theory in designing and evaluating behaviour change interventions (Improved Clinical Effectiveness through Behavioural Research Group (ICEBeRG), 2006; Medical Research Council, 2000). Key reasons for this were that interventions are more likely to be effective if they target identified determinants of behaviour central and causal to behaviour change (Chapter 2 Section 2.5.1.2). Theory-based interventions demonstrate an explicit causal pathway and hence, facilitate an understanding of how the design of the intervention affects the determinants of the behaviour or outcomes (Improved Clinical Effectiveness through Behavioural Research Group (ICEBeRG), 2006; Michie et al., 2008). In addition, using theories to inform the design and development of health-related interventions can also facilitate reporting of findings, evaluation and replication of the intervention (Craig et al., 2008; Michie et al, 2008). In consultation with a community organisation who coordinates the peer education program, the decision was made to develop a new falls prevention peer education program that considered these key factors (behaviour change theories and adult learning principles) likely to impact on uptake and sustained behaviour change by older adults involved in the program.

The new contemporary education program was designed using the COM-B model because it translates concepts to practice as described in Chapter 2 Section 2.5.1.2. The Theoretical Domains Framework (Cane et al., 2012) is an expansion of the COM-B model's concepts. The Theoretical Domains Framework provides the mechanism of action known as "intervention function" (Michie et al., 2011, p. 6). Based on the Theoretical Domains Framework's intervention function chosen, behaviour change techniques (BCTs) can be identified and used in the implementation of the intervention (Abraham & Michie, 2008). These techniques are seen as specific strategies used in an intervention to promote change in behavioural determinants (Abraham & Michie, 2008).

The Theoretical Domains Framework design methodology has been successfully applied in other healthcare research studies including care of low back pain and management of the risk of falls by physiotherapists (French et al., 2012; Thomas & Mackintosh, 2014). The Theoretical Domains Framework researchers have proposed a four-step process to guide designing theory-based behavioural change

interventions (Michie et al., 2014). Briefly, the four-step process involves (1) identifying the behaviour change problem to be addressed, (2) assessing the problem, (3) forming possible solutions and applying these to the design and development of the program, and (4) evaluating the selected behaviour change intervention. These steps were used to guide the design, development, implementation and evaluation of the new peer-led falls prevention education program. During this process, the feedback from the studies conducted in Phase 1 of the research and adult learning principles (Merriam & Bierema, 2014) were incorporated. The education program was subsequently evaluated to examine its impact on older adults' beliefs, knowledge of falls and falls prevention, intention and motivation to change their behaviour in the area of falls prevention (described in Chapter 8).

7.4 Identifying the Problem: Older Adults' Low Level of Engagement in Recommended Falls Prevention Strategies (Step 1)

A review of the literature investigating the enablers and barriers to engagement and participation in falls prevention recommendations and programs by community-dwelling older adults was conducted, as presented in Chapter 2 Section 2.4.1. The problem identified was older adults' low levels of engagement in recommended falls prevention strategies. The target health behaviour was for community-dwelling older adults to initiate and develop a personal take home action plan for engaging in personally applicable evidence-based falls prevention strategies. This behaviour was chosen because it was considered a feasible and achievable target within the limitations of conducting a one hour peer group presentation. The selection of this target behaviour was also supported by findings from Phase 1 where the key stakeholders' feedback was obtained, in particular from the experts who reviewed the peer education presentation. The target audience was community-dwelling older adults aged 60 years and over.

7.5 Assessing the Problem (Step 2)

After the problem of older adults' low levels of engagement and uptake of falls prevention strategies and target behaviour (initiate and develop a personal take home action plan to engage in falls prevention strategies) were identified, the next step was to assess and identify what needs to change. Identifying what needs to change in the older adult or the environment is critical as these changes will be required to

achieve the desired change in behaviour. The "more accurate this analysis of the target behaviour, the more likely it is the intervention will change the behaviour" in the manner desired (Michie et al., 2014, p. 57).

The assessment of the problem consisted of gaining an understanding of why older adults might undertake a plan of action regarding falls prevention. Additionally, as part of this process, it was important to identify what enablers and barriers older adults faced if they attempted to develop a plan, and the potential mechanisms likely to motivate them to undertake this behaviour. Therefore, three studies (comprising Phase 1 of this research) were conducted to seek the views of key stakeholders. The studies explored (1) the perspectives of experienced peer educators about their role and the challenges they faced in presenting peer-led falls prevention education (Chapter 4) (Khong et al., 2015), (2) the views of community-dwelling older adults about their preferences in seeking and receiving falls prevention information (Chapter 5) (Bulsara et al., 2016; Khong et al., 2016), and (3) a critical review of the existing peer educators' presentations was undertaken by a panel of experts to determine strengths and weaknesses to inform future program development (Chapter 6) (Khong, Berlach, Hill & Hill, in press).

A summary of the key findings from these studies and the reviewed literature was synthesised (Table 7.1). These findings identified a key potential mechanism that could facilitate engagement and uptake in falls prevention strategies, namely, that tailoring and personalising information fosters older adults' perception of the personal relevance of falls prevention. Other findings indicated that emphasising the positive aspects and benefits of engaging in falls prevention could enhance receptivity of the information.

Table 7.1   **Summary of Feedback from Key Stakeholders Conducted in Phase 1 and Literature Review.**

Literature Review (Chapter 2)	Study 1 (Chapter 4) *Peer Educators' input*	Study 2 (Chapter 5) *Community Forum input*	Study 3 (Chapter 6) *Expert Review input*
Older adults do not find falls prevention personally relevant	Audience does not see personal relevance of falls prevention information	Foster personal relevance	Make information personally relevant
Information should be tailored		Messages should take a positive tone	Personalise falls prevention message with an action plan
Provide older adults with a rationale for learning about falls prevention	Peer educators reported a peer-to-peer connection with their audience	Offer strategies that older adults prefer or find feasible	Improve the level of knowledge and motivation to engage in falls prevention
Older adults have better recall for positive stimuli	Peers can be a credible source to enhance engagement	Use competent and trustworthy sources	Draw on older adults' prior experience with falling
Promote benefits and positive self-identity gained by participating in falls prevention strategies	Peer educators require resources and support at the presentations	Peers can deliver message effectively if they are trained	Emphasise positive benefits of well-being and independence in preventing falls
Use a peer as a role model to impart the information	Peer educators should receive training regarding delivering falls prevention presentations and receive feedback about their presentations	Deliver message with respect, empathy and with the time to listen	Presentations should be more interactive, and use multimedia resources
Use a variety of media to impart and share information			
Use good instructional design and pedagogical skills			
Provide information from a variety of sources besides doctor			

**7.6   Forming Possible Solutions and Using These for
            the Design and Development of the Peer-led Falls
            Prevention Education Program
            (Step 3)**

Synthesised findings enabled an understanding of why older adults might not see the personal relevance of falls prevention messages and the enablers and barriers they faced in changing the target health behaviour (initiate and develop a personal take home action plan to engage in falls prevention strategies). Progressing from Step 2, the construct central to facilitating the target behaviour identified was fostering a sense of the personal relevance of the falls prevention information provided within each older adult member in the audience. Hence, the peer-led falls prevention education program, underpinned by the COM-B model and its matrix of BCTs (Michie et al., 2011) was designed and developed with the central construct of fostering personal relevance of the information to achieve the target behaviour. Besides theoretical considerations, the final education program and the BCTs that were chosen were also based on feasibility considerations (Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005). Therefore, the BCTs chosen focused on building individual or personal agency, instead of an external agency (such as transportation issues) given the constraints of the setting such as the short timeframe of one hour for each presentation in the community. The peer educators used BCTs such as role-modelling and verbal persuasion about their peer's capability (persuasion) during the presentations, which were viewed as a feasible and effective means of motivating the older adults to accept the personal relevance of the falls prevention messages provided.

**7.6.1   Development of the peer-led falls prevention education
             program**

An overview of the four-step process of designing the peer-led education program is shown in Figure 7.1. The program targeted community dwelling older adults who attended the peer-led falls prevention presentations in the Perth (Western Australia) metropolitan area. Subsequently, these findings were mapped against the falls prevention evidence, COM-B model, related BCTs and adult learning principles to design a contemporary peer-led falls prevention education program.
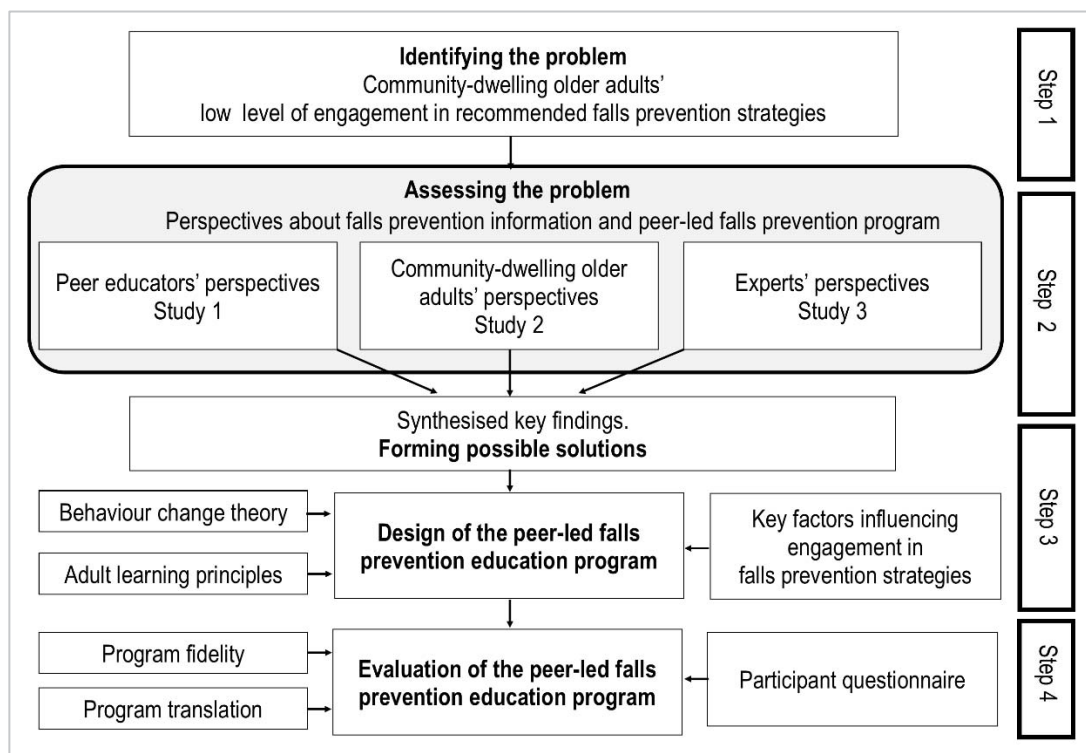
Figure 7.1   Overview of the Process Used to Design the Peer-Led Falls Prevention Education Program

The program was designed and developed in collaboration with a community organisation (Chapter 3 Section 3.4.1). The program consisted of (i) a workshop to train new peer educators to deliver the new presentation (ii) the provision of supporting resources and (iii) a new contemporary peer-led falls prevention presentation. These are discussed in the next section of this chapter.

7.6.2   Development, content and structure of the workshop to train new peer educators

A two-day workshop was subsequently designed and developed to train the newly recruited peer educators. The purpose of conducting the workshop was (i) to equip the peer educators with falls and falls prevention knowledge and the pedagogical skills to engage with their peers positively, and (ii) to train the new peer educators to deliver the contemporary peer-led falls prevention presentations to groups of community dwelling older adults.

Adults aged 60 years and over were recruited as volunteer peer educators as part of the development of the peer education program. This was done through advertising on the local university radio network, which has a dedicated older adult

audience. Six new volunteers were recruited, who then completed the peer education training workshop. However, two were subsequently unavailable to deliver the presentation during the research period and two felt uncomfortable to commence presenting immediately during the research period.

Training for the new peer educators was facilitated by the community engagement officer and research team over two days. The considerations for the structure and duration of the training workshop included ICCWA's capacity to provide training, the volunteers' availability and the effect of ageing on learning. Module 1 of the workshop (5 hours) was conducted on the first day by the community engagement officer. The objectives of Module 1 were for the new peer educators to gain an understanding of the nature of falls in the community, the risk factors for falling, and the evidence-based strategies for managing those risk factors. Module 2 (4 hours) was delivered on the second day by the research team. It consisted of introducing the theory of learning styles, relevant adult learning principles and BCTs. Skills for effectively delivering presentations were also imparted. The learning objectives (Module 2) for the new peer educators were to:

- Develop an awareness of learning styles
- Describe the basic concepts and principles of adult learning
- Apply relevant adult learning principles in delivering the falls prevention presentations
- Describe and identify the relevant BCTs to foster a change in behaviour during the falls prevention presentation
- Integrate the relevant BCTs into the falls prevention presentations

During the workshop, the role of peer educators was stated explicitly and explained. This included their role in facilitating the learning of their peers, being role models in the area of falls prevention, and encouraging the uptake of falls prevention strategies by their peers. The new peer educators were advised to emphasise the positive benefits of preventing falls when they conducted the presentations. Importantly, to foster personal relevance of the falls prevention message, the peer educators were trained to deliver the presentation in an interactive manner that encouraged each peer to tailor the information learned by setting personalised goals and completing their own take home action plan at the end of the presentation.

7.6.3 Resources developed for use by the facilitator of the workshop

A facilitator instruction manual (presented in full in Appendix O.1) with corresponding presentation slides (Appendix O.2) and teaching aids was developed as a resource to support Module 2 of the workshop. The teaching aids included flip-charts, activity sheets, a learning style questionnaire, and online video links to provide relevant multimedia learning platforms. The workshop included five activities that were designed to draw on the new peer educators' own experience during the learning process in an interactive manner. The activities were purposefully sequenced and information was scaffolded using appropriate pedagogical strategies for teaching adult learners as described in Chapter 2 Section 2.5.1.3. The five activities focused on:

1. Creating a supportive learning environment: this included icebreaker activities that aimed to promote a comfortable learning environment for the volunteers and to develop their self-confidence as a peer educator. For example, working in pairs, each volunteer would report one attribute that they thought would make their partner a successful peer educator

2. Learning styles: this included completing a Visual Aural Read Kinesthetic (VARK) learning style questionnaire (Fleming, 2008) and a facilitated group discussion. This activity aimed to assist the peer educators to appreciate different preferences in learning styles and to consider how presentations should optimise learning, by varying the presentation format to reflect different learning preferences

3. Adult learning: this included watching an online video that aimed to impart information to the peer educators about relevant adult learning principles. This activity also included discussion about how incorporating these principles into their presentations could enhance their peer-to-peer connection and facilitate active learning by the older adults in the audience

4. BCTs: this included online videos to encourage the volunteers to reflect on the underlying concepts of health behaviour change. This activity aimed to introduce the behaviour change theory, highlighting concepts about capability, opportunity and motivation from the COM-B model. The discussion focused on fostering behaviour change in the audience by integrating relevant BCTs into the presentations

5. Presentation skills and mock practice: this included watching a video of the presentation with training prompts (described in the following section). This activity aimed to demonstrate presentation skills that could positively engage their peers and allow the peer educators to practice applying these skills during a mock practice session

7.6.4 Resources developed for self-directed learning by the peer educators

In addition to the training workshop, additional resources for the peer educators were developed to provide self-directed learning opportunities after the workshop. An online video with training prompts (https://youtu.be/7Y2gFZlT5RA) was created which could be viewed multiple times by the peer educators. It displayed an experienced university falls prevention educator modelling the contemporary falls prevention presentation to a live audience. The video demonstrated the feasibility of achieving the aims of the presentation (details in the Guidebook in Appendix P) and delivering the information in an interactive and engaging manner, within the one hour timeframe.

Each new peer educator received a presentation guidebook (Appendix P) that included the information imparted during the workshop and the teaching plan for delivering the presentation. Eight activities following the structure of the presentation and the learning objectives were also detailed in the guidebook. Each activity provided the peer educator with a step-by-step script for delivering the relevant section of the presentation and outlined their teaching activities for each section. These were to:

- Provide the designated content regarding epidemiology, risk factors for falls and information about falls prevention
- Raise awareness and recognition about why falls prevention is important and personally relevant
- Establish themselves as a credible source of information and as a role model
- Communicate and facilitate a positive self-identity and mindset regarding falls prevention
- List and describe feasible falls prevention strategies and explain how these strategies can minimise risk of falls, maintain independence and enhance healthy ageing
- Provide access to resources (e.g. ICCWA falls prevention hotline and information)
- Encourage peers in the audience to develop a personal take home action plan to minimise their own risk of falling
- Share personal anecdotes and information to address and foster self-efficacy regarding healthy ageing and falls prevention

Following the workshop, opportunities for the new peer educators to practise delivering the contemporary falls prevention presentations were organised. Each new peer educator conducted initial falls prevention presentations to groups of older adults, with support from the community engagement officer. A buddy system was also used as a means of support for the new peer educator to learn and receive feedback as they practised delivering the presentation (Lamb, Lane, & Aldous, 2013). Furthermore, a self-reflection report (Bennett, Rolheiser, & Stevahn, 1991) and a fidelity checklist (Bellg et al., 2004) provided opportunity to facilitate self-directed learning and to ensure program fidelity respectively. Program fidelity will be discussed in Section 7.8.1.

Figure 7.2 summarises the process undertaken to train new peer educators and the resources that supported their acquisition of knowledge and skills, culminating in them delivering the contemporary falls prevention education program.
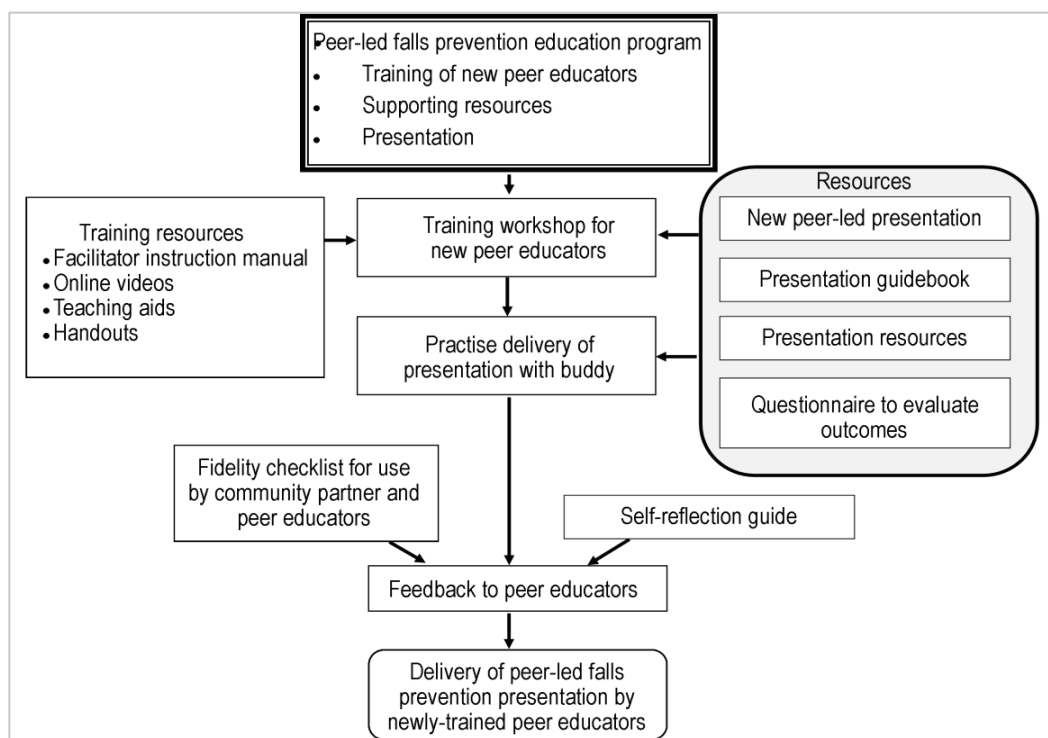
Figure 7.2   Process Undertaken to Train New Peer Educators to Deliver Peer-Led Falls Prevention Education Program

7.6.5   Development of the peer-led falls prevention presentation

A contemporary one hour peer-led falls prevention presentation for community-dwelling older adults was designed and developed to be delivered by the newly trained peer educators. This one hour timeframe was pre-determined by the preference of the community groups and by the community organisation's capacity to

provide volunteers. While Figure 7.1 shows the conceptual input into the design of the presentation, Table 7.2 illustrates how the design and development of the structure and content of the presentation was mapped against the framework of the behaviour change concepts, corresponding intervention functions and related BCTs (Michie et al., 2014; Michie et al., 2008; Michie et al., 2011).

Table 7.2 also summarises how the key evidence-based barriers identified in the literature and relevant adult learning principles (Merriam & Bierema, 2014) were incorporated into the design of the presentation. For example, one of the perceived barriers is some older adults' belief that they are not at risk of falls and therefore consider that falls prevention information is of limited personal relevance. This can be reflected as low levels of capability (knowledge about falls and falls prevention) and motivation according to the COM-B model. The corresponding intervention function such as education could be applied to facilitate motivation and knowledge. In order to achieve this function, BCTs indicate the need to provide information to show how common falling is, the risk factors for falls and consequences that can occur from falls. The structure of the presentation was carefully sequenced to scaffold new knowledge with the support of resources such as DVDs. The teaching objectives of conducting the presentation were to:

- Raise the older adult's self-belief that taking measures to reduce their risk of falls would be useful
- Provide knowledge about falls and falls prevention strategies
- Enhance the skills and self-confidence of the older adults about falls prevention
- Raise motivation, and the intention to engage in falls prevention strategies amongst the older adults

The peer educator commenced the presentation by providing the facts about falls and falls prevention (factual knowledge), which aimed to raise awareness and understanding of falls as a relevant problem, progressing to providing the steps to reduce the risk of falling (procedural knowledge). Finally, consolidating all that was learned towards application (conceptual knowledge) to engaging in falls prevention strategies including completing a personal take home action plan (Merriam & Bierema, 2014). The teaching plan for the presentation is described in detail in the guidebook (Appendix P).

Table 7.2   Mapping of the Theoretical Frameworks and Adult Learning Principles to Address Identified Barriers to Engagement in Falls Prevention

	Identified Barriers[a]	Behavioural Change Concepts[b]	Intervention Function[c] Dimension	Behaviour Change Technique[d] Dimension	Application of adult learning principles to all categories
1	Belief that falling will not happen to me	Motivation Knowledge	Education [e]Persuasion Modelling	Information about social, environmental and emotional consequences of falling-relevance of falls prevention Using a credible source Role-modelling	Assess older adults' current expectations by drawing on their experience with falling To engender a connection between the peer educator and their peers Scaffold learning by starting with initial introduction to prevalence of falls and progressing to management of falls risks in several stages Use demonstration, pictures, video, or checklists as learning aids during presentation to impart information
2	Belief that falls prevention is a threat to self-identity Belief that falls prevention is not socially acceptable	Opportunity Motivation Social identity Social influences	Enablement [e]Persuasion Modelling	Social comparison Framing/Reframing perspectives Using a credible source	

Identified Barriers[a]	Behavioural Change Concepts[b]	Intervention Function[c] Dimension	Behaviour Change Technique[d] Dimension	Application of adult learning principles to all categories
3 Unfamiliar with term 'falls prevention' and low awareness of falls prevention Lack of knowledge about falls prevention Falling is an inevitable part of ageing and beyond personal control	Capability Knowledge Intentions Goals	Training Enablement	Instruction on how to perform falls prevention strategies Demonstration about feasible/relevant falls prevention strategies or anecdotes by role-model (peer educator) Problem-solving to overcome barriers Action planning Goal-setting Pros and cons (weigh up benefits and costs in engaging in falls prevention)	Presentation to provide knowledge but also to cultivate the skills, foster self-efficacy and to influence positive attitudes towards falls-related behaviour Be explicit about the positive benefits of falls prevention including maintaining independence Using peer educators to share positive personal anecdotes relating to falls prevention that older adult peers can also relate to. To facilitate a positive self-identity and foster self-efficacy Tailor the falls information to meet the goals of the older adult and build on their experience of falls prevention Provide access to resource e.g. hotline, information sheet as adults are self-directed learners Develop a personal take home action plan
4 Lacking skills or self-confidence to engage and practice falls prevention	Skills Foster self-confidence	Modelling [e]Persuasion	Information about emotional consequences of falling Verbal persuasion about one's capabilities Focus on past success Using a credible source	

[a]Evidence-based barriers identified in the literature

Behavioural change concepts: These are concepts derived from the COM-B model and Theoretical Domains Framework

[c]Intervention function: Term used to describe mechanisms of action based on Theoretical Domains Framework

[d]Behaviour change technique: Specific strategies used in the program to promote change in the falls prevention behaviour

[e]Persuasion: verbal persuasion about their peer's capability

7.7 Evaluating the Selected Behaviour Change Intervention (Peer-led Falls Prevention Education Program) (Step 4)

Following from Steps 1 to 3, the final step (Step 4) in developing the education program was to develop a method of evaluating the audience's response to the peer-led falls prevention presentation. Considerations regarding program fidelity and structure in reporting the evaluation of the program were also addressed.

7.7.1 Questionnaire outcome measures

A purpose-developed semi-structured questionnaire (De Vaus, 2014; Guyatt, Jaeschke, Feeny, & Patrick, 1996) was designed to evaluate the effectiveness of the peer-led falls prevention presentation. Older adults who attended the presentation were invited to participate in the research and those who were interested in participating provided written informed consent. They were asked to complete the participant questionnaire before the delivery of the falls prevention presentation (Appendix N.1) and after the presentation (Appendix N.2). A follow-up questionnaire (Appendix N.3) was mailed to each participant one month after the presentation to determine the older adults' sustained response to the presentation. Considerations regarding the design and administration of the questionnaire are described in detail in Section 3.5.4 and Section 8.4.6 respectively.

The questionnaire design was based on concepts of behaviour change studies that evaluated health behaviour change using the selected theoretical framework (Cane et al., 2012; Hill et al., 2009; Huijg, Gebhardt, Crone, Dusseldorp, & Presseau, 2014; Huijg, Gebhardt, Dusseldorp, et al., 2014). The design, choice of appropriate outcome measures, and constructs of the questionnaire were guided by these health behaviour studies. The outcomes that were evaluated were community-dwelling older adults' level of beliefs and knowledge about falls prevention and their motivation and intention to engage in falls prevention strategies after attending the presentation compared to prior to the presentation.

The questionnaire was divided into three sections. The first section comprised seven item statements relating to four outcome measures. These were closed-item statements rated on a five-point Likert response scale format (ranging left

to right from Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). The four outcomes were:

1. Beliefs about falling and falls prevention
    - For me, taking measures to reduce my risk of falling would be useful (Item 1)
    - Most people whose opinion I value approve of me taking measures to reduce my risk of falling (Item 2)
2. Levels of knowledge about falls prevention
    - I am aware of the measures needed to reduce my risk of falling (Item 3)
    - I am confident that if I wanted to, I could reduce my risk of falling (Item 5)
3. Motivation to reduce risk of falling by engaging in falls prevention strategies
    - I feel positive about reducing my overall risk of falling (Item 4)
4. Intention and a plan to undertake falls prevention strategies
    - In the next month, I intend to take measures to reduce falls or my risk of falling (Item 6)
    - I have a clear plan of how I will take measures to reduce falls or my risk of falling (Item 7)

The second section of the questionnaire consisted of an open-ended question. The question asked each older adult participant in the audience to list up to three measures they could take in the next month that could help them avoid or minimise their risk of falls. The final section of the questionnaire was designed to collect socio-demographic information (age, gender, socio-economic status), health status indicators (self-rated health, number of prescribed medications taken per day, falls-related history) and if they had previously discussed falling or received falls prevention information from a health professional. Participants' indicators of mobility (use of walking aid inside and outside of the house and ambulatory capacity) were also captured.

7.7.2   Establishing validity and reliability of the questionnaire

Figure 7.3 summarises the steps undertaken to establish the validity and reliability of the Participant Questionnaire.
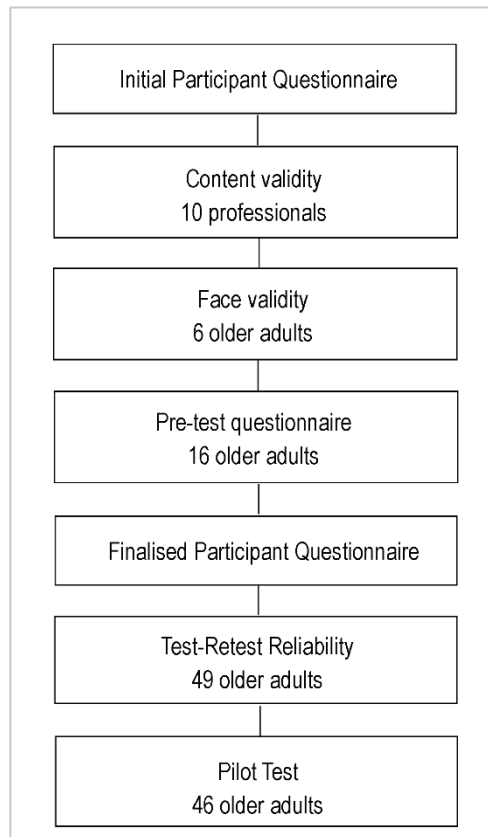
Figure 7.3   Steps Taken to Establish Validity and Reliability of the Proposed Research Outcome Questionnaire

Ten academic and health professionals with questionnaire design experience were invited to evaluate the questionnaire's content validity.   The community engagement officer and two of their experienced volunteer peer educators also provided feedback about the item statement wording to improve the clarity of the questionnaire.

A further six community-dwelling older adults, with a similar profile to the target sample, were invited to complete the questionnaire to establish face validity and to provide further feedback about the comprehension of the item statements and ease in completing the questionnaire.   Finally, pre-testing of the revised questionnaire was conducted with 16 older adults from two community-based groups.   They were invited to pre-test the questionnaire as a whole to evaluate the ease of administration and to identify any further issues that might be perceived.   The instructions pertinent to the post-presentation and one month follow-up questionnaires were modified in terms of wording of the questionnaire items.

7.7.3 Test-retest reliability of the questionnaire

A convenience sample was used to conduct the test-retest reliability of the participant questionnaire, with members of an older adults' walking group (n=49). To test consistency of the older adults' responses, the questionnaire was administered twice, two days' apart within the same week. For an estimated reliability index of 0.8, with an alpha level of 5% and power of 80%, a sample size of 46 participants was required (Walter, Eliasziw, & Donner, 1998). Test- retest reliability was assessed by both Kappa and ICC. The Kappa measure of agreement statistic was used to assess percentage agreement between the first and second occasion that the questionnaire was administered. The Kappa statistic measured the "extent which agreement across the categories is greater than that expected by chance" (Rothwell, 2000, p. 828). Kappa agreement scores were established at "0.21-0.40 fair; 0.41-0.60 moderate; 0.61-0.80 substantial; 0.81-0.99 almost perfect" (Landis & Koch, 1977, p. 165). Test-retest reliability of the mean score of questionnaire items was determined using ICC (two-way random model) for the seven item statements. The ICC measured the variability among the participants' mean scores across the item statements on the first occasion (test) in comparison with the variability of their mean scores on their repeat second occasion (retest). ICC values "above 0.75 were considered indicative of good agreement and those below 0.75 of poor to moderate agreement" (Portney & Watkins, 2009, p. 595). Results showed that there was moderate to substantial agreement across items (Kappa range: .585 to .765). Percentage agreement ranged from 73.5% to 87.8% across the two occasions. The ICC for the participants' mean scores between test-retest occasions was 0.877, considered a good level of agreement. The results demonstrated that the questionnaire was stable across the two test occasions.

7.7.4 Pilot trial of the questionnaire

A pilot trial to examine the procedure in completing the questionnaire across three points of time was conducted with two groups of older adults (n=46) who attended the existing education program's presentations. Each participant completed the questionnaire before and after the presentation, as well as one month after the presentation. The format of the questionnaire and instructions for the data collection process were revised based upon their feedback to facilitate accurate administration of the questionnaire over time.

7.8 Other Considerations

7.8.1 Program fidelity

Fidelity of a program is the extent to which the program is "implemented as intended" (Moncher & Prinz, 1991, p. 247) and is integral to the interpretation and generalisation of its findings (Nigg, Allegrante, & Ory, 2002). The description of program fidelity includes the "methodological strategies used to monitor and enhance the reliability and validity of behavioural intentions" (Borrelli et al., 2005, p. S52; Nigg et al., 2002).

Considerations for the fidelity of the peer-led falls prevention education program were monitored at five points of the research. They were 1) study design; 2) training provided for the peer educators; 3) delivery of the presentation; 4) receipt of the education by the older adult participants; and 5) enactment (Bellg et al., 2004; Borrelli, 2011; Moncher & Prinz, 1991; Resnick et al., 2005). Following established research principles (Borrelli, 2011; Moncher & Prinz, 1991; Resnick et al., 2005), a description of recommendations, drawn from the literature to enhance program fidelity, is described in Table 7.3. The program's fidelity checklist (Appendix Q), that evaluated the program components identified by the research team as critical for an effective presentation, was also produced for the community organisation and the peer educators to utilise.

Table 7.3 **Fidelity Considerations and Application for the Peer-Led Falls Prevention Education Program**

Component of Fidelity	Definition and description modified for this study	Fidelity Plan for the program	To be completed or managed by:
Design	Study design intended to ensure that a study can adequately test its hypotheses in relation to the underlying theory	Evaluation of a new peer-led falls prevention education program A peer-to-group new falls prevention education program compared to an existing program. Underpinned by the COM-B model	Research Team

Component of Fidelity	Definition and description modified for this study	Fidelity Plan for the program	To be completed or managed by:
Training	Assessment and ongoing evaluation of training of peer educators to ensure they have been satisfactorily trained to deliver the intervention to participants	Use of a standardised guidebook Use of a facilitator instruction manual, presentation slides and teaching aids Accommodate learner differences Role-play during the training workshop	Research Team and Community Organisation
Delivery	Fidelity processes that monitor the intervention is delivered as intended	Observation of presentation delivery by an independent person Application of the after presentation fidelity checklist Ensure adherence to protocol (content, dose and process) To manage any deviations with pertinent peer educator Correction of any observed problems in delivery of the presentation Use of buddy system to provide support and feedback Use of the peer educator's self-reflection report	Research Team Community Organisation Peer Educator
Receipt	Assessment of the presentation to ensure that the information presented has been understood by the older adults	Ensured written material provided have appropriate health literacy for older adults Information provided utilised multiple formats (verbal, video, written) Feedback from peer educators after their presentations Evaluate response by research team during research (participant questionnaire across three points of time) Evaluate response by community organisation for ongoing presentations using participant questionnaire after the research concluded	Research Team Community Organisation
Enactment	Assessment of the participants' engagement and uptake of falls prevention strategies	Questionnaire outcomes, for example, level of intention	Research Team Community Organisation (subsequent program delivery after research conclusion)

7.8.2 Structure in reporting the program

Finally, consideration was given to reporting the intervention for future evaluation and translation. The education program was mapped using the template for intervention description and replication (TIDieR) checklist (Hoffmann et al., 2014). This checklist is recommended for use when reporting interventions to ensure other researchers can assess the relevance of the interventions and for potential replication of the research (Hoffmann et al., 2014). The completed checklist is presented in Table 7.4.

Table 7.4   Reporting of the Education Program Using the Template for Intervention Description and Replication (TIDieR) (Hoffman et al., 2014)

Elements of Checklist	Applied in the study
Precise name that describes intervention	Can peer education improve beliefs, knowledge, motivation and intention to engage in falls prevention amongst community-dwelling older adults?
Why: Describe any theory essential to the intervention	COM-B model was used to guide the design, delivery and evaluation of the intervention. Relevant adult learning principles were integrated into the education program
What (materials): Describe any physical or informational materials used in the intervention (in delivery or for providers)	Resources for training new peer educators in the workshop and for delivery of the presentation such as facilitator instructional manual and resources, a training video, peer educator guidebook, a fidelity checklist, and evaluative questionnaire were described
What (procedures): Describe each of the procedures, activities, and/or processes used in the intervention	Recruitment of new volunteer peer educators, training of educators, peer educators delivered presentations and the steps taken to train new peer educators were described
Who provided: The intervention provider. Describe their background and any specific training given	The community organisation and community engagement officer were described. The recruitment of new volunteers and the steps taken to train new peer educators were described
How: Describe the modes of delivery. When and how much	One-off one hour presentation by a peer educator to a group format. The workshop (Module 1 and 2) to train peer educators was conducted over two days
Where: Describe the type(s) of location(s) where the intervention occurred	The presentations were conducted to groups of older adults in the community that meet on a social-basis. These are generally held at venues in the community such as community centres

Elements of Checklist	Applied in the study
Tailoring: If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when and how	Presentation format allowed for tailoring by individual participant with personal take home action plan
Modifications: If the intervention was modified during the course of the study, describe the changes (what, why, when, and how)	Each community site had varying access to multimedia facilities. Butchers' paper or posters were alternative media when a DVD player was not available
How well (planned): If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them	A fidelity checklist was developed for use by the peer educator and the community engagement officer to evaluate the presentations (Appendix Q). The fidelity checklist was described in Table 7.3
How well (actual): If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned	All the presentations were delivered by trained peer educators, feedback was given to the peer educator after each presentation, resources such as online video and guidebook were available self-directed learning, a questionnaire completed by participants assessed their responses to the presentation

7.9   Summary of Chapter

This chapter has illustrated the steps taken to design and develop a contemporary peer-led falls prevention education program. A workshop to train the peer educators who delivered the presentations, learning resources to support the program, a peer-led presentation and a questionnaire to evaluate the presentation were developed. Consideration was given to fidelity. The program was subsequently delivered and evaluated (described in Chapter 8).

Chapter 8

Can Peer Education Improve Beliefs, Knowledge, Motivation and Intention to Engage in Falls Prevention Strategies Amongst Community-Dwelling Older Adults?

8.1   Chapter Outline

In Phase 2 of this research, a new contemporary peer-led falls prevention education program was designed and evaluated. Earlier, Chapter 7 described the design and development of the program). This chapter describes Study 4, a quasi-experimental trial conducted to evaluate the effectiveness of the peer-led falls prevention education program (intervention) compared to the existing program for community-dwelling older adults.

8.2   Abstract

A two-group quasi-experimental pre-test post-test study using a convenience sample was conducted. A new falls prevention training workshop for peer educators was developed, drawing on contemporary adult learning and behaviour change principles. A one hour presentation was delivered to community-dwelling older adults by peer educators trained with the new package (intervention group). Control group participants received an existing, one hour falls prevention presentation by trained peer-educators who had not received the adult learning and behaviour change training. Participants in both groups completed a purpose-developed questionnaire at baseline, immediately post-presentation and at one month follow-up. Participants' levels of beliefs, knowledge, motivation, and intention were compared across these three points of time. Generalised estimating equations models examined associations in the quantitative data, while deductive content analysis was used for qualitative data.

Participants (control n=99; intervention n=133) in both groups showed significantly increased levels of beliefs and knowledge about falls prevention, and intention to engage in falls prevention strategies over time compared to baseline. The intervention group was significantly more likely to report a clear action plan to undertake falls prevention strategies compared to the control group.

Peer-led falls prevention education is an effective approach for raising older adults' beliefs, knowledge, and intention to engage in falls prevention strategies.

8.3   Background

There has been limited empirical research investigating the impact of peer education in the area of falls prevention (Chapter 2 Section 2.6), especially where an older individual peer delivers a presentation to a group of other older adults. In addition, there are limitations in the previous studies conducted in this area (Chapter 2 Section 2.6.3.2). Concepts of health behaviour change suggest that providing people with knowledge and motivation are critical for achieving health behaviour change (Chapter 2 Section 2.5.1) and that education for older adults should be delivered using adult learning principles (Chapter 2 Section 2.5.1.3).   However, there has been limited translation of this educational approach into the community setting. Therefore, provision of a peer-led presentation should ideally be underpinned by adult learning principles (Chapter 2 Section 2.5.1.3) and behaviour change theory (Chapter 2 Section 2.5.1). This may improve beliefs, knowledge, motivation and intention which could facilitate behaviour change, namely, the uptake of falls prevention strategies by older adults.

The aim of Study 4 was to evaluate the effect of delivering a peer-led falls prevention presentation on community-dwelling older adults' beliefs and knowledge about falls prevention, and their motivation and intention to engage in falls prevention strategies. The study compared the effect of delivering a contemporary presentation by an individual older adult to a group incorporating adult learning principles and behaviour change strategies against delivering an existing peer-led falls prevention presentation.

8.4   Study Design and Methods

8.4.1   Study design

A two-group quasi-experimental pre-test post-test study design using a convenience sample was conducted. At the initial control group stage (Phase 1), participants received the existing peer-led presentation. In the subsequent intervention group stage (Phase 2), participants received the contemporary peer-led presentation (Figure 8.1)

8.4.2   Participants and setting

Participants were community-dwelling older adults who were attending a peer-led falls prevention presentation (Chapter 3 Section 3.4.7). The presentations were organised by the research's collaborating community organisation that promoted injury prevention and community safety in Western Australia (Chapter 3 Section 3.4.1).

8.4.3   Recruitment of participants

A convenience sample was recruited for both the control and intervention phases of the trial. The target audience for the peer-led falls prevention education were predominantly English-speaking older adults' groups in the community (Chapter 3 Section 3.4.7). These groups were drawn from the broad Perth metropolitan areas such as Probus clubs and National Seniors Australia groups. The older adults from these groups meet for various reasons including social, physical exercise and other common interests and hobbies. Inclusion criteria for both control and intervention groups consisted of being aged 60 years or older, attending a peer-led falls prevention presentation during the study phases, and being able to complete a questionnaire. Older adults who resided in residential care facilities or were hospitalised were excluded.

Peer-led presentations were organised by the community engagement officer (Chapter 3 Section 3.4.2) who advertised the falls prevention presentation to existing older adult community groups in Western Australia, retirement village associations and other seniors' networks through mailed flyers or newsletters five months prior to conducting each phase of the study. The community engagement officer was the organisation's contact person for these groups and played an active role in the scheduling of the falls prevention presentations to each group, as well as providing support for the program.

8.4.4   Control conditions

The control conditions consisted of participants receiving the existing peer-led presentation during Phase 1 (2014). This was a one hour presentation delivered by five volunteer peer educators that has been delivered regularly for approximately 10

years. The existing peer-led falls prevention presentation consisted of the peer educators sharing falls-related content knowledge such as risk factors for falls and strategies for reducing risk of falls, including managing one's medications, improving balance by undertaking exercises, checking feet and footwear and completing environmental modifications (Deandrea et al., 2010; Gillespie et al., 2012). The training for these volunteer peer educators, conducted by the community engagement officer, consisted of a five hour session which provided them with this information (Table 8.1). The content was regularly reviewed by the organisation, and focused on providing the best available strategies that could be used by older adults to reduce their falls risk. However, the training did not include information about the principles of adult learning and health behaviour change (Section 3.4.3 Existing peer-led falls prevention program). Peer educators were also provided falls prevention support materials such as a video-tape, booklet and flyers to use during presentations, to aid in conveying the falls prevention message to the community groups of older adults. These existing peer educators were experienced presenters all aged over 60 years who had delivered the presentations for between two and ten years (Section 3.4.4). The training for both existing and new peer educators delivering the presentations to the control and intervention groups is presented in (Table 8.1).

Table 8.1   **Training Sessions Undertaken to Prepare Peer Educators of Existing and Contemporary Programs to Deliver Peer-led Falls Prevention Education Presentations**

Training sessions for peer educators	Existing program[a]	Contemporary program[b]
Training session (5 hours): Conducted by community engagement officer	✓	✓
Learning objectives: Introduction to epidemiology of falls – related content knowledge e.g. falls information including incidence of falls in the community, risk factors for falling, evidence-based falls prevention strategies[c]	✓	✓
Training activity provided: Demonstration and lecture	✓	✓
Activity supporting material: Lecture notes	✓	✓
Peer-led falls prevention presentation support material: Video, booklet and flyers	✓	✓

Training sessions for peer educators	Existing program[a]	Contemporary program[b]
Additional training session (4 hours): Conducted by research team	✖	✓
Learning objectives: Develop an awareness of learning styles; describe basic principles of adult learning and apply them in delivering falls prevention presentations; identify and integrate relevant behaviour change techniques into falls prevention presentations[d]	✖	✓
Training activity provided: Learning style questionnaire, online video links, discussion, group work and interaction, and mock presentation practice	✖	✓
Activity supporting material: Peer educator guidebook and online training video; program fidelity[e] checklist; self-reflection guide	✖	✓

[a]Peer educators were trained and already had two to ten years of experience delivering the existing peer-led falls prevention education preceding the research period.

[b]Newly recruited volunteer peer educators who were trained to deliver the contemporary peer-led falls prevention education.

[c]Deandrea et al., 2010; Gillespie et al., 2012.

[d]Abraham & Michie, 2008; Anderson et al., 2001; Fleming, 2008; Merriam & Bierema, 2014.

[e]Bellg et al., 2004.

8.4.5 Intervention

A contemporary falls prevention peer-led education program as described in Chapter 7 was designed by the research team to be used in Phase 2 (2015). The program consisted of providing training and resources for new volunteer peer educators to also deliver a one hour peer-led falls prevention presentation to groups of community dwelling older adults. The aim of the presentation was to improve the older community-dwelling adults (1) self-belief that taking measures to reduce their risk of falls would be useful, (2) knowledge about falls and falls prevention strategies, and (3) motivation, and intention to engage in falls prevention strategies.

The design and development of the presentation was as described in Chapter 7, Section 7.6.5. The presentation was informed by previous studies conducted by the authors, whereby key stakeholders were consulted, including community-dwelling older adults (Bulsara et al., 2016; Khong et al., 2016) (Appendix K) and experts in the areas of education and falls (Khong et al., in press). Feedback was also sought from the peer educators who were delivering the existing presentations (Khong et al., 2015).

The design and development of the presentation was also informed by the framework of behaviour change theory (Michie et al., 2011), and educational and adult learning principles (Anderson et al., 2001; Merriam & Bierema, 2014).

The new volunteer peer educators were recruited via daily advertisements on a community radio whose target audience was older adults. Training of the peer educators was conducted by the community organisation's community engagement officer in Module 1 (5 hours) of the workshop and the research team in Module 2 (4 hours). Resources were developed to conduct the training of new volunteer peer educators. The resources consisted of a facilitator instruction manual, corresponding presentation slides and teaching aids. Other resources were also developed for the peer educator's self-directed learning and for fidelity of the program. These were described fully in Chapter 7 Section 7.6.2 to 7.6.4.

Following the training, each new peer educator conducted an initial falls prevention presentation with support from the organisation and a fellow peer educator (Section 7.6.4). After delivering a presentation, the peer educator completed a self-reflection report (in Guidebook Appendix P) and the program fidelity checklist described in Section 7.8.1 (Appendix Q) (Bellg et al., 2004), which was used as a guide for self-reflection and feedback and to promote adherence to the intervention delivery.

8.4.6 Data collection and procedure

Data collection followed the same procedure during both phases of the trial. The peer educator arrived at the local community group when a presentation was organised. Prior to the delivery of the presentation, the older adults who attended were invited to participate in the trial and those who provided written consent were recruited. Each participant completed a purpose-developed questionnaire prior to the peer educator delivering the falls prevention presentation and following the presentation. The follow-up questionnaire was mailed out to each participant one month after the presentation.

The questionnaire (Appendix N) was designed based on concepts of health behaviour change from other studies that evaluated behaviour change regarding falls prevention (Cane et al., 2012; Hill et al., 2009; Huijg, Gebhardt, Crone, et al., 2014). There were seven closed items (Table 8.2) which were rated on a five-point Likert

scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). The final open-ended question asked each participant to list up to three measures that they could take in the next month, which would help them avoid falling or the risk of falling. The post-presentation and one month follow-up questionnaires were modified in terms of wording of the questionnaire items.

Sample attrition has the potential to impact on validity of the research (Barry, 2005; Hansen, Collins, Malotte, Johnson, & Fielding, 1985). Given the challenge in conducting research with older adults (Fudge et al., 2007; Kelsey, O'Brien, Grisso, & Hoffman, 1989; Samelson et al., 2008), steps were taken to minimise sample attrition in this study. At the one month follow-up, telephone calls were made to each participant to advise them to expect a questionnaire, which was subsequently mailed out with a pre-paid envelope. A single mail or telephone call was made to remind those who did not respond within two weeks of the deadline to return the questionnaire.

The questionnaire items are shown in Table 8.2. The four outcomes measured using the questionnaire were: (1) beliefs about falling and falls prevention (measured using items 1 and 2), (2) levels of knowledge about falls prevention (measured using items 3 and 5), (3) motivation to reduce risk of falling by engaging in falls prevention strategies (measured using item 4) and (4) intention and a plan to undertake falls prevention strategies (measured using items 6 and 7).

Other information collected at baseline were participants' sociodemographic information, including age, gender, socioeconomic index (Australian Bureau of Statistics, 2013b), self-rated health, number of prescribed medications taken per day, history of falls in the past 12 months, and level of mobility.

Prior to the commencement of the main trial, a convenience sample of community-dwelling older adults who attended community groups was enrolled to evaluate the test-retest reliability of the questionnaire. Subsequently, the questionnaire was pilot-tested with older adults from two other community groups completing the questionnaires across three points of time. Following this, slight changes were made to the format of the questionnaire and to the instructions given for completing it based on the feedback received.

8.4.7 Data analysis

Data were summarised using descriptive statistics. Both Intraclass Correlation (ICC) and Cohen's kappa coefficient (kappa) analyses were conducted to establish the test-retest reliability of the questionnaire. A p-value < .05 was considered significant for all analyses.

Participants' responses to the seven closed items (dependent variables) measuring beliefs, knowledge, motivation and intention outcomes were compared within and between the intervention and control groups using Generalised Estimating Equation modelling (GEE) (Liang & Zeger, 1986). The independent variables were participants' sociodemographic information. Final GEE models included only significant independent variables (p < .05). Results were reported using odds ratios (OR) with accompanying 95% confidence intervals and p-values. Quantitative data were analysed using statistical package SPSS® (Statistical Package for Social Sciences, version 22 for Windows).

Qualitative data obtained from the open-ended response question were transcribed verbatim and exported to NVivo 10 for Windows (QSR International Pty Ltd, 2012). These data were analysed using deductive content analysis, which uses previous knowledge around the research topic (Elo & Kyngas, 2008). The categorisation matrix was constructed using Australian recommendations for falls prevention for community-dwelling older adults (Australian Commission on Safety and Quality in Healthcare, 2009) and systematic reviews which summarised the evidence for falls prevention strategies for community-dwelling older adults (Gillespie et al., 2012). The primary researcher read the transcripts to gain a sense of the content. Participants' responses regarding their falls prevention measures were coded by theme and assigned according to the predetermined categories within the matrix. New categories were generated for responses that could not be categorised within the matrix. Two researchers discussed the data but identified their corresponding generic and sub-categories independently. Frequency counts were also undertaken of each category or sub-category. Final findings of the two independent researchers were compared and triangulated to enhance trustworthiness of the findings.

8.4.8 Sample size

For conducting the test-retest reliability, for an estimated reliability index of 0.8, with an alpha level of 5% and power of 80%, a minimum sample of 46 participants were required (Walter et al., 1998). As previous trials in this area have not been conducted, a minimum number of 100 participants were chosen for Phase 1 to gain sufficient data to calculate the sample size for Phase 2. The control phase of the study used matched data from participants and measured differences over time (pre-post presentation). Data from the control group indicated that when examining the mean differences of each of the seven items the minimum difference in the response of these matched pairs (pre-post presentation) was normally distributed with standard deviation 0.44. If the true difference in the mean response of the matched pairs was 0.155, then 65 participants (with paired pre and post presentation data) needed to be enrolled in the intervention group to be able to reject the null hypothesis that this response difference was zero with probability (power) 0.8. The Type I error probability associated with this test of this null hypothesis was 0.05. Since in the control group trial there was a dropout rate of 17% between baseline and one month follow up, the aim was to enrol at least 80 participants for Phase 2 of the study.

8.5   Results

Forty-nine older adults (aged 60 and over) participated in the test-retest reliability trial of the questionnaire. There was moderate to substantial agreement across items (Kappa=.585 to .765) (Landis & Koch, 1977). Percentage agreement ranged from 73.5% to 87.8% across the two occasions (Table 8.2).

Table 8.2   Test-Retest Reliability Agreement (per Participant Questionnaire item) Across Two Occasions, as Indicated by Kappa and Percentage Agreement

Questionnaire Item Description	% agreement	Kappa	p-value
Item 1: For me, taking measures to reduce my risk of falling would be useful	79.6	.615	<.001
Item 2: Most people whose opinion I value approve of me taking measures to reduce my risk of falling	83.7	.698	<.001

Questionnaire Item Description	% agreement	Kappa	p-value
Item 3: I am aware of the measures needed to reduce my risk of falling	87.8	.765	<.001
Item 4: I feel positive about reducing my overall risk of falling	79.6	.629	<.001
Item 5: I am confident that if I wanted to, I could reduce my risk of falling	75.5	.585	<.001
Item 6: In the next month, I intend to take measures to reduce falls or my risk of falling	81.6	.698	<.001
Item 7: I have a clear plan of how I will take measures to reduce falls or my risk of falling	73.5	.594	<.001

The ICC for the participants' mean score of outcome measures between retest occasions was 0.88 (Table 8.3), which was considered a good level of agreement (Portney & Watkins, 2009).

Table 8.3   **Intraclass Correlation Coefficient for Test-Retest Agreement of the Outcome Mean Score Measures via Questionnaire**

Outcome Measure	No. of items	Mean (SD)	ICC	95%CI
Outcome measure at first occasion (Test)	49	4.4 (0.6)	0.877	0.783-0.931
Outcome measure at second occasion (Retest)	49	4.4 (0.6)		

Abbreviations: SD-Standard Deviation, ICC-Intraclass Correlation Coefficient, CI-Confidence Interval.

There were n=141 participants who enrolled and of those n=99 participants completed Phase 1 (control) of the trial and n=196 enrolled and n=133 participants who completed Phase 2 (intervention). The flow of participants through the study is shown in Figure 8.1.

The main reasons for not providing any response to the post-presentation or follow-up questionnaire included participants needing to leave the presentation venue prior to the post-presentation questionnaire being administered, or being unwell, away on holiday or unable to be contacted at the one month follow-up. Participants were excluded if they did not complete the questionnaire after the presentation or at the one month follow-up. There were no significant differences in the demographic

characteristics between participants who dropped out compared to participants who completed the follow-up questionnaire.
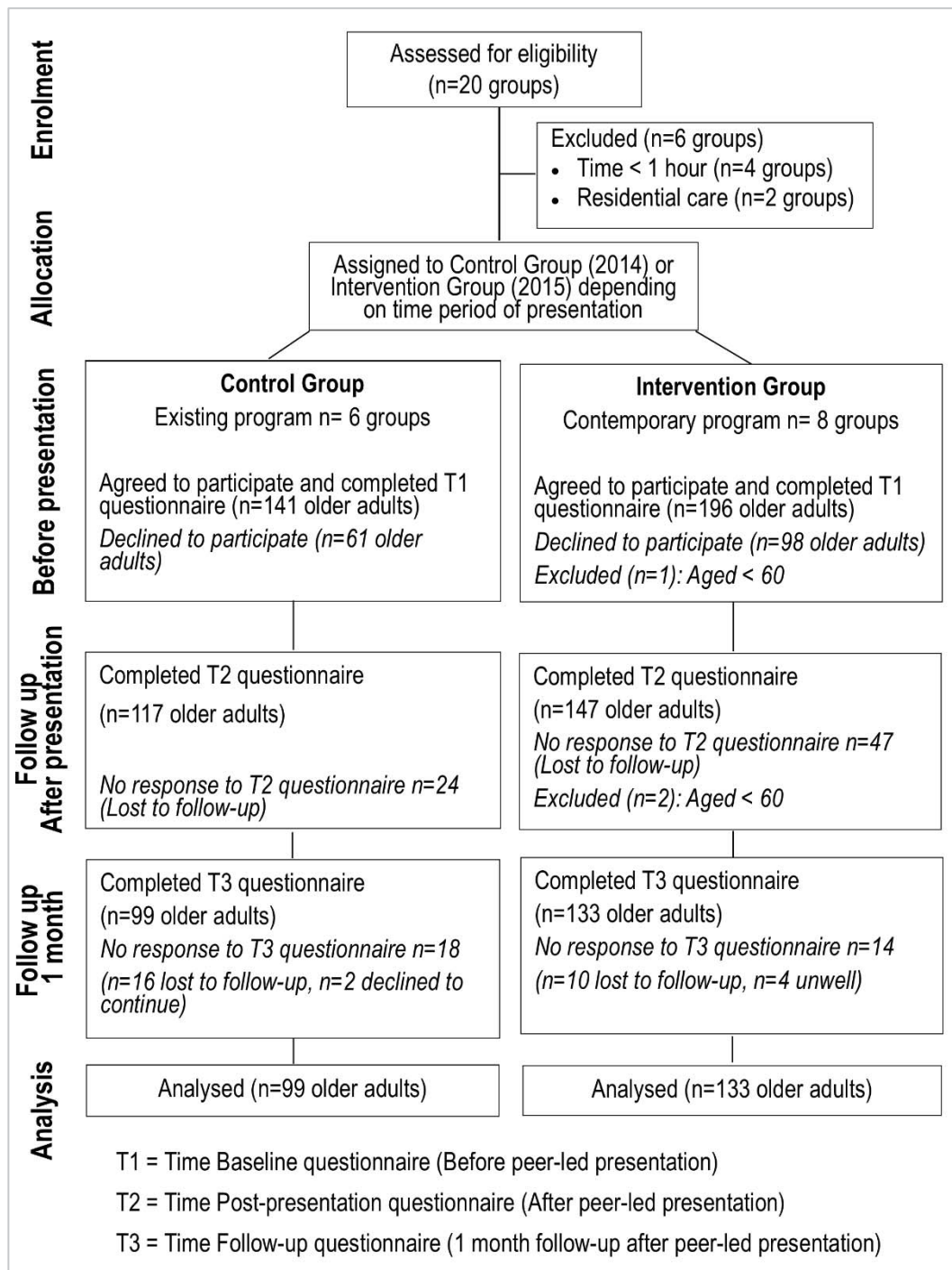

Figure 8.1   Flow Diagram of the Recruitment of Participants and Data Collection Process for Study 4

Participant characteristics are summarised in Table 8.4. Intervention group participants were significantly more likely to be male (p=0.006) and come from higher socioeconomic areas (p=0.002).

Table 8.4   Participants' Baseline Characteristics

Characteristic	Control n = 99	Intervention n = 133	Significance
Age (years), M (SD)	77.9 (6.9)	79.2 (7.0)	.142[b]
Number of prescribed medication taken per day, Mdn [IQR]	4.0 [5.0]	4.0 [5.5]	.606[b]
Number of people who had fallen in the past 12 months, n (%)	40 (40.4)	45 (33.8)	.304[a]
Gender, n (%)			.006[a]*
Female	71 (71.7)	72 (54.1)	
Socio-Economic Area, n (%)			.002[a]*
Higher	59 (59.6)	104 (78.2)	
Self-rated health, n (%)			.261[a]
Poor/Fair	25 (25.3)	22 (16.5)	
Good	52 (52.5)	79 (59.4)	
Very Good	22 (22.2)	32 (24.1)	
Self-rated difficulty with walking, n (%)			.115[a]
No	61 (61.6)	95 (71.4)	
Use of walking aid inside of house, n (%)			.182[c]
Nil aids	83 (83.8)	122 (91.7)	
Walking stick	11(11.1)	8 (6.0)	
Walking frame	5 (5.1)	3 (2.3)	
Use of walking aid outside of house, n (%)			.612 [a]
Nil aids	72 (72.7)	104 (78.2)	
Walking stick	15 (15.2)	17 (12.8)	
Walking frame	12 (12.1)	12 (9.0)	
Ambulatory distance without rest on level ground, n (%)			.182[a]
Less than 400m	21 (21.2)	17 (12.8)	
400m to 800m	23 (23.2)	35 (26.3)	
801m to 1.6km	13 (13.1)	29 (21.8)	
1.7km to 3.2km	15 (15.2)	24 (18.0)	
3.3km or more	27 (27.3)	28 (21.1)	
Previously discussed issue of falls with health professional/doctor or received falls prevention information from them? n (%)			.232[a]
Yes	34 (34.3)	36 (27.1)	

Abbreviations: M-Mean, SD-Standard Deviation, Mdn-Median, IQR-Inter Quartile Range;
[a] Determined by using χ^2 test; [b] Determined by using t-test; [c] Determined by using Fisher's Exact Test
* Significant at p<.05

Participants' levels of beliefs, knowledge about falls and falls prevention, motivation, and intention to reduce their risk of falling at baseline and after the presentations are presented in Table 8.5. Participants in both control and intervention groups showed increased levels of self-perceived knowledge, increased self-belief that falls prevention would be useful, and increased levels of motivation to prevent falls at post-presentation and at one month follow up. Participants in both groups also reported higher levels of intention (control median 4.4, intervention median 4.5) and clear plans (control median 4.3, intervention median 4.3) in falls prevention strategies following the presentations.

For the GEE modelling (Table 8.6), the Likert scores of the seven items were found to be bimodal and therefore were recoded into a dichotomised variable. Rating of "Strongly Agree" and "Agree" were recoded to "Agree" or 1 and "Neutral", "Disagree" and "Strongly Disagree" were recoded to "Disagree" or 0. Participants within both the control and intervention groups demonstrated significantly increased levels of beliefs that falls prevention measures would be useful and that knowledge about falls prevention strategies increased intention to take measures to prevent falls. Both groups also reported a clear action plan to engage in falls prevention strategies at post-presentation and/or at one month follow-up (Table 8.6) compared to baseline. Despite participants' improved levels of motivation to reduce their risk of falling across the three points of time within both the control and intervention group, there was no significant difference when investigated in the GEE modelling. Multivariate analysis demonstrated that the intervention group was significantly more likely to report that they had developed a clear action plan which they intended to implement to reduce their risk of falling compared to the control group [OR=1.69, 95% CI (1.03-2.78)], but there were no significant differences between groups regarding beliefs and knowledge about falls prevention, and levels of intention to engage in falls prevention strategies.

Table 8.5 Participants' Responses at Baseline, Post-Presentation and at One Month Follow-Up

	Control Group (n=99)			Intervention Group (n=133)		
	Time1	Time2	Time3	Time1	Time2	Time3
	Mdn^a [IQR]	Mdn^a [IQR]	Mdn^a [IQR]	Mdn^a [IQR]	Mdn^a [IQR]	Mdn^a [IQR]
1: For me, taking measures to reduce my risk of falling would be useful	4.5[0.66]	4.6 [0.62]	4.8 [0.41]	4.4 [0.62]	4.6 [0.56]	4.7 [0.48]
2: Most people whose opinion I value approve of me taking measures to reduce my risk of falling	4.4 [0.71]	4.6 [0.6]	4.6 [0.62]	4.4 [0.66]	4.5 [0.61]	4.5 [0.56]
3: I am aware of the measures needed to reduce my risk of falling	4.2 [0.77]	4.6 [0.53]	4.6 [0.53]	4.1 [0.79]	4.5 [0.53]	4.6 [0.53]
4: I feel positive about reducing my overall risk of falling	4.3 [0.74]	4.5 [0.58]	4.5 [0.56]	4.3 [0.67]	4.5 [0.61]	4.5 [0.55]
5: I am confident that if I wanted to, I could reduce my risk of falling	4.1 [0.74]	4.4 [0.66]	4.4 [0.55]	4.2 [0.74]	4.4 [0.68]	4.4 [0.6]
6: In the next month, I intend to take measures to reduce falls or my risk of falling	4.2 [0.86]	4.4 [0.69]	4.3 [0.69]	4.1 [0.8]	4.5 [0.68]	4.3 [0.72]
7: I have a clear plan of how I will take measures to reduce falls or my risk of falling	3.8 [0.9]	4.3 [0.77]	4.2 [0.86]	3.9 [0.9]	4.3 [0.79]	4.3 [0.71]

Abbreviation: Mdn- Median, IQR- Inter Quartile Range; ^{a} Score 5- Strongly Agree; 4- Agree; 3-Undecided; 2- Disagree; 1- Strongly Disagree.

Time 1: Baseline (Before peer-led presentation); Time 2: Post-Presentation (After peer-led presentation); Time 3: One Month Follow-up (1-month follow-up)

Table 8.6   **Final GEE Models and Parameter Estimates for Each Behaviour Change Outcome**

Model	Variable	Reference Group	Exp(B) OR	Robust 95%CI	p-value
1. Belief that taking measures to reduce risk of falling would be useful	Time 3	Time 1	12.06	1.86,78.06	0.09*
	Time 2	Time 1	2.33	1.05,5.16	.038*
	Intervention	Control	1.07	0.28,4.02	.922
	Female	Male	3.99	1.08,14.68	.038*
2. Belief that people whose opinion they value would approve of them taking measures to reduce their risk of falling	Time 3	Time 1	2.17	1.15,4.08	.017*
	Time 2	Time 1	2.17	1.22,3.85	.009*
	Intervention	Control	1.50	0.62,3.61	.365
3. Knowledge of the measures needed to reduce their risk of falling	Time 3	Time 1	9.60	3.68,25.03	.001*
	Time 2	Time 1	9.60	3.65,25.24	.001*
	Intervention	Control	0.98	0.41,2.33	.962
	Gender Female	Male	2.34	1.09,5.13	.030*
	Discussed: Yes[A]	No	3.07	1.09,8.66	.034*
4. Motivation: positive attitude about reducing their overall risk of falling	Time 3	Time 1	1.70	0.69,4.23	.252
	Time 2	Time 1	1.70	0.68,4.24	.252
	Intervention	Control	1.29	0.38,4.38	.688
5. Knowledge in their confidence to reduce their risk of falling	Time 3	Time 1	3.48	1.74,6.97	.001*
	Time 2	Time 1	1.85	1.17,2.94	.009*
	Intervention	Control	1.01	0.53,1.93	.984
	Aids inside house: Nil	Walking frame	4.15	1.33,12.89	.014*
6. Intention to take measures to reduce their risk of falling	Time 3	Time 1	1.46	0.90,2.35	.122
	Time 2	Time 1	2.18	1.33,3.56	.002*
	Intervention	Control	1.13	0.62,2.04	0.697
	Female	Male	1.82	1.02,3.27	.043*
	Walking stick	Nil aids	5.20	1.56,17.3	.007*
7. A clear plan of the measures to reduce falls or risk of falling	Time 3	Time 1	3.17	2.08,4.84	.001*
	Time 2	Time 1	3.43	2.27,5.18	.001*
	Intervention	Control	1.69	1.03,2.78	.037*
	Female	Male	2.47	1.51,4.02	.001*
	Discussed: Yes[A]	No	2.12	1.19,3.78	.011*

Abbreviations: OR= odds ratio; CI = confidence interval; Exp = exponential; GEE=Generalised Estimating Equation

Time 1: Baseline questionnaire (Before peer-led presentation);

Time 2: Time Post-presentation questionnaire (After peer-led presentation);

Time 3: Time Follow-up questionnaire (1-month follow-up)

OR and 95% CI rounded to two decimal places

Female participants in both groups were significantly more likely to believe that taking measures to prevent falls was useful [OR=3.99, 95% CI (1.08-14.68)]; to report increased levels of knowledge about falls prevention after the presentation [OR=2.34, 95% CI (1.09-5.13)]; to report increased intention to take measures to prevent falls [OR=1.82, 95% CI (1.02-3.270]; and to report a clear action plan to reduce their risk of falling [OR=2.47, 95% CI (1.51-4.02)] (Table 8.6). Participants who reported that they had previously discussed falls prevention with their doctor or health professional or received falls prevention information were significantly more likely to report an increased knowledge of falls risk [OR=3.07, 95% CI (1.09-8.66)] and to develop a falls prevention action plan [OR=2.12, 95% CI (1.19-3.78)].

Content analysis of the participants' written responses to the open-ended question is reflected in the categorisation matrix in Figure 8.2. The main category was defined as knowledge about falls prevention following participants' identification of falls prevention measures. Participants identified measures that they considered they could take that would help reduce their risk of falling, which were coded into three generic categories: (1) evidence-based strategies, (2) non-evidenced strategies, and (3) no strategies. The latter two categories were new categories generated from data that did not fit into the predetermined categories within the matrix. The final matrix displayed measures that participants identified as being helpful for reducing their risk of falling. Participant's responses within each generic and subcategory are summarised in Table 8.7.
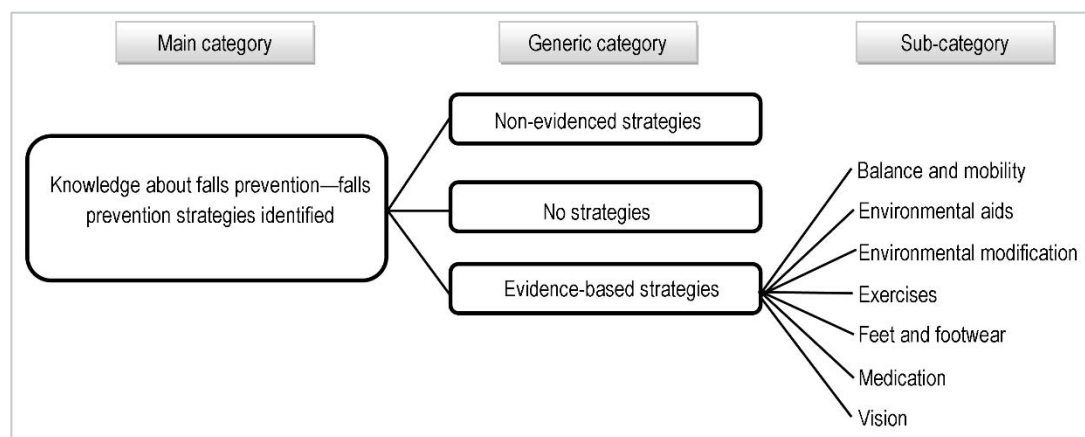

Figure 8.2   **Categorisation Matrix: Participants' Knowledge of Falls Prevention Strategies Identified from Their Qualitative Responses**

Table 8.7   **Participants' Knowledge of Falls Prevention Strategies and Measures Identified in Their Plan**

Generic Category	Sub-category	Control Baseline n=197[a] n (%)	Control Follow-up n=217[a] n (%)	Intervention Baseline n=266[a] n (%)	Intervention Follow-up n=291[a] n (%)
		Control		**Intervention**	
Non-evidenced strategies		23 (12)	25 (12)	48 (18)	19 (7)
No strategies		19 (10)	9 (4)	32 (12)	14 (5)
Evidence-based strategies	Balance and mobility[b]	48 (23)	46 (21)	18 (7)	47 (16)
	Environmental aids	25 (13)	25 (11)	21 (8)	39 (13)
	Environmental modification	39 (20)	67 (30)	88 (33)	90 (31)
	Exercises	28 (14)	17 (8)	25 (9)	34 (12)
	Feet and footwear	9 (5)	23(11)	25 (9)	31 (11)
	Medication	4 (2)	4 (2)	7 (3)	10 (3)
	Vision	2 (1)	1 (1)	2 (1)	7 (2)

[a] Participants could provide more than one measure/steps in their comments

[b] Balance and mobility included participants' knowledge about posture, balance and gait but excluded exercises

Knowledge about environmental modification measures was the largest sub-category represented, which included comments about adaptation of the internal and external home environment. One participant described "shortened electric blanket cords beside bed … so I would not fall over it".

The environmental aids sub-category represented responses that described using mobility aids such as a walking stick. The balance and mobility sub-category included measures relating to posture, balance and gait but excluded exercises. Examples included "Walking rather than shuffling; Make a conscious effort to lift my feet when walking". The other sub-categories described and coded were:

- Exercise: Continued with tai-chi; Balance exercises; Did quad [quadriceps]. strengthening exercises; Seeing a physiotherapist to help me with my strength

- Feet and Footwear: Podiatrist; Got rid of loose fitting shoes

- Medication: Health check with doctor and using correct medications

Participants in both groups also provided responses, in addition to the falls prevention measures they listed, that appeared to reflect their increased beliefs about the need to reduce their risk of falling. This was evidenced by comments that demonstrated recognition of the need to change or modify their behaviour, with one participant stating "[I] truly believe I need to change". Other responses indicated that participants accepted that the topic was personally relevant to them, with statements such as:

> Awareness of the likelihood of falling at my age; Your presentation reinforced my current behaviour to prevent falls; I made a deliberate attempt to analyse my [falls] risks in my small unit.

Some responses were categorised as being not evidenced-based and some participants stated "none" or "nil" when asked to list measures they planned to take to reduce their risk of falls. Measures that were categorised as not being evidence-based included "Slow down and take [your] time; Being careful always; Slower walking; Watching more".

8.6   Discussion

This study showed that providing falls prevention education for groups of older adults using peers was an effective means of raising older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. Previous studies showed that older adults may not be interested in or motivated to receive falls prevention information as they often underestimated their risk of falling, or tended to seek information only after experiencing falls (Haines et al., 2014; Khong et al., 2016). Other studies have also shown that older adults have low levels of knowledge about falls and falls prevention (Haines et al., 2014; Hill, Hoffman, Beer, et al., 2011). Therefore, providing education that raises knowledge and motivation is an important means of preparation for subsequent engagement in falls prevention strategies. Though both groups demonstrated significant increases in beliefs, knowledge and intention, only the intervention group reported a significant difference in having a clear plan that they intended to follow to reduce their personal risk of falling. This finding suggests that the delivery of a theory-based contemporary presentation centred on behaviour change concepts can significantly raise the level of engagement in the audience. The peer educators who presented to the intervention groups were specific about encouraging each individual peer to attempt their personal goal-setting and action plan during their presentation and it is possible that this specificity may be one of the factors in explaining the outcome.

Findings identified that those participants who have discussed falls with a health professional previously or had some previous falls prevention information had greater knowledge and greater intention to engage in falls prevention. These results concur with another study (Lee et al., 2013) in highlighting that healthcare providers play an important role in facilitating older adults' knowledge and motivation to manage their risk of falling. However, it has been found that relatively few older adults discuss falls and falls prevention with their health-professionals (Lee, Brown, Stolwyk, O' Connor, & Haines, 2016). Therefore, peer educators could play a role in encouraging their peers to discuss falls prevention with their health professionals and potentially improve uptake of falls prevention strategies.

There was a significant gender bias in most of the responses to the peer education presentations, with women reporting significantly more intention to change their behaviour positively. This is consistent with previous research that found men are significantly less likely to perceive they are at risk of falls (Hughes et al., 2008), or to report falls or discuss about falls with health-providers (Stevens et al., 2012). There may be value in incorporating elements in future peer-led falls prevention education presentations that specifically note these gender differences, and consider strategies to meaningfully engage men in falls prevention. Another consideration may be the provision of a gender-based peer-led falls prevention presentations. Aligned with this, further research may be required to determine whether gender-congruent presenters might be likely to increase efficacy.

8.7   Limitations

The older adults who chose to participate in this study belonged to community groups, and social participation has been shown to engender positive health-promoting benefits (Cohen, 2004). In addition, these older adults would likely be required to travel either by car or by public transport to attend group meetings. Hence, participants may have been more likely to be mobile, motivated and actively involved members of the older adult population. This could explain why the participants of both groups reported relatively high levels of knowledge and motivation even prior to the presentation. Accordingly, it would be beneficial to trial providing presentations to those relatively more isolated older adults recruited through avenues that do not involve existing community groups such as were used for the peer education sessions in this study.

The challenges to the recruitment, training and retention of new peer educators have previously been identified as obstacles to the successful delivery of falls prevention programs (Peel & Warburton, 2009). The new peer educators delivered the contemporary presentations for the first time during the trial, meaning they had limited experience. This was in contrast with the experienced peer educators who had delivered the existing presentations for between two and ten years. Hence, this could pose a bias against the contemporary program in the outcomes. However, rigorous program fidelity was monitored at various points of the research including the new peer educators' delivery, to ensure the program was implemented as intended (Bellg et al., 2004).

This educational research was conducted within the context of an ongoing falls prevention public health program in the community and as such was a pragmatic non-randomised trial that was conducted under real-world conditions. The presentations were required to be delivered within certain timeframes and training was conducted within the community organisation's regular training program. They delivered to those eligible groups who contacted the community organisation during the research timeframe. However, this approach had benefits in that it meant that the contemporary program was embedded in the community organisation's activities, supporting the program's subsequent sustainability. Additionally, the contemporary peer-led falls prevention education program was also developed in a manner conducive to translation for real-world conditions without losing its intended effectiveness.

Finally, this study provided an important step in evaluating the potential of providing peer education as an approach to prevent falls. This study's intervention, underpinned by evidence and behaviour change theory demonstrated outcomes that reflected older participants' level of engagement with the falls prevention messages. Understanding the effectiveness of a program's outreach in bridging the gap in older adults' knowledge and intention to engage in falls prevention messages can be deemed a critical step prior to delivering any falls prevention programs especially those that measure falls outcomes as a primary end-point. Future research should investigate how a peer-led education delivered in a group setting can be used to encourage older adults to take an interest, commence and sustain participation in other falls prevention programs for older adults.

8.8   Summary of Chapter

Peer-led presentations are an effective means of providing community-dwelling older adults with falls prevention education. The contemporary peer-led falls prevention education program, underpinned by health behaviour change theory and relevant adult learning principles, was an effective means of raising older adults' beliefs and knowledge about falls prevention and their intention. It also resulted in them developing a clear action plan to undertake specific measures to reduce their risk of falls.

Chapter 9

Research Summary,
Recommendations and Conclusion

9.1   Chapter Outline

This chapter summarises and synthesises findings of the research conducted. Key findings from both phases of the research will be presented. First, each of the three studies in Phase 1 will be discussed. These focused on older adult peer educators, community-dwelling older adults, and experts in the area of falls prevention, education, health promotion and psychology. These studies were conducted concurrently to seek the views from key stakeholders about providing falls prevention education for older adults. Findings from these studies yielded an understanding about providing education for falls prevention and community-dwelling older adults' preferences about seeking and receiving falls prevention information. Practical feedback from these studies was used to inform Phase 2 of the research. Phase 2 consisted of the design, development and evaluation of a new contemporary peer-led falls prevention education program. This program consisted of a peer-led presentation, a workshop to train new peer educators to deliver the presentation and resources to support the program. Subsequently, the key findings from a trial conducted to evaluate the effectiveness of the contemporary peer-led falls prevention education presentation compared to the existing presentation will be considered. Finally, the strengths, limitations and challenges of the research will be summarised and the implications for practice presented; recommendations for future research will also be provided.

9.2   Introduction

The primary aim of this research was to design a new peer-led falls prevention education program and evaluate its impact on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. This research was conducted in collaboration with a large not-for-profit community organisation that provides falls prevention and health promotion programs in Western Australia, one of which was a peer-led falls prevention education program.

In Phase 1 of the research, three studies were conducted concurrently to gain an understanding of key stakeholders' perspectives about the provision of falls prevention information and education for older adults. Firstly, older adult peer educators of the existing peer-led falls prevention education program were interviewed to explore their perspectives about their role in delivering peer-led falls prevention education to groups of community-dwelling older adults. In another study, a community-based participatory research forum using the World Café approach was conducted to examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information. Finally, a study was undertaken in which experts from different areas of specialisation evaluated the existing peer education presentations against established criteria consistent with adult learning, behavioural change and falls prevention evidence.

Findings from Phase 1 were used to inform the design of a contemporary peer-led falls prevention education program that was developed and evaluated in Phase 2. This program consisted of a new peer-led falls prevention presentation, a workshop to train new volunteer peer educators to deliver the presentations and supporting resources for the program. As this program was intended for older adult learners, it was important that relevant adult learning principles were incorporated in the design of the education program. Equally important, the theoretical framework of the program was the COM-B model. Research evidence (Michie et al., 2011) has shown that when theory-based interventions are used to improve knowledge and motivation of the target group, there is potential for achieving positive behavioural outcomes. Finally, a longitudinal, quasi-experimental pre-test post-test trial was conducted. The aim of the trial was to evaluate the effectiveness of the contemporary peer-led falls prevention education presentation in improving older adult participants' beliefs and

knowledge about falls prevention, and their motivation and intention to engage in falls prevention strategies compared to the existing peer-led education presentation.

9.3   Summary and Synthesis of Findings

Overall, the peer education approach was supported by both peer educators and older adult forum participants as a valuable means of reaching out and connecting with community-dwelling older adults regarding falls prevention. This is consistent with a review in this area which concluded that peer education could be a potential approach for empowering older adults to take action to reduce their risk of falls (Peel & Warburton, 2009). Expert reviewers gave recommendations on how a peer education program could be designed to be more effective in delivery. These research findings provided new evidence regarding the design of education programs, with an enhanced understanding about how peer education could be designed to potentially raise older adults' awareness, knowledge, motivation and intention to engage in falls prevention strategies. The findings were supported by adult learning principles (Merriam & Bierema, 2014), and could be explained using concepts of health behaviour change from the COM-B model (Michie et al., 2011). The findings from Phase 1 were incorporated into the contemporary program and trial conducted in Phase 2.

While both existing and new programs showed that peer education to be effective in raising older adults' beliefs, knowledge and intention regarding falls prevention, participants who received the contemporary program were significantly more likely to make a clear personal action plan to reduce their risk of falling. Additionally, the strength of the contemporary program was that it was designed using behaviour change theory and relevant adult learning principles.

The overall findings of this thesis strongly suggest that falls prevention education for older adults should be designed using relevant adult learning principles and referencing health behaviour change theory. This research has demonstrated that an evidence-based peer education approach informed by sound theoretical frameworks, can be a feasible means of addressing older community dwelling adults' perceptions regarding falls prevention programs.

9.3.1 Phase 1: Key stakeholders' perspectives about falls prevention information and education

Previous studies showed that some older adults did not find falls prevention recommendations personally relevant, identified barriers to engaging in falls prevention strategies and often had limited knowledge about falls and falls prevention (Bunn et al., 2008; Dickinson, Machen, et al., 2011; Dorresteijn et al., 2012; Hill, Hoffman, Beer, et al., 2011; Hughes et al., 2008; Yardley, Bishop, et al., 2006). In view of these findings, the peer education approach to falls prevention education has been proposed (Peel & Warburton, 2009) as a means of overcoming these barriers and potentially improving community-dwelling older adults' knowledge about falls and falls prevention and uptake of relevant evidence-based strategies. The aim of Phase 1 of the research was first, to seek key stakeholders' perspectives in order to gain a better understanding of the role of peer educators in falls prevention; second, to garner views about community-dwelling older adults' preferences for seeking and receiving falls prevention information, and third to seek expert evaluation and opinion about the peer educators' presentations of falls prevention education for community-dwelling older adults. The key stakeholders in this research were (1) peer educators of the existing peer-led falls prevention education program, (2) a group of community-dwelling older adults, and (3) professionals who had expertise in various areas of specialisation relevant to falls prevention, education, health promotion and psychology.

Research Aim (Study 1): Explore the perspectives of a group of peer educators about their role in delivering peer-led falls prevention education for community-dwelling older adults.

Study 1 explored the peer educators' perspectives through focus-group and semi-structured interviews. This study was the first in the field of falls prevention to specifically investigate peer educators' understanding of what their role entailed and their perceptions about how they encouraged their peers towards a change in health behaviour. New insights into the enablers and barriers that can influence peer educators' capacity to deliver the falls prevention education effectively were identified. The peer educators emphasised that they could successfully engage in and promote positive health behaviour change to the older adults because they could personally relate to them through the peer-to-peer connection. The peer educators

consistently expressed the need for further organisational support regarding their training and for formal feedback on how to better motivate their peers to engage in falls prevention strategies. Overall, these findings reinforced existing empirical evidence (Peel & Warburton, 2009) supporting peer education as a feasible and potentially effective approach for delivering education about falls prevention to older adults.

> **Research Aim (Study 2):** Examine the views and preferences of community-dwelling older adults about seeking and receiving falls prevention information.

Study 2 used a consumer-focused approach to examine the views and preferences of older adults as stated in the research aim. Studies have identified that older adults frequently stated that they did not find falls prevention messages personally relevant and they often thought that falls were not preventable (Horne, Speed, Skelton, & Todd, 2009; Hughes et al., 2008). Other studies have reported that falls prevention messages are better accepted if portrayed positively (Hill, Hoffman, Beer, et al., 2011; Hughes et al., 2008; Yardley, Bishop, et al., 2006). Given these findings, the second study aimed to further understand how the delivery of falls prevention information could be improved by examining older adults' views and preferences about seeking and receiving falls prevention information. A community-based participatory research forum using a novel World Café approach was conducted with community-dwelling older adults. A range of factors regarding older adults' perspectives about seeking and receiving falls prevention information was identified. The study found that older adults were primarily concerned that information be imparted positively and respectfully to encourage engagement with the messages delivered. Personal experience strongly influenced older adults' perceptions about whether they chose to seek out falls prevention information. Those older adults who reported that they had already experienced a fall or had experienced a family or friend falling, stated that it triggered a search for information and additionally, changed their perceptions about the relevance of information provided. These findings suggested that the approach to falls prevention education may need to be further refined. For older adults who have fallen, the approach could be to provide detailed tailored information to individual older adults or groups of older adults about what strategies could be undertaken to reduce their risk of falling. For those older adults who have

not yet experienced a fall, education strategies could be targeted with the aim of raising awareness about the risk of falls and in particular, fostering an appreciation of the personal relevance of falls prevention. Furthermore, education could encourage these older adults to investigate positive strategies that can reduce the risk of falls, but are also relevant for wellbeing and healthy ageing. Feedback from forum participants indicated that alternative sources of providing information, such as seniors' groups and shopping centers and libraries, should be considered, as these older adults reported that they were less likely to seek falls prevention information from healthcare professionals if they had not fallen. Peer education was one of the alternatives proposed by forum participants as a feasible means of reaching out to those older adults who had not experienced a fall. The findings from this study were valuable because they were informed by the older adult lived experience in the community. They confirmed other studies and concepts of health behaviour change, which have identified that raising older adults' knowledge about falls and falls prevention is critical for overcoming barriers and developing the motivation and confidence to engage in falls prevention strategies (Haines et al., 2011; Hill, Hoffman, McPhail, et al., 2011; Michie et al., 2011).

> **Research Aim (Study 3):** Evaluate peer educators' presentations of falls prevention education for community-dwelling older adults against established criteria that were consistent with adult learning principles, the framework of health behaviour change, falls prevention guidelines and recommendations for providing falls prevention information by experts of various areas of specialisation.

Study 3 was a mixed methods study that used a novel approach, whereby three peer-led falls prevention presentations were videoed and the recordings were made available via a secure internet link for subsequent review by ten experts (nine from Australia and one from UK). These experts were from areas of falls prevention, education, health promotion and psychology. Although the experts reviewed the peer-led presentations from different professional perspectives, they were consistent in their findings and concurred in their final recommendations. Key recommendations included reminding peer educators to personalise falls prevention messages delivered, and that adult learning principles ought to be used to encourage audience interaction and subsequent engagement with the message. They recommended that falls

prevention education be presented in a positive manner and that information provided should emphasise the benefits in wellbeing beyond preventing falling. Finally, the experts also recommended that to foster awareness of the personal relevance of falls and to raise motivation, participants should be encouraged to develop a personal action plan for reducing the risk of falling.

Subsequently, the findings from Phase 1 were used to inform the design, development and evaluation of a contemporary peer-led falls prevention education program in Phase 2.

9.3.2 Phase 2: Design, development and evaluation of a new peer-led falls prevention education program

Phase 2 of the research consisted of the design, development and evaluation of a contemporary peer-led falls prevention education program that was underpinned by the COM-B model and also incorporated relevant adult learning principles. It was developed in close collaboration and partnership with the community organisation, with the aim of enhancing feasibility in delivery and future translation. A workshop was developed to train new peer educators to deliver the presentation. The new peer educators were given training initially regarding epidemiology of falls and falls prevention and also understanding their role in facilitating the learning of their peers about falls prevention. Subsequently, they learned about integrating BCTs and adult learning principles into their presentations, and encouraging uptake of falls prevention strategies by their peers. The peer-led falls prevention presentation was mapped against the COM-B model and related BCTs. The program resources that were developed included a facilitator instruction manual and teaching aids, online training video, a peer educator guidebook and fidelity checklist (see Appendix O, Appendix P, Appendix Q) to enable the community organization (ICCWA) and other organisations to replicate the peer-led falls prevention education program with fidelity.

> **Research Aim (Study 4):** Evaluate the effectiveness of delivering a contemporary peer-led falls prevention presentation incorporating adult learning principles and behaviour change strategies on community-dwelling older adults' beliefs and knowledge about falls prevention, their motivation, and intention to engage in falls prevention strategies compared to delivering an existing peer-led falls prevention presentation.

The contemporary peer-led falls prevention education presentation was evaluated to determine its effectiveness on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. The outcomes of the contemporary presentation were compared with the control group, whose participants received the existing falls prevention presentation delivered by the peer educators trained under the existing program. Peer-led education significantly raised both groups of participants' beliefs about the personal relevance of falls prevention, knowledge about falls and falls prevention and their levels of intention to engage in evidence-based falls prevention strategies. In addition, the contemporary peer-led falls prevention education was significantly more effective in influencing older adults to develop a clear personal take home action plan to engage and undertake falls prevention measures to reduce their risk of falling.

As discussed earlier, barriers to engagement in falls prevention have been found to include older adults' low self-perceived risk of falls, low levels of knowledge about falls and falls prevention, and low levels of motivation to engage in falls prevention strategies (Bunn et al., 2008; Dickinson, Machen, et al., 2011; Dorresteijn et al., 2012; Hill, Hoffman, Beer, et al., 2011; Hughes et al., 2008; Yardley, Bishop, et al., 2006). Given that changing health behaviour as proposed by the COM-B model (Michie et al., 2011) requires an individual to gain capability (awareness and knowledge) and motivation, these results demonstrated that using the peer education approach can overcome some of these barriers to engagement in falls prevention. Participants in both groups were significantly more likely to report an increased knowledge of their personal falls risk and to develop an action plan to reduce their risk of falls. Participants who reported that they had previously discussed falls prevention with their doctor or health professional or received falls prevention information were significantly more likely to report an increased knowledge of falls risk. While this highlighted the important role that healthcare professionals can play in facilitating older adults' knowledge about falls and motivation to engage in preventive strategies (Dickinson, Horton, et al., 2011; Lee et al., 2013), other studies have found that relatively few older adults take the opportunity to discuss falls and falls prevention with such professionals (Lee et al., 2016; Stevens et al., 2012). Peer education could be a feasible, alternate means of encouraging older adults to discuss falls prevention with their healthcare professional. The study also found new evidence that men were

significantly less likely to believe that taking measures to prevent falls was useful, to report increased knowledge or to report an intention to engage in falls prevention strategies after attending a peer-led presentation. This is consistent with previous studies that have reported that men were less likely to perceive themselves at risk of falling compared with women (Hughes et al., 2008) and less likely to seek medical care after a fall or talk to a health professional about falls or falls prevention (Stevens et al., 2012).

9.4   Strengths of the Research

This research has several strengths. While an earlier review (Peel & Warburton, 2009) recommended peer education as a potential approach for reducing falls, there was limited empirical research that evaluated the design and implementation of peer-led falls prevention education using a behaviour change theory approach. This is the first research to evaluate the impact of a peer-led falls prevention education program that is underpinned by a behaviour change framework, utilises adult learning principles and incorporates feedback from key stakeholders. This research was able to evaluate if the contemporary program (a complex intervention) could raise older adult's beliefs and knowledge about falls and falls prevention, and their motivation and intention to engage in an evidenced-based plan to reduce their risk of falls (Campbell et al., 2000). The program can now be further robustly evaluated in larger trials to determine its effect on older adults' engagement in falls prevention strategies.

Consumer involvement in research has increasingly been recognised and promoted as important because consumer engagement can improve the quality of health research studies ensuring that proposed research outcomes are relevant to end-users (Hill & Draper, 2011; National Health and Medical Research Council (NHMRC), 2004; National Health and Medical Research Council (NHMRC) & Consumers' Health Forum (CHF), 2005). One of the strengths of this research was its regular consultations with older adult groups in the community throughout the research process. These consultations included seeking feedback about questionnaires and procedures to be used in the research, pilot testing the questions for the forum and seeking feedback from the new peer educators after they delivered the contemporary presentation. During Phase 1, extensive consultation was undertaken with the older adult peer educators (Study 1) and with older adults who participated in the

community-based participatory research forum (Study 2). This level of involvement enhanced the development of the new peer education program by ensuring that the program was feasible to deliver in the allocated timeframe. Since the hour was pre-determined, it was important that key concepts were conveyed briefly, but it was essential that principles of adult learning were applied to the program structure. The final program was designed with older adults' preferences in mind and included practical consumer-focused solutions. Such involvement and engagement also ensured that concerns raised in previous studies regarding falls prevention messages not being personally relevant or providing appropriately clear information, were addressed (Bunn et al., 2008; Dickinson, Machen, et al., 2011; Dorresteijn et al., 2012; Hill, Hoffman, Beer, et al., 2011; Hughes et al., 2008; Yardley, Bishop, et al., 2006). Overall, older adults' involvement and feedback improved the feasibility of the program that has now been translated into practice by the community organization (ICCWA) and is still currently adopted. Therefore, the one hour presentation designed to be delivered by volunteers, can potentially be readily translated into other similar community-based settings.

The design, development and evaluation of the new education program was described explicitly and extensively. Unlike earlier peer-led falls prevention education studies for older adults (Allen, 2004; Deery et al., 2000; Kempton et al., 2000), a rigorous, structured mapping of the health behaviour change theory and its taxonomy of BCTs (Abraham & Michie, 2008) was applied to guide the design and development of the new education program during this research. In designing effective health research programs, health behaviour change theory confirms that identifying the "active ingredients (core components)" in behaviour change interventions and the conditions in which they are effective is crucial (Michie et al., 2009, p. 4). Through this process, the research team could map the identified target health behaviour (initiate and develop a personal take home action plan to engage in falls prevention strategies) against the BCTs required to address this behaviour. Subsequently, the target behaviour was assessed to evaluate the effectiveness of the BCTs chosen. (Colquhoun et al., 2014). This detailed mapping of the intervention facilitated evaluation of the study's peer-led falls prevention education program and also allows for future replication by third parties (Craig et al., 2013; Davies et al., 2010; Michie & Abraham, 2008).

Conducting educational health research in real-life-conditions (Murray, 2002; National Research Council, 2002) has both strengths and challenges. The research in this thesis was approached in a manner that was consistent with recommendations for research in education such as a phased approach to both development and evaluation of complex interventions (Campbell et al., 2000; Medical Research Council, 2000; Murray, 2002; National Research Council, 2002). Additionally, a mix of approaches has been proposed as the most efficacious method of evaluating complex interventions in educational research (Campbell et al., 2000; Medical Research Council, 2000; Murray, 2002; National Research Council, 2002). In the final synthesis of mixed methods results, an enhanced understanding of the underlying aspects was derived (Liamputtong, 2013), with identification of factors that enriched the evidence for a peer-led approach to falls prevention education. The use of a mixed methods research design with both qualitative and quantitative approaches in Phase 1 provided for a robust analysis and in-depth understanding of peer led falls prevention education. Phase 2 also provided both quantitative and qualitative findings for the evaluation of the education program that enabled a more in-depth and richer understanding of older adults' responses to the program. In addition, the research was conducted in close collaboration and partnership with a community organisation which was advantageous but also posed challenges (Ross et al, 2010). The advantage was the latter provided feedback, support and active participation in some aspects of the research. The approach to aspects such as design and delivery of the peer-led falls prevention education program, data collection and evaluation were all informed by the organisation's feedback from their large older adult volunteers' membership and the older adults' community groups with whom they interact with on a regular basis. Their insights to contextual factors facilitated research such as identification of potential barriers to recruitment and retention of participants. Extra effort was made to discuss expectations of goals, ownership of data, timelines and resources for the research with the community organisation. In addition, the research team negotiated with the community organisation to determine essential elements of the intervention that could be adapted to local context and to control for elements which could not be altered. This ensured that the contemporary peer-led falls prevention education program was developed in a feasible manner for translation to practice in real-life conditions without losing its intended effectiveness. Additionally, the new program was embedded in the community organisation's activities, supporting its sustainability. Finally, the

reporting of this research's contemporary peer-led falls prevention education program was guided by the Template for Intervention Description and Replication (TIDieR) checklist (Section 7.8.2) (Hoffmann et al., 2014), which is recommended for use when reporting interventions (EQUATOR Network, 2016; Johnston et al., 2014).

Validity and reliability of the research can impact on interpretation of findings and generalisability (De Vaus, 2014; Portney & Watkins, 2009). To maximise the validity (internal and external validity) and reliability of the research, the program's fidelity was addressed (Borrelli et al., 2005; Nigg et al., 2002; Resnick et al., 2005). In this research, fidelity was monitored during the research to ensure the education program was delivered as intended (Bellg et al., 2004; Borrelli, 2011; Gearing et al., 2011; Moncher & Prinz, 1991; Resnick et al., 2005). For example, as discussed in Chapter 7, Section 7.8.1, a fidelity checklist (Appendix Q) was developed to be used by the community organisation, to provide feedback to the new peer educators after observation of delivery of their presentations. The development of a facilitator instruction manual and teaching aids also ensured consistency in training of new peer educators and delivery of the one hour presentation. The measuring instruments (questionnaires in Study 3 and Study 4) used in the research were validated and assessed to be reliable (De Vaus, 2014). Sample attrition also has the potential to introduce bias and impact on internal and external validity (Barry, 2005; Hansen et al., 1985). Our older adult participants' ages ranged from 60 to 86 years throughout the four studies and more than half of the participants (52.5%) in the quasi-experimental trial reported their health to be good (Chapter 8, Table 8.4). However, although most participants may indicate slightly better health than the wider population of older adult, there are challenges to conducting research among older adult populations (Fudge et al., 2007; Kelsey et al., 1989; Samelson et al., 2008). Care was taken to minimise sample attrition during all the studies conducted. For example, during the World Café community-based forum, regular rest breaks with refreshments and an age-friendly setting were organised. Notably, the older adult participants overwhelmingly reported the forum met their expectations (95.7%) and they felt the forum covered issues important to them (92.8%) (Bulsara et al., 2016) (Appendix K). During the trial in Phase 2, the research team made a call to each participant prior to sending out the follow-up questionnaire and later another effort was made to remind those who did not respond within the deadline. The Phase 2 quasi-experimental trial's attrition rate was

32% (control group) and 30% (intervention group) across the three time points, even though participants had only attended an hour presentation with no further face-to-face contact with the research team. This compares favorably with attrition rates reported in other studies in this area (Allen, 2004; Deery et al., 2000). Finally, the studies conducted and reported a priori sample size calculations to ensure adequate statistical power for hypothesis testing.

Overall, the steps taken in this research facilitated (i) evaluation of findings, (ii) the ability to translate the program with fidelity for use in other similar community-based settings and (iii) potential replication of the program for further evaluation in other larger falls prevention trials. Importantly, the program was shown to be practical, feasible and sustainable in real-life conditions, and effective in raising older adults' beliefs, knowledge and intention with regard to falls prevention.

9.5   Limitations and Challenges of the Research

The use of a mixed method approach in the design and evaluation of the studies in this thesis has advantages as presented in Chapter 3 Section 3.2.1 but a mixed method research design poses challenges, too. There is a lack of consensus regarding the definition of a mixed method research design (Teddlie and Tashakkori, 2011) which has proven to be time-consuming at the publication stage where there has been queries from reviewers. Furthermore, there is a debate over the theoretical and conceptual issues arising from the conduct of such a research approach (Creswell, 2011). The relevant issues for this thesis included specifying the weight of quantitative and qualitative aspects within each study (for example in Study 1, Chapter 4) that can impact on the interpretation of the findings. Mixed method research design has also been deemed to be costlier, more time-consuming and requiring a wider repertoire of skills for doctoral students to conduct (Teddlie and Tashakkori, 2011). In this research, the final mixed method research methods were chosen to aid in answering the research questions most effectively by collecting both quantitative and qualitative data to understand the complex problems presented (Creswell, 2014). Additionally, at a practical level, a mixed methods approach (Creswell 2014) was chosen because it was recognised that there would be pragmatic and procedural limitations in working with a community organisation. A mixed method approach could assist to minimise these limitations.

Educational research is challenging when translating theory into practice (National Research Council, 2002; Nelson, 2000) as there are factors beyond the control of the research team that can impact on the outcome of the program. There were challenges to the recruitment, training and retention of new peer educators (Chapter 8 Section 8.7), which has previously been identified as a challenge to the successful delivery of such programs (Peel & Warburton, 2009). Training older adult volunteer lay people with varying educational qualifications, life experience and background to grasp new concepts in falls-related content knowledge, behaviour change concepts, adult learning principles and presentation skills within one training workshop was a challenge. It was challenging because of the effect of ageing on their learning (Chapter 2 Section 2.5.1.3.3) and the complexity associated with concepts of health behaviour change (Section 2.5.1). Additionally, they were required to learn how to apply adult learning principles into a time limited presentation of one hour. Hence, technology such as online video-based lessons and materials, as well as role-play and mock practice were harnessed to accommodate the new peer educators' diverse learning requirements and pace of learning at the workshop. Resources were also developed for their self-directed learning after the workshop and a buddy system was applied to provide opportunities for support from their peers during practice runs (Chapter 7). Only two out of the six newly trained volunteer peer educators were available at the time of the research period to deliver the presentations to the intervention group participants. In contrast, the five peer educators who delivered the existing peer-led presentations to the control group participants had one to ten years of peer education experience. Another challenge in conducting educational research was encountered in Study 3 (Chapter 6) where the experts conducted an appraisal by watching video-recordings of three peer-led presentations. Each of the presentations was recorded by using a positionally fixed, single-angle video-recorder. The real-time dynamics of the presentations and the audience was not as evident on video as it may have been if the presentations were observed live.

Non-randomisation and self-selection participation in research may have an impact on sampling representativeness (Ives, Traven, Kuller, & Schulz, 1994), validity and generalisability of the findings (Campbell, 1957; Portney & Watkins, 2009). The participants in the present studies were older adults who were eligible in terms of the study's inclusion criteria, and volunteered to participate. The older adults who

participated in the forum, as discussed in Chapter 5, were generally from a higher socio-economic background and were probably a more mobile group of those older adults living in the community because they were required to travel to the forum venue by car or public transport. Similarly, in the quasi-experimental trial in Phase 2 (Chapter 8), the participants were predominantly English-speaking and belonged to community-based groups who met regularly on a social basis. Social integration such as this tends to engender positive health outcomes according to previous research (Cohen, 1988, 2004). As reported in Chapter 8, participants of both the control and intervention groups may be the more mobile, motivated and actively involved members of the older adult population because they reported relatively high levels of knowledge and motivation about falls prevention, even prior to the presentation. Moreover, other studies conducted among older populations (Carter, Elward, Malmgren, Martin, & Larson, 1991; de Souto Barreto, 2012; Norris, 1985; von Strauss, Fratiglioni, Jorm, Viitanen, & Winblad, 1998) have found that older adult respondents in research are generally fitter, have better cognitive function and are more positive compared to non-respondents. Potential sampling bias through self-selected participants in this research may mean relatively frailer, more isolated older adults and adults from other cultural backgrounds were not included in our convenience sample. Results of these studies need to be considered in this context.

A limitation of this research was that the effectiveness of the education program could not be evaluated for its effect on falls-related primary endpoints such as occasions of falling or rate of falling. The program was designed and evaluated primarily to assess its effectiveness in raising levels of beliefs, knowledge, motivation and intention to take up falls prevention strategies, as this had not been previously well investigated in peer-led falls prevention programs. While the results confirmed the program's effectiveness when delivered by and for older adults, it is unknown if an actual change in behaviour to prevent falling would occur subsequent to the participants' reported raised intention and action plan development. Unfortunately, there was only one hour for delivery of the peer-led presentation, and hence, a limited time for conducting the pre-test post-test trial. Given the limited timeframe for data collection, a pragmatic approach using a questionnaire was adopted. However, unlike interviews, with the use of questionnaires there was no opportunity to further explore or identify other potential moderating variables or influences (positive or otherwise) impacting on participants' behaviour subsequent to their reported intention and action plan.

9.6   Implications for Practice

Researchers ought to involve older adults to obtain their perspectives prior to, and throughout, the design and development of falls prevention education programs targeting older adults. At the forum, older adults shared their unique perspectives about falls, and exhibited how information and education about falls prevention can be communicated in a respectful and meaningful manner. These perspectives and information gleaned can be applied by healthcare professionals or researchers to enhance any interaction with older adults regarding falls prevention information or education. Health professionals could also seek to involve older adults wherever programs regarding falls prevention are offered. In such situations, older adult committees and peer volunteers could advise and interact with others at falls clinics and day therapy settings. Older adults in this research suggested that falls prevention information could be provided through alternative and more accessible non-health focused sources such as community libraries or seniors' groups.

Training older adult volunteers to grasp new concepts within one training workshop was a challenge, so there may be value in considering dividing the training for Module 2 into two days, or having a refresher follow-up workshop shortly after Module 2 to reinforce key concepts. This contemporary peer-led falls prevention education program, developed as part of the research, has the potential to be translated across to other community-based older adult falls prevention or healthy ageing programs. Organisations could use this program as the resources developed could easily translate to other community settings. However, such organisations would need to have a mechanism to recruit, train and support new volunteer peer educators and adapt the program to cater for local contexts. Alternatively, the contemporary falls prevention education program could be considered as an adjunct follow-up program after health professionals or doctors have identified which older adults could benefit from more support in falls prevention.

9.7   Recommendations for Future Research

There is merit in conducting a randomised trial which could evaluate the effect of providing peer led falls education on community-dwelling older adults' engagement in falls prevention strategies. As the primary end-point of falls was not assessed in this

research, another valuable approach would be to undertake a study incorporating falls outcomes as an endpoint, and having sufficient sample size and power for doing this effectively. In addition, it may be worthwhile extending the timeframe for follow-up beyond the one month of this research, to maximise the time that some older adults can realistically follow through and implement their goals in their action plan, and to evaluate the sustainability of any achieved practice change. A further consideration may be to trial the effectiveness of peer-led education as compared to education by a healthcare professional, or as part of multifactorial interventions in a larger RCT.

Some findings in this research suggested that tailored approaches to providing falls prevention education may be beneficial. To explore this, further, there may be value in future research incorporating older adult consumer involvement. In Chapter 8, older adults who reported no prior history of falls were found to be less ready to engage in falls prevention strategies, compared to those who had already fallen. Researchers should incorporate older adults' views in examining how the design of a program could be tailored to accommodate the different perceptions and attitudes of these groups of older adults. Men reported significantly lower levels of knowledge, were less likely to believe that taking measures to prevent falls was useful, and expressed less intention to undertake falls prevention strategies after attending the peer-led falls prevention presentations. Researchers could consult community-dwelling men to explore which approach might raise their intention to engage in falls prevention strategies, and determine whether a tailored peer-led approach, such as a men-to-educate-men presentation format might be a more effective approach.

Culture has been identified as learned social norms, beliefs and values shared amongst a group of people (Betancourt, 1993). It has been shown to influence perceptions in the areas of health-seeking behaviours (Kwok & Sullivan, 2007) and of older adults' in their choice of mobility aids and falls prevention (Aminzadeh & Edwards, 1998; Horton & Dickinson, 2011). Older adult participants in the community forum (in Chapter 5) also discussed the consideration of cultural appropriateness in educational interventions. Consequently, these studies have recommended that falls prevention programs be culturally-sensitive and relevant to the target group (Aminzadeh & Edwards, 1998; Horton & Dickinson, 2011). ICCWA's peer-led falls prevention programs were delivered to both predominantly English-speaking older adult community groups and to groups from other cultures. In this

research, we targeted those English-speaking groups in the community instead of groups from other cultures or ethnicity. However, future research should be conducted to ascertain whether this program is appropriate for older adults from other cultures.

Little is known about cost factor(s) involved specifically with a community-based peer-led education program in falls prevention. A cost-benefit analysis conducted on the Stay on Your Feet® falls prevention program in NSW, of which peer-led presentation was one component, found the community-based program to be cost-effective (benefit-cost ratio 20.6:1) when compared to incurred costs for the health services or avoided hospitalisation costs (Beard et al., 2006). However, this study was conducted at a time when falls prevention education programs were not widely established; hence in Australia and possibly elsewhere this study's methodology may be difficult to replicate. Investigating the cost effectiveness of community-based peer education falls prevention programs could be another potential area for future research.

9.8 Conclusion

The primary aim of this research was to design a peer-led falls prevention education program and evaluate its impact on community-dwelling older adults' beliefs, knowledge, motivation, and intention to engage in falls prevention strategies. The peer education approach was found to be an effective means of raising older adults' levels of beliefs, knowledge and intention to engage in falls prevention strategies. Importantly, by using key stakeholders' feedback, relevant adult learning principles and a behaviour change framework to design, implement and evaluate the program, the contemporary education program was found to be significantly more effective than the existing program in encouraging older adults to develop a clear action plan to reduce their risk of falling.

In conclusion, a peer-led falls prevention program can be designed using adult learning principles and a behaviour change framework and be delivered with fidelity to a group of community dwelling older adults in a feasible timeframe and in real-life conditions. Delivering peer-led presentations can raise community-dwelling older adults' belief that they can reduce their risk of falls, increase their knowledge about evidence-based falls prevention strategies and result in them developing a clear personal take home action plan. Peer education may be a valuable addition to community-based falls prevention initiatives for older adults.

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Appendix A

Ethical Approval

A.1 Approval for Phase 1 Study 1: Peer Educators
(Chapter 4)

THE UNIVERSITY OF
NOTRE DAME
A U S T R A L I A

19 Mouat Street (PO Box 1225)
Fremantle, Western Australia 6959
Telephone: +61 8 9433 0555
Facsimile: +61 8 9433 0544
Email: enquiries@nd.edu.au
Internet: www.nd.edu.au

ABN: 69 330 643 210
CRICOS PROVIDER CODE: 01032F

6 May 2013

Dr Anne-Marie Hill
School of Physiotherapy
The University of Notre Dame Australia
Fremantle Campus

Dear Anne-Marie,

Reference Number: 013061F

Project Title: "Peer-led community falls education program for older adults: gaining the views of volunteer peer educators."

Your response to the conditions imposed by a sub-committee of the university's Human Research Ethics Committee, has been reviewed and based on the information provided has been assessed as meeting all the requirements as mentioned in *National Statement on Ethical Conduct in Human Research* (2007). Therefore, I am pleased to advise that ethical clearance has been granted for this proposed study.

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with what promises to be a most interesting and valuable study.

Yours sincerely,

Dr Natalie Giles
Executive Officer, Human Research Ethics Committee
Research Office

cc: Prof Peter Hamer, Dean School of Physiotherapy;
        A/Prof Shane Patman, SRC Chair, School of Physiotherapy.

A.2   Approval for Phase 1 Study 2: Community Forum
(Chapter 5)

THE UNIVERSITY OF
NOTRE DAME
AUSTRALIA

19 Mouat Street (PO Box 1225)
Fremantle, Western Australia 6959
Telephone: +61 8 9433 0555
Facsimile: +61 8 9433 0544
Email: enquiries@nd.edu.au
Internet: www.nd.edu.au

ABN: 69 330 643 210
CRICOS PROVIDER CODE: 01032F

11 August 2014

Associate Professor Anne-Marie Hill & Ms Linda Khong
School of Physiotherapy
The University of Notre Dame Australia
Fremantle Campus

Dear Anne-Marie and Linda,

Reference Number: 014128F

Project Title: "World Cafe community forum: To examine views and preferences of older people about seeking and receiving falls prevention health-related information."

Your response to the conditions imposed by a sub-committee of the university's Human Research Ethics Committee, has been reviewed and based on the information provided has been assessed as meeting all the requirements as mentioned in *National Statement on Ethical Conduct in Human Research* (2007). Therefore, I am pleased to advise that ethical clearance has been granted for this proposed study.

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

cc: Prof Peter Hamer, Dean, School of Physiotherapy;
         A/Prof Shane Patman, SRC Chair, School of Physiotherapy.

A.3 Approval for Phase 1 Study 3: Expert Review
(Chapter 6)

THE UNIVERSITY OF
NOTRE DAME
A U S T R A L I A

19 Mouat Street (PO Box 1225)
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ABN: 69 330 643 210
CRICOS PROVIDER CODE: 01032F

16 June 2014

Associate Professor Anne-Marie Hill & Ms Linda Khong
School of Physiotherapy
The University of Notre Dame Australia
Fremantle Campus

Dear Anne-Marie and Linda,

Reference Number: 014100F

Project Title: "Peer-led community falls education program for older adults: Expert review of the delivery of peer educator presentations."

Your response to the conditions imposed by a sub-committee of the university's Human Research Ethics Committee, has been reviewed and based on the information provided has been assessed as meeting all the requirements as mentioned in *National Statement on Ethical Conduct in Human Research* (2007). Therefore, I am pleased to advise that ethical clearance has been granted for this proposed study.

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

cc: Prof Peter Hamer, Dean, School of Physiotherapy;
        A/Prof Shane Patman, Acting SRC Chair, School of Physiotherapy.

A.4 Approval for Phase 2 Study 4: Quasi-Experimental Trial *(Chapter 8)*

A.4.1 Control Group trial

THE UNIVERSITY OF
NOTRE DAME
AUSTRALIA

14 August 2014

19 Mouat Street (PO Box 1225)
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Telephone: +61 8 9433 0555
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Associate Professor Anne-Marie Hill & Ms Linda Khong
School of Physiotherapy
The University of Notre Dame Australia
Fremantle Campus

ABN: 69 330 643 210
CRICOS PROVIDER CODE: 01032F

Dear Anne-Marie and Linda,

Reference Number: 014134F

Project Title: "To evaluate the effectiveness of peer-led falls prevention education presentations for older adults in the community."

Your response to the conditions imposed by a sub-committee of the university's Human Research Ethics Committee, has been reviewed and based on the information provided has been assessed as meeting all the requirements as mentioned in *National Statement on Ethical Conduct in Human Research* (2007). Therefore, I am pleased to advise that ethical clearance has been granted for this proposed study.

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

cc: Prof Peter Hamer, Dean, School of Physiotherapy;
        A/Prof Shane Patman, Acting SRC Chair, School of Physiotherapy.

A.4.2   Intervention Group trial

5 March 2015

Associate Professor Anne-Marie Hill & Ms Linda Khong
School of Physiotherapy
The University of Notre Dame Australia
Fremantle Campus

Dear Anne-Marie and Linda,

Reference Number: 015013F

Project Title: "To evaluate the effectiveness of peer-led falls prevention education presentations for older adults in the community."

Thank you for submitting the above project for Low Risk ethical review. Your application has been reviewed by a sub-committee of the university's Human Research Ethics Committee in accordance with the *National Statement on Ethical Conduct in Human Research* (2014). I am pleased to advise that ethical clearance has been granted with advice for this proposed study.

- Researchers should include a statement that if a potential participant chooses not to participate in the study it doesn't mean they can't stay for the presentation.

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

cc: Prof Peter Hamer, Dean, School of Physiotherapy;
        A/Prof Shane Patman, SRC Chair, School of Physiotherapy.

Appendix B

Support from Community Organisation

B.1 Letter of Support for Phase 1 Study 1
(Chapter 4)

ICCWA
Injury Control Council of Western Australia

promoting safety
in our community

Dr Anne-Marie Hill
The University of Notre Dame Australia
PO Box 1225
Fremantle WA 6959

8 March 2013

Dear Dr Hill

This letter provides authorisation for Dr Anne-Marie Hill from The University of Notre
Dame Australia to access volunteers involved in the ICCWA falls prevention
education programs. The authorisation includes the research team of Dr Hill, Notre
Dame staff member Mrs Jacqui Francis-Coad and the post graduate student Ms
Linda Khong.

The approval is granted with the following conditions:
- Participation from individuals is voluntary.
- The research has gained appropriate ethics approvals.
- Individuals contact details are not released to the research team and
  individuals are not contacted directly by members of the research team
- ICCWA reviews all research documentation.
- Information, research and data are strictly confidential and are supplied on the
  understanding that they will be held confidentially and not disclosed to third
  parties without the prior consent of ICCWA.

Authorisation is granted for a period of 12 months from the date of this letter.

For further information please contact me on 9420 7212 or dcostello@iccwa.org.au.

Kind regards,

Deborah Costello
Chief Executive Officer

B.2   Letter of Support for Phase 1 Study 3
(Chapter 6)

ICCWA
Injury Control Council of Western Australia

promoting safety
in our community

A/Professor Anne-Marie Hill
The University of Notre Dame Australia
PO Box 1225
Fremantle WA 6959

6 May 2014

Dear A/Professor Anne-Marie Hill,

Re: Peer-led community falls education program for older adults: expert review of the delivery of peer education presentations.

This letter provides authorisation for A/Professor Anne-Marie Hill from The University of Notre Dame Australia to have access to volunteers involved in the ICCWA falls prevention education programs. The authorisation includes the research team of A/Professor Hill and Notre Dame post graduate student Ms Linda Khong. The above mentioned study is a collaboration between ICCWA and Notre Dame University reviewing peer education programs. We are happy to support this proposed study as part of the research project.

The approval is granted with the following conditions:

- Participation from individuals is voluntary.
- The research had gained appropriate ethics approval.
- Individuals contact details are not released to the research team and individuals are not contacted directly by members of the research team. ICCWA will inform and liaise with our volunteer peer educators in relation to the above study on Notre Dame's behalf.
- ICCWA reviews all research documentation.
- Information, research and data are strictly confidential and are supplied on the understanding that they will be held confidentially and not disclosed to third parties without the prior consent of ICCWA.

Authorisation is granted for a period of 12 months from the date of this letter.

For further information please contact me on 9420 7212 or dcostello@iccwa.org.au.

Kind regards,

Deborah Costello

Chief Executive Officer

B.3   Letter of Support for Phase 2 Study 4
(Chapter 8)

iCCWA
Injury Control Council of Western Australia

promoting safety
in our community

Associate Professor Anne-Marie Hill
The University of Notre Dame Australia
PO Box 1225
Fremantle WA 6959

Anne-Marie.Hill@nd.edu.au

1 August 2014

Dear Associate Professor Hill,

Re: Evaluation of the effectiveness of peer-led falls prevention education presentations for older adults in the community.

This letter provides authorisation for A/Professor Anne-Marie Hill from The University of Notre Dame Australia to attend the ICCWA Falls Prevention education presentations to recruit participants for enrolment into the above named study. The authorisation includes the research team of A/Professor Hill and Notre Dame PhD candidate Ms Linda Khong and a research assistant who will help with data collection. The above mentioned study is a collaboration between ICCWA and Notre Dame University reviewing peer education programs. We support this proposed activity as part of the research project.

The approval is granted with the following conditions:

- Participation from individuals is voluntary.
- The research has gained appropriate ethics approval.
- ICCWA will inform and liaise with our community organisations in relation to the above study on Notre Dame's behalf. Organisations may choose not to be involved.
- ICCWA reviews all research documentation.
- Information, research and data are strictly confidential and are supplied on the understanding that they will be held confidentially and not disclosed to third parties without the prior consent of ICCWA.

Authorisation is granted for a period of 12 months from the date of this letter.

For further information please contact me on 9420 7212 matkinson@iccwa.org.au.

Kind regards,

Michael Atkinson
Acting Chief Executive Officer

Appendix C

Search Strategy and Summary of Factors Influencing Older Adults' Engagement and Uptake of Falls Prevention Strategies (Systematic Review)

Table C.1   Search Strategy Conducted for the Systematic Review: Enablers and Barriers

Electronic database and search terms used[1]

CINAHL search terms:

S1: (MM "Accidental Falls/ED/PC")

S2: (MM "Health Promotion") (barrier* OR facilitate* OR attrit* OR attend* OR engag* OR promot* OR enrol* OR participat* OR motivate*)

S3: S1 AND S2

Limiters:

Published Date: 19950101-20160430;

English Language;

Publication Type: Meta Analysis, Meta Synthesis, Review, Systematic Review

Medline and EMBASE search terms:

1. exp*Accidental Falls/pc [Prevention & Control] (4,507)
2. (barrier* or facilitat* or complet* or attrit* or attend* or engag* or promot* or enrol* or participat* or motivat* or adher* or perspect* or view* or complian* or attitud*).mp. (3,538,507)
3. 1 and 2 (1,383)
4. limit 3 to (english language and humans and yr="1995 -Current") (1,276)
5. limit 4 to (meta analysis or "review" or "scientific integrity review" or systematic reviews) (150)

[1] Search was limited to those studies available in the English language

Table C.2 **Summary of Studies: Factors Influencing Older Adults' Engagement and Uptake of Falls Prevention Strategies (Enablers and Barriers) – Expanded Version**

Author	Design	Aim	Participants	Setting	Comments
McInnes 2004	Systematic Review (24 studies)	To examine older adults' views of falls prevention strategies including physical activity To develop guideline and recommendations on falls prevention	50 to 97 years of age Fallers, non-fallers, at risk of falling and healthy	1 residential care 3 hospitals 20 community (mixed setting)	1994-2004, Published studies. Mixed studies Qualitative (n = 10) RCT (n = 3); Cross-sectional (n = 4) Systematic review (n =1); Narrative review (n = 3); Pre-post (n = 3) Explicit inclusion and exclusion criteria provided; screening assessment information about main study designs provided in detail; described how reliability was established for data synthesis process. Meta-analysis of data not performed. Recommendations were relating to participation in a falls prevention program and did not relate to intention or transition for behaviour change in day-to-day life and activities
Bunn 2008	Systematic Review (24 studies)	Perceptions of barriers and enablers influencing older adults' participation and adherence to falls prevention interventions To identify measures that promote acceptance of programs	Aged 55 years and over Range from high risk to healthy active	18 community 1 combined community and residential care 3 residential care 2 hospitals (mixed setting)	Prior to Jan 2005, published and unpublished (includes grey literature) Qualitative (n = 12) RCT (n = 2) Cross-sectional (n = 6) Evaluation (n = 2) Process evaluation (n = 2)

Author	Design	Aim	Participants	Setting	Comments
					Inclusion criteria stated; search strategy described in detail Qualitative studies was rated against seven criteria ranging 3.5-7.0. Authors acknowledged the lack of assessment tools for qualitative studies in systematic reviews Challenges described and study addressed what and how to promote participation in falls prevention amongst older adults; focussed on beliefs and attitudes as basis for examination of actual behaviour in participation
McMahon 2011	Literature Review (19 studies)	Perspectives of older adults regarding own falls risk Enablers and barriers to participating in falls prevention programs	Aged 65 years and over 12,691 participants, most women. (details of number of women not published) Includes those identified at risk of falling	Community	2005-2010 Qualitative (n = 11); Quantitative (n = 7) Mixed methods (n = 1) Search keywords provided; flow chart of inclusion/exclusion diagram was provided; process to establish trustworthiness of the study was described. Evaluations of quantitative and qualitative studies was based on authors' published criteria. Enablers and barriers related to participation in falls prevention programs. Did not provide factors for translation to day-to-day living or behaviour change

Author	Design	Aim	Participants	Setting	Comments
McInnes 2011	Qualitative Meta-ethnography	Synthesising a range of qualitative studies with different theoretical or methodological approaches Views and experiences of older adults regarding falls risk and need for falls prevention intervention To understand enablers and barriers to acceptance of risk status and intervention	Aged 60 years and over Fallers and non-fallers	Community Residential care Hospital (fallen outside of hospital). (mixed setting)	Jan 1995-May 2009 Published and unpublished studies Reflected procedural rigour with search strategy; explicit inclusion and exclusion criteria, screening flowchart provided; theoretical framework of meta-ethnography stated; reflected interpretative rigour of findings with inter-rater reliability reported and triangulation
Elskamp 2012	Qualitative Telephone-structured interviews	Reasons why older adults refuse to participate in falls prevention clinical trials	Aged 65 years and over	Emergency Department. Those who refused to participate in a RCT trial	15 interviews (01 Feb-03 Mar 2011) Number of those who refused to participate in the interviews was not known. Participants' profiles were not described. Process of data analysis, that is, who and how the data was analysed was not described

Author	Design	Aim	Participants	Setting	Comments
Dollard 2012	Qualitative Grounded theory via semi-structured interviews	Older adults' perceived chance of falls and why falls are not relevant to them	Aged 65-86 years Fallers and non-fallers	Community-dwelling	6 females, 3 males Advertisement (n=1), personal invitation (n=6), snowball sampling (n=2) Defined the term 'fall' used in study. Recruitment strategy described explicitly. Reasons for refusing to participate not known. Used grounded theory for analysis Reflected reliability with audit trial, triangulation of findings with another investigator Reflected reliability with audit trial, triangulation of findings with another investigator
Shaw 2014	Qualitative Phenomenology via in-depth interviews	Meaning of experience of anticipated falling	Aged 65-94 years	Independent, Community-dwelling	7 females, 2 males Recruitment strategy described. Participants' profile described Interviews were recorded and transcribed verbatim. Reflective memos were used. Findings were credible and consistent with literature

Note: CASP: Critical Appraisal Skills Program Qualitative Research Checklist; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; RCT: Randomised Control Trial

Appendix D

Summary of included Studies:
Providing Falls Prevention
Education for Older Adults
(Systematic Review)

Table D.1   **Search Strategy Conducted for the Systematic Review: Falls Prevention Education for Older Adults**

Electronic database and search terms used[1]

CINAHL search terms

S1: (MM "Accidental Falls/ED/PC") (4,507)
S2: educat* (519,724)
S3: S1 and S2 (745)

Limiters:

Published Date: 19950101-20160430;
English Language;
Publication Type: Meta-Analysis, Meta Synthesis, Review, Systematic Review (46)
Search modes - Boolean/Phrase

Medline and EMBASE search terms

1. exp*Accidental Falls/pc [Prevention & Control]
2. educat*.mp (681,889)
3. 1 and 2 (550)
4. limit 3 to (meta analysis or "review" or systematic reviews) (76)
5. limit 4 to (English language and humans and yr="1995-current") (65)

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[1] Search was limited to those studies available in the English language

Table D.2   Studies Investigating Falls Prevention Education for Older Adults in the Community – Expanded Version

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Ryan 1996[A]	USA Community	Pilot test Intervention A: 16 Intervention B: 14 Control: 15 Mean Age: 78	Nil theoretical framework used Intervention A (Group-format) Intervention B (One-on-One format) Falls prevention program -Emphasised threat of falling -Activities to address intrinsic and extrinsic risks -Cost-effectiveness by demonstration of device	Incidence of falls over 3 months. Monthly telephone calls to monitor any changes to reduce falls	Intervention A: 27 changes Intervention B: 14 changes Control: 22 changes None of participants sough medical intervention for falls-related injuries	Inconclusive findings of pilot study due to small sample size reported Falls prevention messages were standardised, negative (threat-based) and not personally relevant None of the participants sought medical intervention for falls-related injuries
Clemson 2004	Australia Community	Stratified Randomised Intervention: 157 Female: 74% Control: 153 Female: 74%	Cognitive-behavioural approach Adult learning principles -group interaction -practice Falls-related knowledge and strategies (total 15.5 hours) 7 weeks: 2-hour sessions 3rd month: Booster 91.5 hour session	Primary outcome: Occurrence of falls over 14 month period after intervention Secondary outcomes: Mobility Efficacy Scale (MES) Modified Falls-Efficacy Scale (MFES) SF-36 Health survey Physical Activity Scale for the Elderly (PASE) Worry Scale	At follow-up: Intervention had significant 31% reduction in falls (relative risk=0.69, 95%CI 0.50-0.96) Intervention group significant increase in confidence to avoid a fall during functional tasks compared to control (p=0.042) (MES)	Design and implementation of education intervention such as content and dosage were explicitly stated. Used validated outcome measures. Intervention group showed significant reduction falls compared to the control group

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Rucker 2006	Canada Emergency Department community	Non-RCT Control: 55 Female: 76% Intervention: 47 Female: 81% Mean Age: 67	Nil theoretical framework used Falls printed educational material (reduce falls environmental hazards & optimise health e.g. medication review and 10 minutes telephone call at 1 week follow-up Control: Educational material on osteoporosis and telephone follow-up	Completed at baseline and at 3rd month Fear of falls Recurrent falls	Intervention patients (43%) less likely to report increase fear of falls versus control (53%) at 95%CI 0.3 to 1.8, p=0.55. Not significant Intervention patients (17%) likely to present increase recurrent falls versus control (5%) at 95% CI 0.9 to 20.0, p=0.059. Not significant	Generic standardised information following evidence-based falls prevention guidelines. No significant difference between intervention and control group (fear of falls and recurrent falls)
Lin 2007	Taiwan Community	RCT Home Ed: 40 Home Safety: 46 Home Ex: 39 Male: 49% Mean Age: 76.8	Nil theoretical framework used Fortnightly follow-up for 4 months. 30-40 minutes visit every 2 weeks. Home education- pamphlet (exercises, use of walking aids, environmental improvements) Home Safety assessment and modification Home exercise training	Completed at baseline, 2nd and 4th month follow-up Quality of Life Balance and gait Activities of Daily Living (ADL) Fear of falls Depression	Home education- significant increase in ADL scores (0.9 at 95%CI 0.2-1.7) and in depression level (0.5 at 95% CI 0.1-1.0) but no significant changes in other outcomes Over 6 month period, no significant difference in rate of falls between the 3 groups	Generic standardised falls prevention information provided in education. No significant difference in falls rates between the three groups

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Huang 2010[A]	Taiwan Community	Cluster randomised Control: 47 Male 60% Education (Ed): 29 Male: 89.7% Tai Chi: 31 Male" 71% Ed and Tai Chi: 56 Male: 41% Mean Age: 71-72	Nil theoretical framework Education-brochure, video, photo Tai Chi Education and Tai Chi	Completed at Pre-Post at 5th month and after one year Falls risk factors Get up & Go test Fear of Falls	At 5th month, only Education and Tai Chi groups had significant reduction in number of falls (x^2=14.5, p=0.0001) After one year, three interventions had significant reduced falls at odds ratio Ed (0.33), Tai Chi (0.27), Ed & Tai Chi (0.13), had significantly lower risk of falls compared to control group	Significant difference between three intervention groups (Ed, Tai Chi & Ed and Tai Chi) in reduction in falls rates compared to the control group
Chang 2011	South Korea Community	RCT Control: 8 Male: 1 Female: 7 Intervention: 10 Male:0 Female: 10	Nil theoretical framework used 30-40 minutes exercise education program Telephone monitoring & Self-management	Completed at Pre-Post at 4th week Falls risk (Tetrax interactive balance system to evaluate balance in 8 different postures) Balance tests Berg Balance Scale ABC Efficacy Scale (Fear of Falls)	Falls risk and sense of efficacy were significantly improved but other balance measures were not significant	Generic standardised information following evidence-based exercise and falls prevention guidelines Significant difference in falls risk between intervention group compared to control group

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Dapp 2011[A]	Germany Community	Clustered Randomised Intervention:878 Female:62% Mean Age: 71.9 Control: 1,702 Female: 63% Mean Age: 71.8 Comparison: 746 Female: 68% Mean Age: 72.0	Health Appraisal Approach Intervention Group reinforcement: -information -medical team directed goal-setting Intervention-Home visit reinforcement: -information -medical team directed -6th month follow-up home visit Control: usual care with trained doctors (from cluster) Comparison: usual care with untrained doctors (not involved with intervention/control)	Primary outcomes after 1 year: -Prevention care index. Calculated proportion of preventive care services used -Health behaviour index. Calculated as proportion of favourable health behavioural items addressed among 6 in the study Secondary outcomes: Health/functional status; patient-doctor interaction; mortality; nursing home admission, need for nursing or hospital care	Preventive care index: Intervention: 74.7% ±18.4% Control: 68.3 ±17.7% Significant increase 6% (95%CI 4.2-7.7%) Health behaviour index: Intervention: 63.6% ±16.8% Control: 60.3% ±16.4% Significant increase 3% (95%CI 1.7-5.0%) Secondary outcomes: Nil significant differences	Individualised checklists but based on medical team-directed goal-setting for each individual; tailored recommendations and feedback; content was mainly health related and not specifically falls-related. Dosage was not stated Significant increase in preventive care use index (e.g. uptake of vaccination, blood pressure check) and health behaviour index (proportion of favourable health behaviours)

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Hill 2011a[B]	Australia Post-discharge from hospital Community	Randomised prospective cohort Control: 97 Intervention 1: 120 Intervention 2: 116 Female: 62% Mean Age: 79.2	Health Belief Model used to design multimedia (DVD & workbook) education package Intervention 1: Multimedia package Intervention 2: Multimedia package & individualised tailored education from health professional Control: Usual care	Semi-structured interview Explored older adults' knowledge of falls prevention strategies at point of discharge from hospital	629 falls prevention strategies identified 2 intervention groups identified 71% falls prevention strategies compared to control group 29% of strategies Only 4% of falls prevention strategies suggested were evidence-based	A total of 629 falls prevention strategies were identified by participants. Of this, the 2 intervention groups identified 71% (445) of the falls prevention strategies compared to control group that identified only 29% (184) strategies
Hill 2013[B]	Australia Post-discharge from hospital Community	Pilot RCT Control: 24 Female: 68% Mean Age: 78.3 Intervention: 24 Female: 64% Mean Age: 78.2	Health Belief Model & Adult learning principles Intervention: written and video materials & individualised tailored education by trained health professional prior to discharge (2-5 sessions of 15 minutes). Telephone call at 2 weeks follow-up Control: Usual care. Nil education	Questionnaire survey Baseline and at 1 month Evaluated participants' knowledge, confidence and motivation levels Level of engagement in falls prevention strategies Fall rates	Intervention group significantly more knowledgeable, confident and motivated. Significant increased self-perceived risk of falls [OR 4.96, 95%CI (2.84, 7.10), p,0.001] and perceived falls injuries [OR 4.76, 95%CI ((2.59, 6.94), p<0.001] Intervention group (75%) more likely to return to functional activity compared to control group (33%) [OR 3.8, 95%CI (1.07, 13.52), p=0.04]	Intervention group significantly more knowledgeable, confident and motivated than control Significant increased self-perceived risk of falls, perceived falls injuries and likelihood return to functional activity

Studies	Setting	Attributes and Size of Sample	Intervention*	Outcome Measures	Results	Comments
Kim 2013	Japan Community	RCT Exercise: 51 Age: 77.83 Education: 52 Age: 77.83	Nil theoretical framework used Strength and balance exercise 2x per week for three months Education (60 minutes) once per month for three months (under-nutrition, cognitive function, oral hygiene)	Baseline and at 1 year follow-up. Falls rates Functional fitness Falls diaries	Nil significant differences between groups in repeated and injurious falls. The odds ratio for falls was greater in the education (odds ratio 2.78, 95% confidence interval 1.17–6.96)	No significant differences between exercise and education groups in repeated and injurious falls
Haas 2014	Australia Community	Non-RCT Mixed method evaluation Group CALD:75 Female: 22% Group non-CALD: 41 Female: 27% Home CALD: 6 Female: 83% Home non-CALD: 22 Female: 73%	Information-Motivation-Behavioural Skills model Goal-setting strategy 15-week exercise and education program, run one hour weekly on a group or home-basis	Week 8: Goal-setting with health professional Week 15:Follow-up and review of goal achievement with health professional	Goals set Group CALD 13% Group non-CALD 31% Home CALD 55% Home non-CALD 68%	Didactic approach used in education Reported poor recall of education component by participants and poor uptake of recommendations Recommended goal-setting technique

Note. ADL=Activities of Daily Living; RCT=Randomised Control Trial; Ed= education; Ex= exercise; CALD=Culturally and Linguistically Diverse

* Intervention includes health behaviour and adult learning; [a]Hill, Hoffman, Beer, et al (2011)

[A] Studies that was part of the systematic review by Gillespie et al. (2012); [B] Studies that was part of the systematic review by Lee et al. (2014)

Appendix E

ICCWA Falls Prevention Brochure: Nine steps to Stay on Your Feet

6. Foot care and safe footwear

- See a podiatrist if you have foot pain
- Do foot exercises to improve circulation and keep your feet and toenails healthy
- Safe shoes have a good fit, laces or velcro fasteners, low broad heel with a good grip

? Are your shoes too tight or too loose?

7. Regularly check your eyesight

- Have your vision tested regularly
- Take time to adjust to new lenses and sudden changes of light
- Take extra care when wearing bifocal or multifocal glasses

? Has it been more than 12 months since your eyes were tested or your glasses checked?

8. Eat well for life

- Eat at least three meals a day with plenty of fruits and vegetables and high calcium foods
- Add sunshine to your life to maximise your Vitamin D
- Drink plenty of water – aim for 6 to 8 glasses per day

? Do you skip meals or not eat enough at meal times?

9. Identify, remove and report hazards

- Have good lighting and reduce clutter inside the home
- Maintain pathways to ensure they are even and non-slippery
- If you see a hazard, report it to the most appropriate authority

? Are electrical cords and clutter blocking your walkways?

? Have you had a fall in the last year?
Have you answered "yes" to one or more of the questions?
The good news is that there are steps you can **take now to reduce your risk.**

Want to know more?

Contact the Stay On Your Feet WA® team for:

- a free information pack detailing the nine steps to stay on your feet®
- referral information for services and activities in the local area
- organising a free community presentation.

Phone: (08) 9420 7212   **Email:** soyfwa@iccwa.org.au   **Web:** www.stayonyourfeet.com.au

Appendix F

Focus Group Interview Guide
(Phase 1 Study 1)
(Chapter 4)

Moderator Guideline for Warm-up Session

Adapted guideline and template[12]

□ We have the discussion scheduled for approximately 1-1.5 hours today. During the group, we want to obtain your views as Peer Educators on the Stay on Your Feet programme.

□ My role is to facilitate the session today. You won't offend me, whatever opinions you give. We are interested in hearing you point of view even if it disagrees with others' opinions.

□ Everyone's opinion is valid. It is important that we maintain confidentiality and respect others' beliefs and opinions.

□ We will be audiotaping this discussion, with your permission, because we don't want to miss any comments. It is important for you to realize that no names will be attached to the report or any publications. You may be assured of complete confidentiality in the report and publications.

□ It is my role to keep the discussion focused on the topic we are here to discuss, so I may need to move the conversation along so we can cover all the items and to make sure that we get to hear from everyone here today.

□ I would like to introduce you to my colleagues (co-facilitator/note taker.....................)

□ Before we start the group, there are a few ground rules. I would like to emphasise the need for respect and confidentiality and the importance of hearing everyone's views.

□ Also, the digital voice-recorder does not pick up on everything at the same time so if someone is talking, please be mindful to let the person finish talking before continuing the conversation. I would like to remind that one person speak at one time and to speak up for the audio-tape.

□ I would also like you to introduce yourselves briefly.

Focus Group Data Collection Template

Date:
Start Time:
Stop Time:
Moderator:
Note taker:
Observer (s):
Venue:
Number of Participants:

Focus Question Guide	Responses	Key Issues	Review note
Intro Qt			
What do you see your role as Peer Educator?			
What skills & strategies do you think are useful to have to be most effective in the Peer Educator role?			
What challenges do you face in being a Peer Educator?			
What strategies have you used to address any of these challenges?			
What part of the training sessions is most useful to you?			
What part of the training sessions is least useful to you?			
Is there anything that could be included in the training sessions to help you in your role as a Peer Educator?			
Transition Qt			
Please tell me more			
Focus Qt			
What do you think about the Speakers' Kit?			
Are there any additional skills or information that could be included in the Speaker's kit that would help you in your role as a Peer Educator?			
What do you think about the Session Evaluation form?			
What's good to keep in the program?			
What suggestions do you have for improving the program?			
Summary Qt			
Besides, your role, the training resource, evaluation and the program we have discussed, what other aspects of the program would you like to comment on?			
Concluding Qt			
Is there anything else you wish to add or comment?			
Summary & Reflections			

Appendix G

Semi-structured Interview Guide:
Follow-up (Phase 1 Study 1)
(Chapter 4)

Participant One: Semi-structured interview question guide

1. When you decided to join the SOYF program, what did you expect the program to be like?
2. As a Peer Educator now, what is your overall impression of the program now?
3. What are your hopes and expectation of the program?
4. How would you describe your overall experience?
5. What do you think or see is the value of a 'peer educator' compared to an 'educator'?
6. What keeps you going as a Peer Educator in the program as compared to the others who have left?
7. There were words like 'fill a gap', 'baby-sitting', 'waste of time' brought up earlier at the focus group session, why do you or others feel there are such feelings when we talked about the program?
8. There are 2 Schools of Thought for peer educator an organization. One is for more structure and the other is flexibility.
9. What would 'more support' look like to you?
10. Which would you prefer?

Participant Two: Interview question guide

1. When you decided to join the SOYF program as a Peer Educator, what did you expect the program to be like?
2. As a Peer Educator now, what is your overall impression of the program now?
3. How would you describe your overall experience?
4. What do you think the current aims of the program are?
5. Do you feel these aims are working'? Achieving them?
6. What do you think they should be? (That is, in an ideal world, in other words, what is it you want your participants to get out of it?)
7. If you 're in-charge. how would you run it?
8. What would you like to see done?
9. What do you think or see is the value of a 'peer educator' compared to an 'educator'?
10. What keeps you going as a peer educator in the program as compared to the others who have left?
11. There were words like 'fill a gap', 'baby-sitting', 'waste of time' brought up earlier at the focus group session, how does that make you feel?
12. There are 2 schools of thought for peer educator an organisation. One is for more structure and the other is flexibility.
13. Which would you prefer 'Structure' or 'Flexibility'?
14. What would 'more organisational support' look like to you?

Facilitator mid note-taker: Debrief question guide

What was the most important theme(s) or idea(s) to come out?

Any key points from the focus group (itself) worth noting?

How was this different to our expectations? Anything different or unexpected?

How is this focus group similar or different from the other focus group?

Is there anything we should do differently for the next focus group?

Appendix H

World Café Publicity: Flyer
(Phase 1 Study 2)
(Chapter 5)

How to get to the forum:

where: Level 5, 445 Hay Street, Perth.
by car: Park locally at the many paid carparks.
by public transport: By train travel to Perth Underground Station or Perth Train Station and catch the Red CAT from Wellington Street. Disembark the Red CAT at STOP No. 7 (Victoria Avenue).

5/445 Hay St

Swan River

CAT routes are serviced by accessible buses

LEGEND

Blue CAT Route
Red CAT Route
Yellow CAT Route
Green CAT Route
CAT Stops
Mixed Service CAT Stops

Train Transfer
Train Station
Bus Station
Ferry Terminal
Free Transit Zone
Railway

Appendix I

World Café Briefing Notes
for Table Facilitators
(Phase 1 Study 2)
(Chapter 5)

World Café Forum
Wednesday, 29th October 2014
Field Briefing Notes

Volunteering as Table Host at World Café Forum

The world café event is planned for the **29th October, 2014**. The research team and volunteers will commence at **9.00 am**. Most of the people including table hosts and volunteers will not have attended a world café event. Therefore, it is really vital that all briefing notes and information sheets are read through thoroughly. If you are hosting and volunteering it is really important that you are able to stay for the entire morning.

Table hosts are:

Pam Formby

Alison Kirkman

Vivienne Travlos

Russ Milner

Erica Davison

Elissa Burton

Barbara Smith

Michelle Strother-Hamilton,

Anthony Walter

Bhavisha Devchand

Beth Hands

Jacqui Francis-Coad

There will be one Research Assistant on that day.

What is a World Café?

The forum will be run in a format called World Café. This is a conversational process to encourage an interactive sharing of views on questions raised regarding health information related to falls prevention.

How will it run?

Time	Main Task(s)
0945-1030 (45 mins)	• Registration, complete consent and demographic information
1030-1045 (15 mins)	• Housekeeping • Overview (to include falls prevention; issues to find out, what to discuss, how forum will run/work, ground rules)
1045-1200 (1.25 hours)	• World Café Conversation (5 questions @ 15 minutes each question)
1200-1220 (20 mins)	• Harvest discussion (conversation) by table hosts verbally of each of their question • Caroline to summarise on whiteboard of each question with verification by participants
1220-1230 (10 mins)	• Participants to complete evaluation form (qualitative feedback)

❖ The initial 15 minutes will involve giving the participants an overview of the falls prevention project and what we would like to achieve at the forum.

❖ In brief, the forum will involve conversations at small tables with about 5 - 8 people for about 15 minutes on a question/topic.

❖ Each table host/team will be in charge of one question.

❖ Participants are invited to jot down their thoughts on post-it notes and to discuss with each other and the host for the 15 minutes. All post-it notes are to be placed onto the butcher's paper and easel.

❖ If participants are finding it difficult to write, you (table host) are able to write responses for them and place onto the paper.

❖ The main facilitator (Caroline Bulsara) will sound a bell every 15 minutes to indicate that the host moves to the next table.

❖ The table host asks the same question for the next 15 minutes.

❖ The round of conversations will take about 1.25 hours.

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❖ A free morning tea and coffee will be served by the 'meet and greet' volunteers to participants.

❖ Regular breaks will occur during table changes.

Pulling it all together

❖ Information discussed at the tables will be summarised by each table host in an open forum with all participants, drawing attention to the key points on the butcher's paper and post-it notes.

❖ Subsequently, the main facilitator will summarise the discussion points to the whole audience and it will also be an opportunity for the participants to verify and/or clarify any points.

❖ The researchers will use all the views and thoughts of the forum to understand how, why, what, when and by whom falls prevention information could be best presented to older people in an appealing format.

❖ Why World Café? https://www.youtube.com/watch?v=YG_6iBcyP7w

❖ World Café concepts https://www.youtube.com/watch?v=YrTKD8NpApY

❖ For those interested to read up more about World Café concepts, please click for a journal article on https://db.tt/rwzVcNuX

What questions do we ask?

Each host will be responsible for <u>one</u> of the following questions which will be asked at each table as you move around the room:

1) If you or a friend needed information about falls prevention in relation to your health, where do you go, or who would you seek advice from?

2) Is there anything or any situation that might prompt or encourage you to seek information about reducing the risk of having a fall?

3) What does an engaging and convincing falls prevention message look or sound like to you? Can you think about some of the more effective ways of promoting falls prevention? What would those look like? Most effective to least effective way? Why?

<u>Prompts to be used as needed?</u>

❖ Do you remember receiving information about how you or other older people might reduce their risk of having a fall?

❖ What form (by flyer format? By doctor?) did this take?

3

❖ Did the information motivate you to do something different to reduce your risk of having a fall? If yes, what was it about the information that engaged and convinced you? If no, how could this be better delivered or what would have motivated you better to do something different to reduce your risk of having a fall?

4) In an ideal world, who do you prefer to receive falls prevention health-related information from? What qualities of the person do you have in mind? Why?

5) If there was an opportunity for a trained older person similar to you delivering those falls prevention information, what do you think of that idea?

Keep in mind

❖ When asking the questions, speak slowly and clearly.

❖ Respect that the participants have the wisdom and experience regardless of education or background.

❖ Listen with sensitivity, seek to understand and look for new insights.

❖ Remain neutral, do not give any opinion about what people say. They are all valid as there is no right or wrong.

❖ Do not get into long discussions.

❖ Make sure everyone has a chance to be heard.

Other things to note

The participants will have been informed that the forum will be photographed, video-taped and audio-recorded as part of our data collection process.

"The visual recording or photographs will mainly focus on the presenters and only use wide shots of the audience with no zoom in on any one participant. If you or anyone attending prefers **not** to be on the video at all please inform the table host / facilitator and you will be invited to move out of range when any recording at your table will be conducted."

They will also be informed that all the information gathered for this study will be held in strict confidentiality.

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Appendix J

World Café Evaluation Form
(Phase 1 Study 2)
(Chapter 5)

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WORLD CAFÉ FORUM EVALUATION FORM

Your opinion and feedback is important to us so we would like to request you complete an evaluation after participating in the forum. All responses are anonymous and confidential.

1. What is your gender? (*Please tick* ☑ one) ☐Male ☐Female

2. What is your age? _____ years old

3. How did you hear about the forum? (Please tick ☑ appropriate box)

☐Radio ☐Flyer ☐E-flyer ☐Friend / family

☐Community board ☐Other (*please state*: _____)

4. Did the forum meet your expectations? (*Please tick* ☑ *appropriate box*)
☐Yes ☐No
Comments_____

_____

_____

_____

5. Did the forum cover issues/areas that are important to you?
(Please tick ☑ appropriate box)
☐Yes ☐No

Comments_____

_____

_____

_____

Please turn over

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6. Did you have an opportunity to put forward your opinion, ideas or priorities for research? (Please tick ☑ appropriate box)

☐Yes ☐No

Comments_____

_____

_____

_____

7. Any other feedback about the community forum?

_____

_____

_____

We would like to express our appreciation and thank you for your time and support with this forum.

Appendix K

World Café Community Forum
Conference Poster
(Phase 1 Study 2)
(Chapter 5)

Appendix L

Expert Review Questionnaire
(Phase 1 Study 3)
(Chapter 6)

Expert Review Questionnaire
Presentation A, B or C ?
Your Name:_____

Instructions:
1. Please indicate above which Presentation (A, B or C) that you are viewing and rating currently. It will be stated at the start of the video.
2. Listed below are 30 item statements describing adult learning principles regarding delivery of the presentation. Indicate your rating by placing an X in the appropriate box ranging from Strongly Agree to Strongly Disagree that best describes how well you perceive that the presentation adhered to the statement.
3. Further comments and suggestions would be valuable to inform our training package for peer educators later.

** Note: These are one-time only falls prevention education presentations, lasting up to one hour to a group in the community e.g. usually held in the premises of a social club, library, church

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

A. Learners actively participated in the learning process

1	The participants were positioned such that everyone could join in discussion activities.	☐	☐	☐	☐	☐
2	There was an introduction to falls and an overview of the fall prevention session.	☐	☐	☐	☐	☐
3	The peer educator stated the learning goals that were to be achieved during the session.	☐	☐	☐	☐	☐
4	The educator encouraged the participants to ask for clarification during the talk if they required it.	☐	☐	☐	☐	☐
5	The peer educator encouraged the participants to join in structured activities. (such as ice-breakers, games)	☐	☐	☐	☐	☐
6	Individuals were encouraged to discuss topics raised by the other participants.	☐	☐	☐	☐	☐

1

| 7 | The peer educator asked an appropriate mix of open-ended questions and closed questions. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8 | Participants' activities allowed for differences in learning style to surface by presenting visual, auditory and kinaesthetic information. | ☐ | ☐ | ☐ | ☐ | ☐ |

Any other comments

_____

_____

_____

_____

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

B. Learning relates to the relevant prior knowledge of the individual

9	Possible consequences of falls were discussed with participants.	☐	☐	☐	☐	☐
10	The peer educator encouraged participants to identify their own risk of falls such as difficulties with everyday activities.	☐	☐	☐	☐	☐
11	The peer educator asked participants to reflect and discuss on their own history of falling.	☐	☐	☐	☐	☐
12	Participants were asked to weigh up the pros and cons of undertaking falls prevention activities.	☐	☐	☐	☐	☐

13	Positive outcomes of undertaking falls prevention activities were presented.	☐	☐	☐	☐	☐

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14 Participants were encouraged to discuss and plan towards an implementation of falls prevention activities.	☐	☐	☐	☐	☐
15 Participants were asked to rate their motivation to plan and undertake a falls prevention strategy.	☐	☐	☐	☐	☐

Any other comments

_____

_____

_____

_____

C. Comfortable and encouraging learning environment

16	Participants appeared to be able to convey their thoughts, opinions or emotions without fear or hesitation.	☐	☐	☐	☐	☐
17	Participants were validated by the peer educator when they made a contribution.	☐	☐	☐	☐	☐
18	Participants appeared to be relaxed in the environment.	☐	☐	☐	☐	☐

3

19	The physical environment was conducive for learning and interaction (e.g. peer educator's voice level was audible, background noise was minimal).	☐	☐	☐	☐	☐

Any other comments

_____

_____

_____

_____

_____

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

D. Peer learning was facilitated by group interaction

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
20	Participants were encouraged to engage in peer dialogue.	☐	☐	☐	☐	☐
21	The peer educator asked participants to relate their experience with falls.	☐	☐	☐	☐	☐
22	The peer educator asked participants to relate examples of falls strategies that they have used.	☐	☐	☐	☐	☐
23	Participants shared strategies with the group that they found to have been useful or not.	☐	☐	☐	☐	☐

Any other comments

4

_____

_____

_____

_____

_____

_____

_____

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

E. Peer educator remained cognizant of and tailored information to the age group being taught

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
24	The peer educator asked participants to identify which points were particularly relevant for them.	☐	☐	☐	☐	☐
25	Participants had sufficient time to complete verbalising their responses.	☐	☐	☐	☐	☐
26	The peer educator repeated key information in a manner that was appropriate to the audience.	☐	☐	☐	☐	☐
27	There was an adequate mix of information provision, participant engagement and opportunity for questions/discussion.	☐	☐	☐	☐	☐

Any other comments

_____

_____

_____

_____

_____

5

Dimension	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

F. Learning requires frequent opportunity for reinforcement and practice

28	The peer educator discussed, gave out resources and encouraged the participants to review them after the session. (For example, handouts, web-links, information where to seek follow-up information)	☐	☐	☐	☐	☐
29	The peer educator asked the participants to plan their personal response after the presentation. (For example, activities that they may intend to undertake at home afterwards e.g. conduct a check of your house, list your meds, make an exercise diary)	☐	☐	☐	☐	☐
30	The peer educator thanked participants for attending the session.	☐	☐	☐	☐	☐

Any other comments

_____

_____

_____

_____

_____

_____

6

Appendix M

Briefing for Experts: Slides
(Phase 1 Study 3)
(Chapter 6)

Introduction

- ➕ Research focus: community-dwelling older adults

- ➕ This study has been approved by The University of Notre Dame Australia Human Research Ethics Committee, June 2014.

- ➕ The video web-links are "unlisted" so only known to you (the experts)

- ➕ Videos not intended for public viewing.

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Modes of Health Education Delivery

One to one
Or
Group

Doctor or
Allied
Health or
Lay Person

Flyer or
Talk or
Demonstrate

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3

Peer Education

One to One Peer
- Counselor
- Mentor
- Support

One to Group Peer
- Health Education
  - Falls Prevention
- Ex Leader
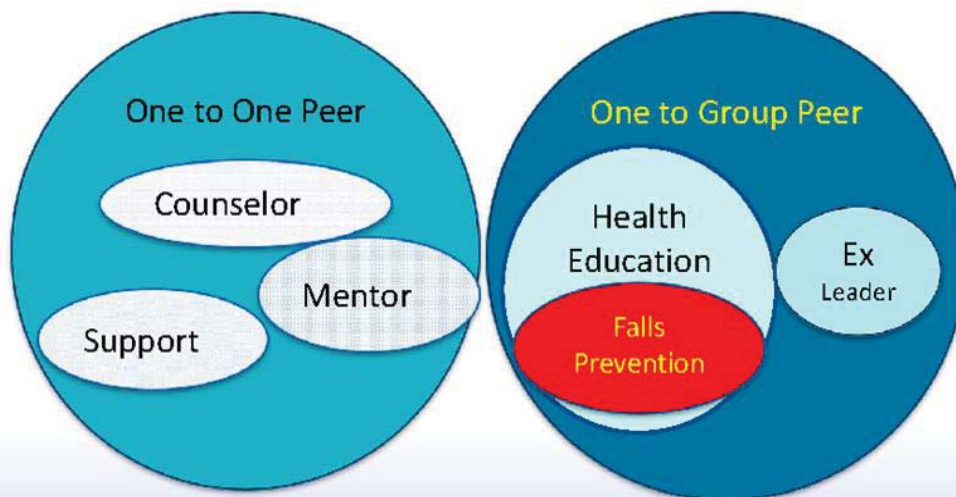
No reviews for peer education in falls prevention in community-dwelling older adults

4

Community Peer Educators

Peer Educator	Education
■ Over 60 years old ■ Volunteers ■ Trained specifically for the role to deliver falls prevention message *Simoni et al, 2011*	■ Provides training ■ 1 hour education presentation ■ To Groups **iCCWA** Injury Control Council of Western Australia

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Methodology

- **Phase 1 Study 1** — Peer educators Focus Groups → Results
- **Phase 1 Study 2** — Community Forum → Results
- **Phase 1 Study 3** — Experts Delivery → Results
- Interpret → Revise
- **Phase 2 Study 4** — Questionnaire
- **Phase 2 Study 5** — Intervention & Evaluation

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Aims of Research Study

- Explore: **Perceptions of peer educators** about their role (Phase 1 Study 1)

- Examine: Views & preferences of **community-dwelling older adults** about falls health-related information (Phase 1 Study 2)

- *Evaluate: **Delivery** of peer-led falls prevention education presentation **by experts** (Phase 1 Study 3)*

- **Validity & reliability** of measurement instrument: assess outcomes(Phase 2 Study 4)

- **Modify** peer-led training program & **evaluate effect** (Phase 2 Study 5)

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Study : Purpose of Expert Review

Expert Review Questionnaire- Content Validity

Video-recording of 3 selected peer educator presentations

Quantitative & Qualitative Feedback from 10 Experts

Training package for Peer Educators

Fidelity of Program

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Study: Expert Review Procedure

1. Expert Participant Information

2. Complete Consent Form

3. Complete Demographic Form

4. Open and closed-ended Questionnaire

5. Video URL links to 3 presentations

9

Study: Expert Review Questionnaire

Steps

- Presentation A, B or C?
- Your Name

- 6 Domains
- 30 statements
  - Strongly Agree to Strongly Disagree
  - Comments & suggestions

6 Domains: Expert Review Questionnaire (Adult Learning)
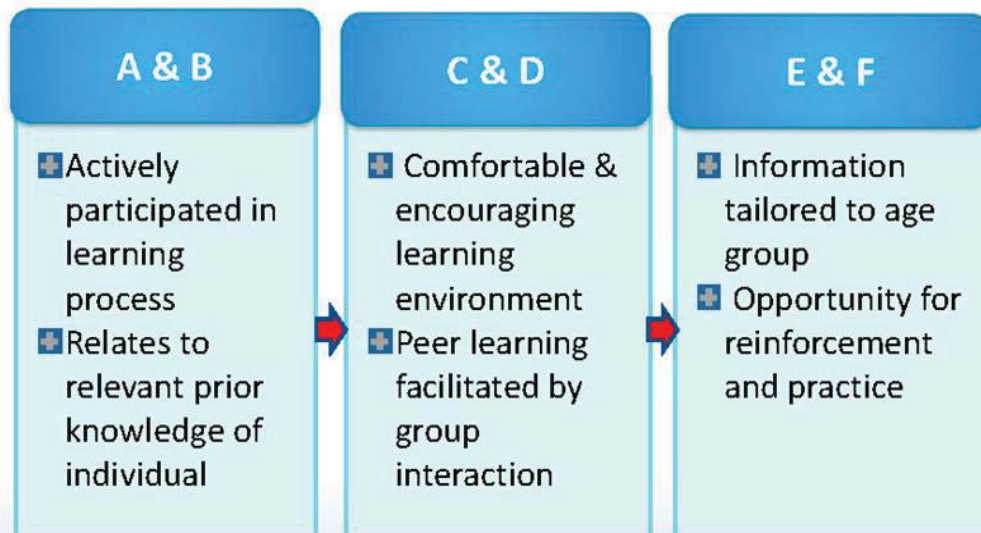
A & B	C & D	E & F
Actively participated in learning process Relates to relevant prior knowledge of individual	Comfortable & encouraging learning environment Peer learning facilitated by group interaction	Information tailored to age group Opportunity for reinforcement and practice

Trompf et al, 2001

Appendix N

Participant Questionnaire
(Phase 2 Study 4)
(Chapter 8)

N.1   Participant Questionnaire before presentation

THE UNIVERSITY OF
NOTRE DAME
A U S T R A L I A

iCCWA
Injury Control Council of Western Australia

Participant Questionnaire

We would like to find out what your views on falls prevention are **before the talk starts**.

1. Whether or not you have had any falls, please share with us the level to which you agree or disagree with the following statements. (*Please **tick** ☑ **one option*** for each question)

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A. For me, taking measures to reduce my risk of falling would be useful					
B. Most people whose opinion I value approve of me taking measures to reduce my risk of falling					
C. I am aware of the measures needed to reduce my risk of falling					
D. I feel positive about reducing my overall risk of falling					
E. I am confident that if I wanted to, I could reduce my risk of falling					
F. In the next month, I intend to take measures to reduce falls or my risk of falling					
G. I have a clear plan of how I will take measures to reduce falls or my risk of falling					

2. List up to 3 ways (measures) that you could take in the **next month**, which will help you avoid falling or the risk of falling:

   _____

   _____

   _____

THE UNIVERSITY OF
NOTRE DAME
A U S T R A L I A

ICCWA
Injury Control Council of Western Australia

Participant Questionnaire

Information about you

Your first name: _____   Your last/family name: _____

Your mailing address: _____

_____

3. What is your gender? (*Please tick* ☑ one)   ☐Male   ☐Female

4. What is your age? _____ years old

5. In general, would you say your health is: (*Please tick* ☑ one)

   ☐Poor   ☐Fair   ☐Good   ☐Very Good

6. How many prescribed medications (by your doctors) are you taking? ☐None

   Indicate number: Morning: _____ Noon: _____ Afternoon: _____ Bedtime: _____

7. Do you have any difficulty walking? ☐No   ☐Yes

8. Do you use a walking aid when **inside** the house? (*Please tick* ☑ one most suitable)

   ☐Nil   ☐Walking stick   ☐Walking frame   ☐Other_____

9. Do you use a walking aid when **outside** the house? (*Please tick* ☑ one most suitable)

   ☐Nil   ☐Walking stick   ☐Walking frame   ☐Other_____

10. How far can you walk without a rest on level ground? (*Please tick* ☑ only one)

   ☐less than 400 metres (less than1/4 mile) ☐400 to 800 metres (1/4 to1/2 mile)

   ☐801 metres to 1.6 km (1/2 to 1 mile)   ☐1.61 km to 3.2km (1 to 2 miles)

   ☐3.3km or more (2 or more miles)

12. A fall is an unexpected event which results in a person coming to rest on the ground or floor or other lower level. Please tell us your best guess at the number of falls that you have had:

   During the last 12 months _____

13. Have you ever discussed the issue of falls with your doctor or health provider or received falls prevention information from them? (*Please tick* ☑ only one)

   ☐Yes   ☐No   ☐Not sure   ☐Prefer not to answer

   Thank you for your time in completing this survey

N.2 Participant Questionnaire after presentation

Participant Questionnaire

We would like to find out what your views on falls prevention are **after listening to the talk.**

Information about you

Your first name: _____ **Your last/family name**: _____

Please note that a fall is seen as an unexpected event which results in a person coming to rest on the ground or floor or other lower level.

1. Whether or not you have had any falls, please share with us the level to which you agree or disagree with the following statements

   (*Please tick* ☑ one option for each question)

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A. For me, taking measures to reduce my risk of falling would be useful					
B. Most people whose opinion I value approve of me taking measures to reduce my risk of falling					
C. I am aware of the measures needed to reduce my risk of falling					
D. I feel positive about reducing my overall risk of falling					
E. I am confident that if I wanted to, I could reduce my risk of falling					
F. In the next month, I intend to take measures to reduce falls or my risk of falling					
G. I have a clear plan of how I will take measures to reduce falls or my risk of falling					

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AUSTRALIA

ICCWA
Injury Control Council of Western Australia

2. List up to 3 ways (measures) that you could take in the **next month**, which will help you avoid falling or risk of falling:

_____

_____

_____

As part of the study, we would like you to complete a final questionnaire one month after the talk. For the **one-month reminder and follow-up**, I prefer to be contacted: (Please tick ☑ and complete as many as you wish)

☐ via SMS (my mobile number is: _____)

☐ via Telephone call (my Telephone number is: _____)

Thank you for your time again in completing the 2ⁿᵈ form

N.3　Participant Questionnaire 1 month after presentation

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ICCWA
Injury Control Council of Western Australia

Participant Questionnaire

We would like to find out what your views on falls prevention are **after listening to the talk**.

Information about you

Your first name: _____　**Your last/family name**: _____

Please note that a fall is seen as an unexpected event which results in a person coming to rest on the ground or floor or other lower level.

1. Whether or not you have had any falls, please share with us the level to which you agree or disagree with the following statements
   (*Please tick* ☑ one option for each question)

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A. For me, taking measures to reduce my risk of falling would be useful					
B. Most people whose opinion I value approve of me taking measures to reduce my risk of falling					
C. I am aware of the measures needed to reduce my risk of falling					
D. I feel positive about reducing my overall risk of falling					
E. I am confident that if I wanted to, I could reduce my risk of falling					
F. In the next month, I intend to take measures to reduce falls or my risk of falling					
G. I have a clear plan of how I will take measures to reduce falls or my risk of falling					

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3. List up to 3 ways (measures) that you took in the **past month**, which helped you avoid falls or risk of falling:

_____

_____

_____

Thank you for your time in completing the questionnaire. We appreciate your help. Please return the questionnaire via the enclosed reply paid envelope back to The University of Notre Dame Australia, School of Physiotherapy or mail to:

Linda Khong

The University of Notre Dame Australia

School of Physiotherapy

Reply Paid 1225

Fremantle, WA 6959

Appendix O

Peer-led Falls Prevention Education Program: Training Workshop
(Chapter 7)

O.1   Facilitator instruction manual

Training Workshop for Peer Educators (Module 2)

RESOURCES FOR THE TRAINING WORKSHOP

Stationery
- ❖ Whiteboard
- ❖ Butchers' paper
- ❖ Whiteboard markers (several colours)
- ❖ Permanent markers (several colours)
- ❖ Blu-tack/adhesive for labels

IT resource
- ❖ Laptop with broadband USB stick or Wi-Fi
- ❖ Training workshop Facilitator Module PowerPoint slides

Activity preparation
- ❖ Copies of VARK questionnaire
- ❖ VARK labels
- ❖ Peer Educator's Guidebook
- ❖ 7 Exercise activity sheets (extracted from Guidebook)
- ❖ Slips of FAQ questions with responses
- ❖ Evaluation forms

Program Day 2: Presentation Delivery Workshop

26th February 2015

9:45am -2:30pm

Time	Topic
9.45am	**Registration- coffee available**
10.00am	Welcome, introductions and recap of Day 1 by Anne-Marie
10:15am	Icebreaker and expectations (30 mins)
10:45am	**Morning tea**
11:00am	Learning Style (45 mins)
11:45am	Adult Learning (30 mins)
12:15pm	**Lunch (30 mins)**
12:45pm	Behaviour Change Technique (30 mins)
1:15pm	Presentation Skills & Mock Practice (60 mins)
2:15pm	Evaluation (15 mins)
2:30pm	**End**

Topic 1: **ICE BREAKER & EXPECTATIONS**
Learning objectives:
To help the volunteers to get to know each other   *To identify what the volunteers want to get out of the training*   *To promote a comfortable learning environment*   *To develop self-confidence as a peer educator*
Estimated time for lesson:
30 minutes
Materials needed:
- Whiteboard or butchers' paper   - Markers
Notes/Prep for facilitator:
- Prepare white board or butchers' paper prior to class   - Welcome the volunteers and introduce yourself   - Introduce overview of the day; clarify if needed   - To ask the group what their learning need is (characteristics/skills as an effective peer educator) and desired results today
Description of Activity
1. <u>15 mins</u> Introductions and provide an overview of the day's program (includes agenda, scheduled breaks, housekeeping such as restroom, stand up/water anytime if they need one) -Ask the group to introduce themselves -Ask the group "What do you hope to learn and gain from today?" -Share their expectations of the workshop -Write them down on butchers' paper -Link objectives to expectations- explain if workshop will meet them or won't be met 2. <u>15 mins</u> Pair up the volunteers to have a one-on-one conversation with each other -Get them to introduce each other and get to know their partner with the aid of the statement on the whiteboard or butchers' paper -Get them to discuss and highlight one attribute of their partner that they think will make them a successful peer educator -Return to the group and share the attribute of their partner with the group
Discussion/Facilitation Tip
During the course of sharing and discussion- to list the expectations and refer at the end of the workshop. Also to list attributes on the whiteboard or butchers' paper.

Topic 2: **LEARNING STYLES**
Learning objectives: • *To identify volunteer's individual learning preference with the aid of the adapted VARK questionnaire* • *To appreciate the different preferences in learning styles within the group* • *To distinguish and determine mix of teaching material with Dale's Cone of Experience*
Estimated time for lesson: 45 minutes
Materials needed: ➢ Peer Educator' s Guidebook on VARK Learning Style ➢ Peer Educator Guidebook's Adapted VARK (Visual, Aural, Read/Write, Kinesthetic) questionnaire ➢ Wall Labels with Learning Style (Visual, Aural, Read/Write, Kinesthetic, Multimodal) ➢ PowerPoint slide of Dale's Cone of Experience
Notes/Prep for facilitator: • Prepare copies of adapted VARK questionnaire and VARK labels • Explain VARK Learning Style to volunteers • Explain to volunteers how to use questionnaire and how to calculate preferred style to volunteers • Explain Dale's Cone of Experience
Description of Activity 1. <u>15 mins</u>: Ask each volunteer to complete the **<u>VARK questionnaire</u>** individually. On completion, they will proceed to analyse and select their preferred learning style 2. <u>15 mins</u>: Request each volunteer to stand and indicate their preferred learning style - Each individual to share their preferred learning style with the group and how well this reflects their perceived learning style? 3. <u>15 mins</u>: Illustrate/Show the **<u>Dale's Cone of Experience</u>** via You-tube https://www.youtube.com/watch?v=p-eSxgRetvk (up to 4 mins) Highlight the various teaching material to enhance learning in this context
Discussion/Facilitation Tip ❖ Remember that most people exhibit <u>all</u> the styles….to some degree. Having a preference for one style does not mean that the other styles are excluded. ❖ Encourage the volunteers to appreciate the various preferences that may exist in a group

Topic 2: **LEARNING STYLES (continued)**
Website Dale's Cone of Experience video - http://www.slideshare.net/day2x/cone-of-experience-24668244; https://www.youtube.com/watch?v=p_85cnTM8pI Cone of Experience diagram - http://pharmacy.mc.uky.edu/faculty/resources/files/Step%20Dales%20Cone.pdf VARK questionnaire adapted from - http://vark-learn.com/the-vark-questionnaire/?p=questionnaire
Research Article Dr Arazi, A Thesis: Exploring learning style preferences and the effectiveness of text-to-speech software with literacy support for university students. https://hip.nd.edu.au/ipac20/ipac.jsp?profile=t&uri=full=3100001~!647823~!6

Vark Modalities
"VARK" stands for Visual, Aural, Read/Write and Kinesthetic sensory modalities that are used for learning information.

Visual (V)
A preference for depiction of information in maps, charts, diagrams, symbolic arrows, shapes, patterns that people use to represent what could have been presented in words.

Aural/Auditory (A)
A preference for information that is "heard or spoken". They learn best from lectures, group discussion, radio, talking things through. This category also includes talking out aloud as well as talking to oneself.

Read/Write (R)
This is a preference for information displayed as words or text-based information. Any form of reading or writing eg. manuals, reports, handouts

Kinesthetic (K)
This is a preference related to experience and practice (simulated or real) eg. demonstrations, videos, case studies.

Note: Many adults will learn best by mainly using one modality, while others have more multimodal approach to learning.

Source: http://vark-learn.com/introduction-to-vark/the-vark-modalities/

The Vark Questionnaire

How do I learn best? Choose the answer which best explains your preference and tick the box next to it.

1. You are listening to a presentation showing how to make a special graph. From which of the following strategies do you think you would learn the most?:

☐ a. Seeing the diagrams

☐ b. Listening to the presenter

☐ c. Reading the words about what to do

☐ d. Watching the actions of the presenter

2. You have a problem with your heart. In discussing the matter, you would prefer that the doctor:

☐ a. Gave you something to read to explain what was wrong

☐ b. Used a plastic model to show what was wrong

☐ c. Described what was wrong

☐ d. Showed you a diagram of what was wrong

3. When engaged in a learning exercise, you would prefer an instructor who uses:

☐ a. Demonstrations, models or practical sessions

☐ b. Question and answer, talk, group discussion, or guest speakers

☐ c. Handouts, books or readings

☐ d. Diagrams, charts or graphs

4. You are helping someone requiring instructions for a particular destination. You would:

☐ a. Go with them

☐ b. Give them the directions

☐ c. Write down the directions

☐ d. Draw, or show them a map, or give them a map

The VARK Questionnaire Scoring Chart

Use the following table to find the VARK category to which each of your answers corresponds. <u>Circle only one letter</u> that correspond to your answers.

Eg. If you answered (c) for Question 1, circle R in the question 1 row

Scoring Chart

Question	(a) category	(b) category	(c) category	(d) category
1	V	A	R	K
2	R	K	A	V
3	K	A	R	V
4	K	A	R	V

Calculating your scores: Count the number of each of the VARK letters you have circled to get your score for each VARK category.

Total number of **V**s circled = _____

Total number of **A**s circled = _____

Total number of **R**s circled = _____

Total number of **K**s circled = _____

Adapted from VARK Questionnaire version 7.1.

Source: *http://vark-learn.com/wp-content/uploads/2014/08/The-VARK-Questionnaire.pdf*

Topic 3: **ADULT LEARNING**
Learning objectives: *To describe the basic concepts and principles of adult learning*   *To understand the adult learner better*   *To apply basic adult learning principles in your presentations*   *Tips on how to make your presentation personal, engaging and appealing to the adult learner. To encourage active learning*
Estimated time for lesson: 30 minutes
Materials needed: ➢ Laptop with Wi-Fi link ➢ You-tube link (8.27 min) https://www.youtube.com/watch?v=vLoPiHUZbEw ➢ Butchers' paper or Whiteboard ➢ Peer Educator Guidebook's Section on "Understanding the Adult Learner"
Notes/Prep for facilitator: - After completion of video, discuss <u>Case study Mrs G</u> to illustrate basic concepts of the adult learner (as case study to prompt if needed)   *80+ year old DVA war widow, lives alone but active social calendar.* *Past medical history: 2 knee replacements; cardiac issues causing shortness of breath with activity. 2014 fall with fracture in thigh and recent bilateral carpal tunnel repair in hands,*   *Motivation to learn→falls prevention and stay at home independently*   *A need to learn→minimise her risk of falls*   *Adopts a problem-oriented, goal or task-oriented approach → Strengthening exercises-Manage her home-based exercises & hydrotherapy*   *Incorporates self-directed approach to learning →Learned and recorded her physiotherapy & hydro exercises*   *Brings life experiences and knowledge to learning →Has preferences, integrated her activities to fit in with home exercises*   - Think of tips to make your presentation personal, engaging and appealing to the adult learner

Topic 3: **ADULT LEARNING (continued)**
Description of Activity 1. <u>10 mins</u>: Get the group to watch the You-tube video on "Introduction to Andragogy" (Adult Learning principles) https://www.youtube.com/watch?v=vLoPiHUZbEw 2. <u>10 mins</u>: In view of what they have watched, get the volunteers to reflect and share with each other (in a group or pair) a positive learning experience from their past and discuss why they felt it was effective. 3. <u>10 mins</u>: Get the group to reflect on what they would like to keep in mind when they present to their peers on falls prevention (case study to prompt if needed)
Discussion/Facilitation Tip ❖ Highlight the section in their Guidebook
Website -Queensland Occupational Therapy Fieldwork Collaborative- Adult Learning Theory and Principles http://www.qotfc.edu.au/resource/?page=65375 - Levels of educational objectives http://www.basicskillsforliving.ca/PDF/Adult_Ed_techniques.pdf
Useful reading-Knowles MS, Holton III EF, Swanson RA. The Adult Learner. The definitive classic in adult education and human resource development. 7 ed. Hoboken: Taylor and Francis; 2012

Topic 4: **BEHAVIOUR CHANGE TECHNIQUE (BCT)**
Learning objectives: • *To describe and identify the behaviour change techniques relevant to this context*   • *To integrate these relevant behaviour change techniques to the falls prevention presentations*
Estimated time for lesson: 30 minutes
Materials needed: ➢ Laptop with Wi-Fi link   ➢ You-tube link (1. 47 min)   https://www.youtube.com/watch?v=RveeQafbdA0   ➢ Butchers' paper or Whiteboard   ➢ Peer Educator Guidebook's Section on " Behaviour Change Technique"
Notes/Prep for facilitator: • Prior to training session: Liaise with Speaker about BCT illustrated in Guidebook and discuss which selective points to highlight within time provided   • Clarify which media (PowerPoint?) speaker prefers   • Play song, followed by short video clip   • Invite speaker to share
Description of Activity   1. 1 min. Play Elvis Presley "Change of Habit" to signal start of activity   2. 2 mins. Get the group to watch the You-tube video on "Inspiring people to change their behaviour through FUN https://www.youtube.com/watch?v=RveeQafbdA0   3. 20 mins –   - take a few minutes to read about what beh change is. First 3 paragraphs   - Speaker to highlight important points of Behaviour Change Technique Taxonomy + Capability/Opportunity/Motivation and discuss application to context. That is "Framing/reframing; Goal-setting; Problem-solving and Action-planning"   4. 7 mins – summarise key points and opportunity for questions
Discussion/Facilitation Tip   ❖ Highlight the BCT section in their Guidebook and   ❖ Highlight the list of videos that can help them
Website or online video   -Falls Prevention video https://www.youtube.com/watch?v=d4Zv4QSNCQM   -Three myths of behaviour change- what you think you know that you don't https://www.youtube.com/watch?v=l5d8GW6GdR0

Topic 5: **PRESENTATION SKILLS & MOCK PRACTICE**
Learning objectives: • *To demonstrate skills in engaging the participants positively*   • *To deliver an interactive session with the participants*   • *Be ready to undertake a peer presentation in the community with buddy support*
Estimated time for lesson: 60 minutes
Materials needed: ➢ Laptop with Wi-Fi link   ➢ In-house training video of role model presentation (Anne-Marie Hill)   ➢ Butchers' paper or Whiteboard   ➢ Exercise activity sheets (extracted) from the Presentation Guidebook   ➢ Slips of FAQ questions
Notes/Prep for facilitator: • Liaise with ICCWA and existing peer educators about FAQ questions   • Discuss with research team/ICCWA preferred responses   • Explain role play for volunteers: select one of the exercise activity sheets provided (extracted from Guidebook)   • Role play managing one of the FAQ question
Description of Activity   1. <u>5 mins</u>: Play in-house training video of selected portions of role model presentation e.g. overview, etc   2. <u>10 mins</u>: Anne-Marie to share her experience about new format presentation e.g. Exercise activity 6   3. <u>15 mins</u>: Volunteers to pair up and select one exercise activity (to role play)   4. <u>15 mins</u>: Request one member of the group to volunteer to share/role-play in front of the group   5. <u>15 mins</u>: Another role play practicing management of one FAQ question
Discussion/Facilitation Tip   ❖ Guidebook-Highlight resource for peer educators about the tip sheet, checklist and self-reflection provided
Website or online video   -A in-house training video of ICCWA role model (Anne-Marie Hill) with a group presenting Falls Prevention   -Presenting & public speaking tips   https://www.youtube.com/watch?feature=player_detailpage&v=Q5WT2vweFRY   -Effective presentations skills   https://www.youtube.com/playlist?list=PLE493C03289BB9628

Topic 6: **EVALUATION & END**
Learning objectives: • *To encourage self-reflection on the key ideas of the day's workshop*   • *To evaluate the outcomes of the workshop*   • *To seek feedback about the workshop from the participants in terms of learning value*
Estimated time for lesson: 15 minutes
Materials needed: ➢ Laptop with Wi-Fi link   ➢ Evaluation forms
Notes/Prep for facilitator: • There are various types of evaluation. Reaction evaluation (eg. responses, take home); learning evaluation (eg role play); behaviour evaluation; results evaluation (eg. outcome).

Description of Activity
 1. <u>5 mins</u>: Summarise today's topics. Highlight resource in Guidebook. Finish training workshop with a one-minute reflection and evaluation. Key ideas and one take-home point
 2. <u>10 mins</u>: Explain that this is a training workshop and we would like to seek feedback if they found the learning valuable in meeting their needs in preparing to be a peer educator.
    - Request the volunteers to take time to complete a short evaluation and they have the option of remaining anonymous.
    - Hand out the evaluation form.
 3. In ending, to thank the volunteers for their time in attending and for providing feedback. Provide contact email, etc.

Discussion/Facilitation Tip
Website or online video   -http://adulted.about.com/od/teachers/a/coursedesign.htm
Useful reading

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Injury Control Council of Western Australia

Training Workshop Evaluation
(Program Day 2)

Your feedback is important to ensure we are meet yours and future volunteers' learning and educational needs. Therefore, we would appreciate if you could take a few minutes to share your opinion with us. You may choose to remain anonymous.

Please return this evaluation form to the organizer at the end of the workshop. Thank you.

Date: _____ Your Name: _____

1. Given the topic, was this workshop:　　☐ a. Too short　　☐ b. Right length　　☐ c. Too long

2. Please rate the following:

	Excellent	Very Good	Good	Fair	Poor
a. Visuals	☐	☐	☐	☐	☐
b. Acoustics	☐	☐	☐	☐	☐
c. Meeting space	☐	☐	☐	☐	☐
d. Handouts	☐	☐	☐	☐	☐
e. The program today	☐	☐	☐	☐	☐

3. Were your expectations for today's workshop met?

_____

_____

_____

_____

4. What would you have liked to learn that you didn't?

_____

_____

_____

_____

5. What was the most helpful thing you learned today?

_____

_____

_____

_____

6. Please share your opinion about any aspect of today's workshop?

_____

_____

_____

_____

Please return this form to the organizer at the end of the workshop. Thank you.

O.2   Facilitator presentation slides

Presentation Delivery

Overview

Linda Khong
Associate Professor Anne-Marie Hill
Professor Keith Hill
Adjunct Professor Richard Berlach

Supported by the Australian Government's
Collaborative Research Network Program
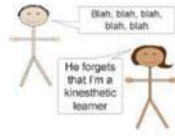
What do you hope to learn and gain from today?

Learning Styles

V - Visual
A - Audio or Aural
R - Read/Write
K - Kinesthetic

VARK Questionnaire

Blah, blah, blah, blah, blah

He forgets that I'm a kinesthetic learner

Dale's Cone of Experience

Cone of Experience

The Cone of Learning

sparkinsight.com

After 2 weeks, we tend to remember ...

I see and I forget.
I hear and I remember.
I do and I understand.
— Confucius

Reading — 10% of what we READ
Hearing Words — 20% of what we HEAR
Seeing — 30% of what we SEE
Watching a Movie
Looking at an Exhibit
Watching a Demonstration
Seeing It Done on Location — 50% of what we SEE & HEAR
Participating in a Discussion
Giving a Talk — 70% of what we SAY
Doing a Dramatic Presentation
Simulating the Real Experience
Doing the Real Thing — 90% of what we SAY & DO

Source: Edgar Dale (1969)

Adult Learning

Concepts of Adult Learners

Your Positive Learning Experience

Falls Prevention Presentation

1

Behaviour Change

Elvis Presley "Change of Habit"

Inspiring people to change their behaviour through fun

Behaviour Change

CHANGE AHEAD

Presentation Skills

Training video

Anne-Marie to share her experience

Role Play- exercise activity

Share

FAQ- role play

Evaluation

Reflect on Key ideas

Take home point?

Resource available- Tip sheet, checklist, self-reflection, references, links
Three myths of behaviour change- what you think you know that you don't

Evaluation

2

<u>Welcome</u>: Thank you for coming, we hope you will learn and enjoy yourself today. Please feel free to seek clarification if anything is unclear to you. Also, the guidebook is new, we would appreciate you let us know if you spot any typo error, etc.

<u>5 mins: Overview</u>
In the earlier part of the training workshop, you have learned about Injury Control Council of WA's policies and also of the Content for the Presentation.

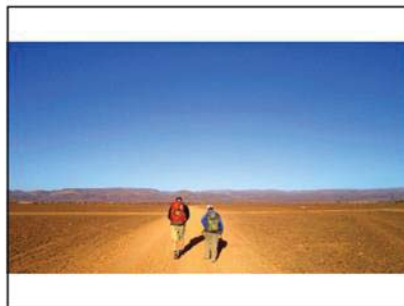Housekeeping- the rest room is outside on your ...... We have scheduled breaks but please feel free to stand up, get a drink or go to the restroom anytime. Please also feel free to ask and clarify if anything is unclear to you.

Now this part of the workshop is to impart components for the Delivery of the presentation (How to impart as a peer educator). We will go through learning styles, adult learning, a morning tea break at 1045 hrs and continue till lunch at 1215 hrs. Then , we continue with Behaviour Change Techniques, Presentation skills and Mock Practice and finishing with a reflection/resource you have in your guidebook. And we request an evaluation feedback from you.
We hope to complete the workshop at 1430 hrs.

This guidebook and session plan is a culmination of a series of events. Anne-Marie is the leader of the falls prevention research project and funding from the Australian Government's Collaborative Research Networks (CRN) program awarded to The University of Notre Dame Australia. "Healthy People, Healthy Country: Translating evidence into action to improve health and well-being in vulnerable populations". There was earlier research surveying existing peer educators' views about the program, an experts' evaluation of existing presentations and finally, a community forum to seek older adults' views of falls prevention information since 2 years ago. All these findings are put together into this part of the guidebook.

<u>10 mins</u>: Now I will ask **Anne-Marie** to give us a background to how this research came about and also a refresher of Tuesday's session. Recap.
- Define what is a fall?
- Discussed risk factors
- Strategies- (move, improve, remove) balance and strength; vision; footwear; home hazards, mental health

5 mins: expectations
- "What do you hope to learn and gain from today? Share your one expectation of the workshop with us.

(Write down as volunteers share info; link objectives to expectations- explain will be met or not met).
Take this opportunity to highlight that there are follow-up links to each area as we introduce them to you. These added resource is for you to pursue if you wish to find up more as a run up towards getting for your presentation.

10 mins: share one attribute

(Pair up + introduce each other and get to know each other…"someone you have not had a chance to pair up")

(Discuss and highlight one attribute of your partner that you feel will makes a successful peer educator)

- Share with the group the attribute
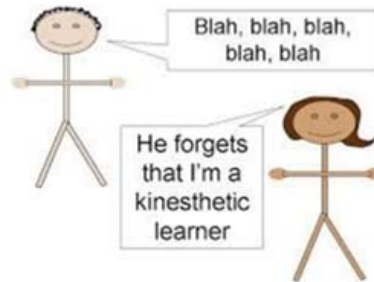
15 mins: complete VARK questionnaire (**to complete by 1115 hrs**)

15 mins: share preferred style (**to complete by 1130 hrs**)

The VARK modalities
The acronym VARK stands for Visual, Aural, Read/Write and Kinesthetic sensory modalities that are used for learning information.
Visual (V)
A preference for depiction of information in maps, charts, diagrams, symbolic arrows, shapes, patterns that people use to represent what could have been presented in words.
Aural/Auditory (A)
A preference for information that is "heard or spoken". They learn best from lectures, group discussion, radio, talking things through. This category also includes talking out aloud as well as talking to oneself.
Read/Write (R)
This is a preference for information displayed as words or text-based information. Any form of reading or writing eg. manuals, reports.
Kinesthetic (K)
This is a preference related to experience and practice (simulated or real) eg. demonstrations, videos, case studies.

Dale's Cone of Experience

Cone of Experience

5 mins: Play video of Dale's Cone of Experience
https://www.youtube.com/watch?v=p-eSxgRetvk

The Cone of Learning

I see and I forget.
I hear and I remember.
I do and I understand.
— Confucius

After 2 weeks, we tend to remember ...

Reading — • 10% of what we READ

Hearing Words — • 20% of what we HEAR

Seeing — • 30% of what we SEE

Watching a Movie
Looking at an Exhibit
Watching a Demonstration
Seeing It Done on Location — • 50% of what we SEE & HEAR

Participating in a Discussion
Giving a Talk — • 70% of what we SAY

Doing a Dramatic Presentation
Simulating the Real Experience
Doing the Real Thing — • 90% of what we SAY & DO

Passive

Active

Source: Edgar Dale (1969)

Dale's cone of experience 10 mins (**to complete by 1145 hrs**) :The Cone of Experience is a:

-visual model that illustrates the range of teaching material that may be used for learning and communication.
-The educator chooses the most suitable teaching material according to the needs and abilities of the learner in a particular situation.
-The best teaching uses a mix of sensory "learning experiences".

Look at the picture below. The Cone of Experience shows the different ways of learning that make up the adult learning experience.

Direct learning experience is the most effective way of learning (bottom of cone), however, that is not possible most of the time. So getting your peers to reflect and discuss their life experience or examples from audience is another way of teaching/learning method. Or watching a movie. Compared to a one-way lecture.

Highlight mix of teaching material to be used. And as you can see how all of you have various preferred learning style.

Adult Learning

Concepts of Adult Learners

Your Positive Learning Experience

Falls Prevention Presentation
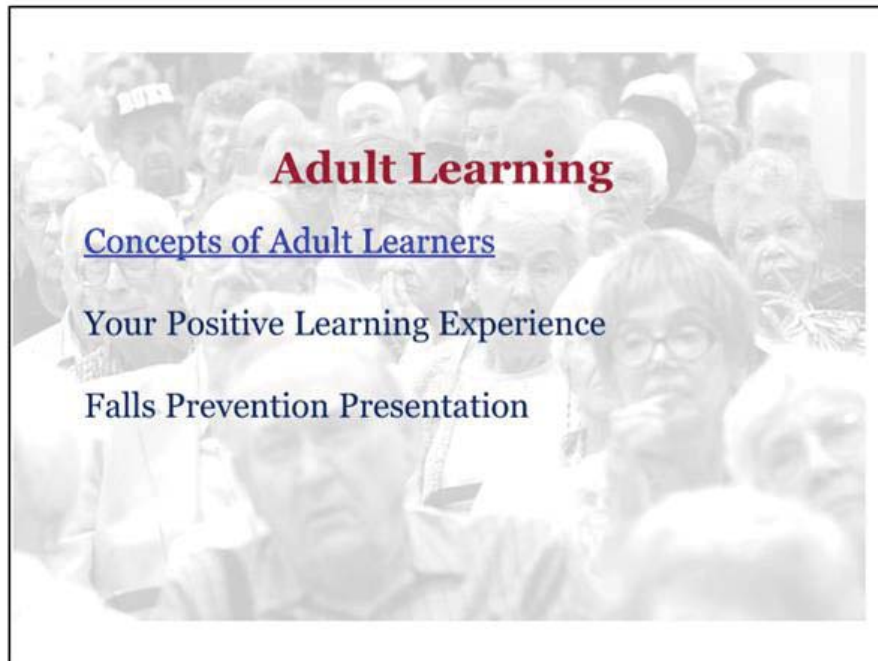
10 mins **(to complete by 1155 hrs)** : Watch video- Adult learning (8:27)
https://www.youtube.com/watch?v=vLoPiHUZbEw
10 mins **(to complete by 1205 hrs)**:
In school, your teacher decides what you learn and how you learn. Now as an adult learner, its different.
Reflect and share with each other a positive learning experience and discuss why you felt it was effective? Maybe you took the time to learn pottery or learn a new language, how was the experience?- what elements contributed to the positiveness?

10 mins **(to complete by 1215 hrs- lunch)**: Reflect what you would like to keep in mind when you present to your peers during falls prevention presentation.

Guidebook page 13-14.
(Case study- if needed as prompt)
- Motivation to learn→ falls prevention and stay at home on her own
- Is problem-oriented, goal or task-oriented → Strengthening exercises-Manage her home-based exercises & hydrotherapy
- A need to learn→ Learned and recorded her physiotherapy & hydro exercises
- Is self-directing → found alternative hydro location at local pool's ramp instead of using steps
- Brings life experiences and knowledge to learning →integrated her activities to fit in with home exercises
- Readiness to learn

Behaviour Change

Elvis Presley "Change of Habit"

Inspiring people to change their behaviour through fun

Lunch time to end…1240 hrs ..1 min: Play Elvis Presley music "Change of Habit"
https://www.youtube.com/watch?v=gijhxdK16O0

2 mins: watch video Inspiring people to change their behaviour through fun" (1:47 min)

3 mins: Behaviour change elements
https://www.youtube.com/watch?v=RveeQafbdA0

Take a few minutes to read BCT on Page 15…. Of Guidebook, please.

What do you think is needed to help people change?

Behaviour change can be challenging
- look at smoking cessation-message on cigarette packs- people continue smoking
- Look at exercise- so many questions
- Spouse and medical checks

Credible source: World Researcher on rats in a lab- to talk about falls prevention…credible source??
- Very important to state that you are "trained". In a forum on falls prevention we held, older people stated they want "trained people" to advise them.

Behaviour Change

Question:

15 mins (**to complete by 1315 hrs**): Knowledge (analogy of a car)-

- Provide facts (factual knowledge green light means 'go' & red means 'stop')- facts about falls, in Exercise Activity 1-3
- How to do it (procedural knowledge how to drive the car)- steps to prevent falls, play video, share personal stories. Exercise Activity 4-5
- Put it together (metacognition-actually driving on the road)- Personally relevant (risk factors); problem-solve (think of barriers & solutions) and action plan
- Motivation- be positive, share success stories among each other, role-model, emphasise improves well-being, independence

Behaviour change key elements: how can we apply?

But if we provide people with knowledge/capability and the motivation leading to action plan with goal setting, set a positive tone- we can get our audience thinking and self-reflecting

Presentation Skills

Training video

Anne-Marie to share her experience

Role Play- exercise activity

Share

FAQ- role play

How to actually impart @ presentation?

5 mins: Play parts of in-house training video (role model) 36 mins
https://www.youtube.com/watch?v=7Y2gFZlT5RA&feature=youtu.be
- At the start: introduction and overview
- 1.22: Encourage participation and clarification
- 2.30: Exercise activity 1-pictures x 3
- 3.33: Strategy- select section of group instead of whole group
- Repeat someone's comment so others can 'hear'
- 11.25: Mistaken belief- it does not happen to me.
- 13.05: discuss consequences of falls
- 14.05: emotional consequence of fall. Lose confidence.
- 14.53: Use peers to influence each other socially and offer feasible solutions. Its acceptable to take action to prevent falls
- 19.34 role modelling. Share personal story. Humour to connect on an emotional level.
- 22.09: Barriers
- 22.58: Repeat and reinforce solutions.
- 28.44: Instructions to complete an action plan checklist
- 33.43: Summarise and thank audience
- 34.08: Evaluate /gauge learning via body language

Encourage to go for more self-learning via sources of resource. The feedback via

questionnaire were….(read out loud)

10 mins: Anne-Marie to share her experience with new-format of presentation

15 mins: Pair up & role play one presentation exercise activity (out of 8 exercise activities in guidebook)- each of ICCWA team, Linda and Anne-Marie to help facilitate/watch each pair

15 mins: 1 or 2 to volunteer/share role play to group about their exercise activity

15 mins: Role play answering one FAQ

Evaluation

Reflect on Key ideas

Take home point?

Resource available- Tip sheet, checklist,
self-reflection, references, links
Three myths of behaviour change- what
you think you know that you don't

Evaluation

5 mins: Summarise by Linda and Anne-Marie
-Today, we have gone over how to incorporate adult learning and behaviour change
techniques in your presentation. To use a mix of methods to encourage learning.
-Highlight resource in Guidebook. Reflect on key take home points

- AIM OF PEER EDUCATOR PRESENTATION: PAGE 7
- YOUR ROLE AS PEER EDUCATOR: facilitate learning; be a role model; encourage
  peers to "take action" to change behaviour

10 mins: Evaluation. Inaugural training workshop and seek their feedback if they
found the learning valuable in meeting their needs in preparing to be a peer
educator?
Video https://www.youtube.com/watch?v=l5d8GW6GdR0

Thank the volunteers for their time in attending and for providing feedback. Email
etc ICCWA.
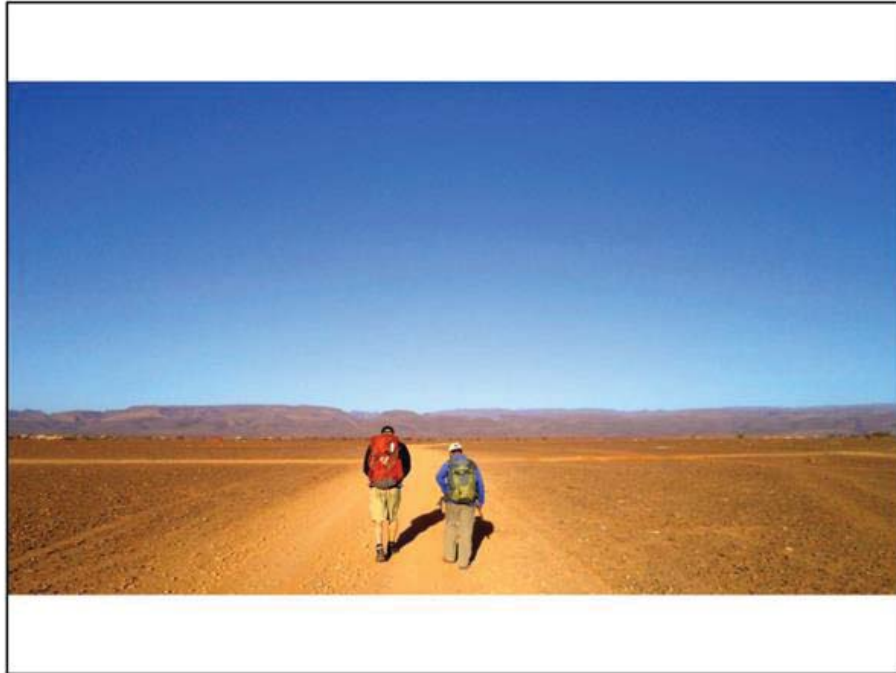
Thank the volunteers for their time in attending and for providing feedback. Email etc ICCWA.

What lies ahead in terms of plans? Ally will brief you.
(March/April- your social/church groups etc as trial presentations, with each other as buddy and support from us, etc). Provide feedback.
Then, Linda will start to collect feedback (data collection via questionnaire)

Appendix P

Peer-led Falls Prevention Education Program: Guidebook for Peer Educators
(Chapter 7)
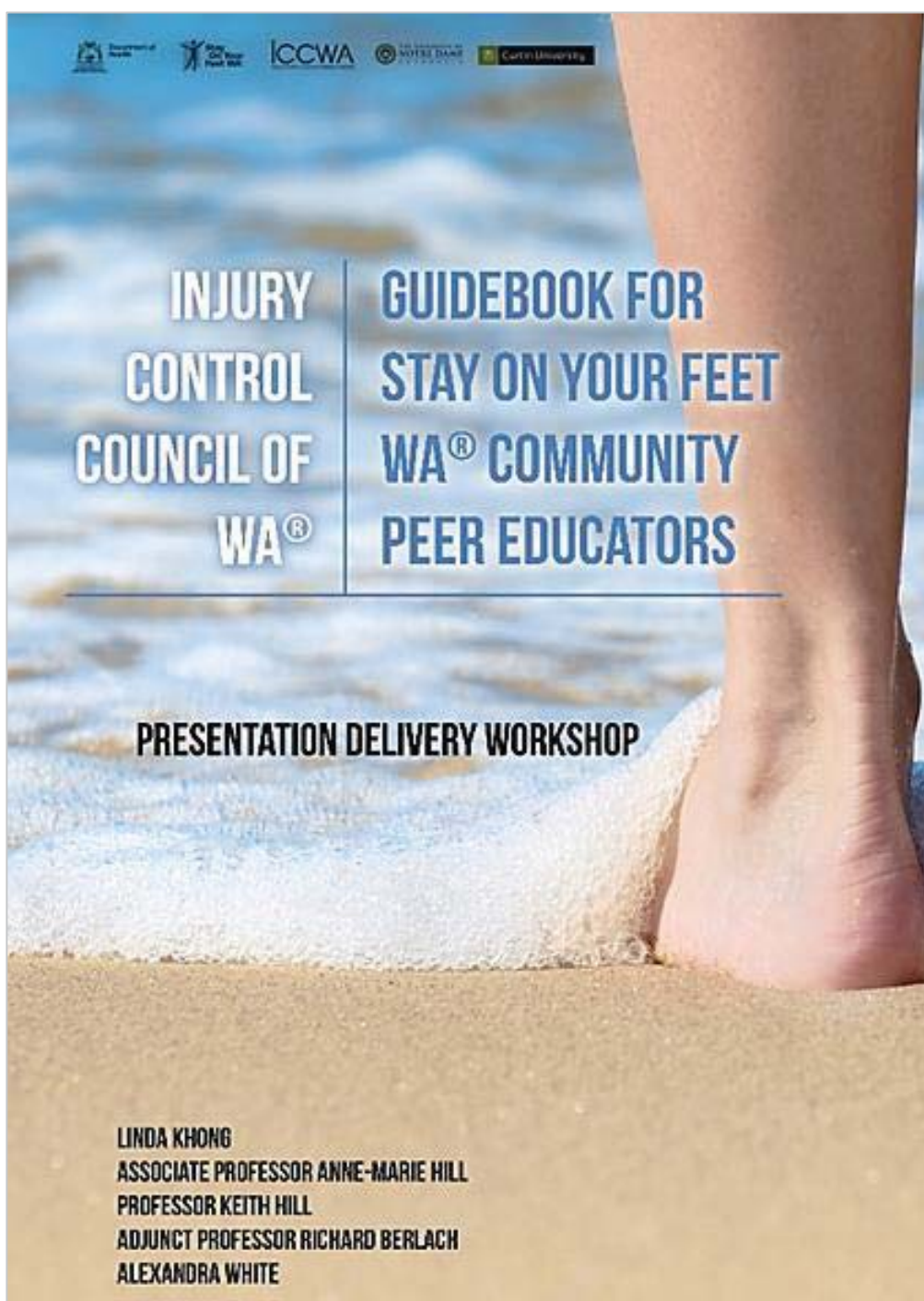
Workshop Schedule
Program Day 2:

Presentation Delivery Workshop
26th February 2015
9:45am -2:30pm

Time	Topic
09.45am	Registration- coffee available
10.00am	Welcome, introductions and recap of Day 1 by Anne-Marie *(15 mins)*
10:15am	Icebreaker and expectations *(30 mins)*
10:45am	Morning tea *(15 mins)*
11:00am	Learning Style *(45 mins)*
11:45am	Adult Learning *(30 mins)*
12:15pm	Lunch *(30 mins)*
12:45pm	Behaviour Change Technique *(30 mins)*
1:15pm	Presentation Skills & Trial *(60 mins)*
2:15pm	Evaluation *(15 mins)*
2:30pm	End

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Table of Contents

> *Anyone who stops learning is old, whether at twenty or eighty.*
> *Anyone who keeps learning stays young.*
> *- Henry Ford*

Foreword

Welcome to the Stay On Your Feet WA* falls prevention team. We are delighted that you have chosen to as a Volunteer Peer Educator.

The Injury Control Council of WA (ICCWA), together with with the University of Notre Dame Australia and Curtin University,are pleased to present the "Guidebook for Stay on Your Feet WA® Community Peer Education".

Whilst falls are the leading cause of injuries requiring hospitalisation in Australia, falls are preventable.

ICCWA delivers the Stay On Your Feet WA* falls prevention program with the support of the Government of Western Australia. Stay On Your Feet WA* promotes healthy, active ageing in WA to reduce falls among older people.

Volunteer peer educators are recognised as essential members of the Stay On Your Feet WA* falls prevention team. Peer educators play a important role in educating older adults about the simple steps to help prevent slips, trips and falls so that they can Stand Strong and get on with enjoying the fun things in life.

Volunteer peer educators to do more than just present information. They are trained and supported by ICCWA to give falls prevention education that promotes behaviour change among older adults living in the community.

This Guidebook provides practical, evidence-based information and strategies for volunteer peer educators to use when preparing to deliver presentations.

We hope you enjoy being a Volunteer Peer Educator and welcome any feedback you have about our training and support.

Deborah Costello
Injury Control Council of WA
Chief Executive Officer

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Background

The Injury Control Council of WA (ICCWA) has delivered the Stay On Your Feet WA® (SOYFWA®) program on behalf of the Department of Health WA since 1999. The early development of SOYFWA® included the implementation of a volunteer peer education program for community dwelling seniors.

At commencement, 32 volunteers were recruited and trained to deliver falls prevention messages by ICCWA in Metro Perth. Within a separate program, 135 regional volunteers were trained by the South West Population Health Unit.

In 2003, the metro program was aided by the development of SOYFWA® speaker's kits and video. Presentation sessions continue in metro Perth in the same format today, with 11 senior volunteers delivering an average of 100 falls prevention presentations annually to over 2500 community members. Each session involves a peer educator presenting a one-off 45 minutes presentation to a group of older adult community members.

Current ICCWA peer educators

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This part of the workshop was developed by Linda Khong and her supervisors with significant contribution from Alexandra White (ICCWA):

Linda Khong [MmanipTherapy, BappSc (Physio)(Hons), BBusinessAdmin] is the PhD researcher from School of Physiotherapy at The University of Notre Dame Australia for this project. She is a qualified Musculoskeletal and Gerontological-titled physiotherapist with extensive experience working with older people in hospitals, the community, exercise groups, private practice and residential care settings. Email: Linda.Khong1@my.nd.edu.au

Associate Professor Anne-Marie Hill (PhD, BSc(Physio, MSc, Grad Cert Uni Teaching) is the CRN project leader of this research. She is a researcher at the School of Physiotherapy and Exercise Science at Curtin University. She was awarded a National Health and Medical Research Council of Australia early career research fellowship (2012-2015) to investigate the role of education in falls prevention. She has extensive clinical experience (Gerontological physiotherapy) and has combined her educational training and clinical experience to focus on developing patient education for older people and is currently leading falls prevention projects in community, residential care and hospital populations. She also works with clinical staff in Western Australia to assist in translation of falls prevention evidence into practice in WA hospitals.

Professor Keith Hill [PhD, Grad Dip Physio (Neuro), BAppSc(Physio)] is the current Head of School of Physiotherapy and Exercise Science at Curtin University. He was previously Director of the Public Health Division at the National Ageing Research Institute (NARI) in Victoria. He has more than 30 years of clinical and research in falls prevention, rehabilitation and physical activity programs for older adults. He has secured more than AUD$14 million in research funds over these years and published more than 170 journal papers.

Adjunct Professor Richard Berlach is the immediate past Associate Dean of the School of Education at The University of Notre Dame Australia and also held the position of Pro-Vice Chancellor (Research). He holds qualifications in education, psychology, and theology. Areas in which he has published include self-concept formation, tertiary level teaching styles and strategies, outcomes-based education, curriculum studies, and student-centred learning.

Alexandra White [BSc (Health Promotion)] is the Falls Prevention Community Engagement Officer on the Stay On Your Feet WA* program. She has practical experience in delivering health promotion initiatives, particularly to older adults living in the community.
Email: AWhite@iccwa.org.au

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Acknowledgements

This workshop manual was only possible with valuable input from the following people:

For further information or enquiries contact:
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Suggested citation:
Khong L, Hill AM, Hill KD, Berlach RG and White A (2015)
Guidebook for Stay On Your Feet" WA community peer educators:
Presentation delivery workshop

Stay On Your Feet" is coordinated by the Injury Control Council of WA and supported by the Department of Health.
For more information on Stay On Your Feet"
visit www.stayonyourfeet.com.au
e-mail: info@stayonyourfeet.com.au or call 1300 30 35 40.

Guidebook Availaible from Injury Control Council of WA

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About this Workshop

Thank you for attending this workshop.

ICCWA, in collaboration with The University of Notre Dame Australia and Curtin University are currently reviewing the delivery of current peer-led falls prevention presentations to community-dwelling older adults. A new peer-led falls prevention education program has been developed by the project team, incorporating current falls prevention research findings, principles of adult learning and behaviour change techniques.

The intent of the workshop is to impart the knowledge, principles and skills related to the new peer-led falls prevention presentation, program and peer educators. The workshop has been developed in consultation with an education experts and earlier research studies by the research team.

We hope that you will enjoy the workshop and look forward to your participation.

Aim of the workshop

The aim of this workshop is to give you broad knowledge about falls prevention, including current research findings and to assist you to develop skills that will enable you to confidently deliver falls prevention education presentation to your peers.

Who are the target audience for the presentations?

Your target audience will be older adults who attend peer-led falls prevention education presentations run by ICCWA. The audience you speak to will be aged 60 years or older and be living independently in the community. This group may include those active, fit and well older adults through to those with limited mobility and those with a number of health issues.

Aim of the presentation

The aims of the peer-led falls prevention education and presentation are:

- to raise awareness of falls
- provide knowledge about falls prevention strategies
- enhance self-confidence about falls prevention,
- raise the intention and improve engagement and uptake of falls prevention activities amongst peers

Your role as a peer educator is to facilitate learning, be a role model and encourage your peers to plan, to take action, to change their behaviour.

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Overview of this Guidebook

This guidebook has been developed to prepare you to undertake your new role as a falls prevention peer educator.

The initial chapters aim to provide you with the background to ICCWA's peer education and information about adult learning and behaviour change techniques. Following this, the session plan gives you an overview and eight exercises that provide a step-by-step guide for your presentation. The exercises progress through these knowledge concepts:
- imparting facts/figures of falls knowledge
- personalise risk of falls
- steps to prevent falls
- considering intention/action plan and behaviour change

Questions are raised to generate discussion or self-reflection in the exercise activities. Wherever possible or suitable, answers or appropriate responses are provided for the questions.

Statements and suggestions printed in bold and underlined should be emphasised during the presentation.

Learning objectives

Upon completing this workshop, you will be able to:
- Demonstrate an understanding and knowledge of falls and range of recommended falls prevention strategies
- Cultivate an awareness of available health services related to falls prevention
- Describe the basic concepts and principles of adult learning
- Apply principles of basic adult learning in your falls prevention presentations
- Describe and identify the behaviour change techniques required for presenting the falls prevention
- Integrate the relevant behaviour change techniques to the falls prevention presentations
- Demonstrate skills in engaging with the audience positively
- Deliver an interactive session with the audience
- Be ready to undertake a peer presentation in the community

Abbreviations and symbols

ICCWA   Injury Control Council of Western Australia
SOYFWA®   Stay On Your Feet WA®

 = answer

 = attention

08

Adult Learning

There are many ways in which adults learn new skills and ideas. By having an understanding of theory of learning, you can increase your knowledge and improve the way you present information to other adults.

"VARK" Modalities
VARK stands for Visual, Aural, Read/Write and Kinaesthetic sensory modalities that are used for learning information.

Visual (V)
A preference by a learner for depiction of information in maps, charts, diagrams, symbolic arrows, shapes, patterns that people use to represent what could have been presented in words.

Aural/Auditory (A)
A preference for information that is "heard or spoken". These people learn best from lectures, group discussion, radio, talking things through. This category also includes talking out aloud as well as talking to oneself.

Read/Write (R)
This is a preference for information displayed as words or text-based information. Any form of reading or writing eg. manuals, reports, information booklet and handouts

Kinaesthetic (K)
This is a preference related to experience and practice (simulated or real) eg. demonstrations, videos, case studies.

Note: Many adults will learn best by mainly using one modality, while others have more multimodal approach to learning.

Information Source: http://vark-learn.com/introduction-to-vark/the-vark-modalities/

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The Cone of Experience

The Cone of Experience is a visual model that illustrates the range of teaching material that may be used for learning and communication. The educator chooses the most suitable teaching material according to the needs and abilities of the learner in a particular situation. The best teaching uses a mix of sensory "learning experiences". The Cone of Experience is not meant to be used in a top to bottom or vice versa manner but shows us that learning can occur by using practical methods so the learner can remember better.

Look at the picture below. The Cone of Experience shows the different ways of learning that make up the adult learning experience. Methods for adult learning generally involve a more practical relevant teaching method (see the bottom of the cone).

Generally learners remember:

Figure 1: The Cone of Experience
Ref: Dale E. (1969) Audiovisual methods in teaching

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Useful reading / links:

- Dale E. (1969) Audiovisual methods in teaching. 3d edition ed. New York: Dryden Press; 1969

- Dale's Cone of Experience via You-tube (6:09 mins): https://www.youtube.com/watch?v=p-eSxgRetvk&list=PLkR8Em RT-TGTnglao8NR5xqi8necZ3Kma&index=9

- Dale's Cone of Experience video: http://www.slideshare.net/day2x/ cone-of-experience-24668244

- Cone of Experience diagram: http://pharmacy.mc.uky.edu/faculty/resources/ files/Step%20Dales%20Cone.pdf

- Stages of Learning according to Bloom's Taxonomy. Basic concepts (4:28 mins): https://www.youtube.com/watch?v=_YdXxwBZ7Q

- Video of Bloom's Taxonomy according to Andy Griffith Show (13:10 mins): https://www.youtube.com/watch?v=NsBna5IVBYg

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Understanding the Adult Learner

The falls prevention presentation you will give has been designed with the aim of changing behaviour, alerting older people the risk of falls (in a Positive Manner) and encouraging them to take up and adopt falls prevention action. However, to help the audience to engage with the message, the presentation has been designed based on adult learning principles and theory.

Adult learning theory states that an adult learner:
1) Need a reason for learning before they undertake the learning
2) Is usually self-directed in approach
3) Adopts a problem-oriented, goal-oriented or task-oriented approach
4) Brings their life experiences and knowledge to learning
5) Prefers to learn things that they can apply in the current situation
6) Possesses an internal drive and motivation to learn

Useful reading / links:

- You-tube video on Andragogy (Adult Learning) (8:27 mins)
  https://www.youtube.com/watch?v=vLoPiHUZbEw

- Queensland Occupational Therapy Fieldwork Collaborative- Adult Learning Theory and Principles http://www.qotfc.edu.au/resource/?page=65375

- Knowles MS, Holton III EF, Swanson RA. The Adult Learner. The definitive classic in adult education and human resource development. 7 ed. Hoboken: Taylor and Francis; 2012

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Adult learning principles	Application to presentation
Learners should actively participate in the learning process	• Provide an overview and state the session and goals of the session • Encourage audience to discuss topics raised by others • Encourage audience to seek clarification if things are not clear
Learning should relate to the relevant prior knowledge of the individual	• Ask audience to reflect and discuss on their own or friends / family history of falling • Encourage audience to identify their own risk of falls
A comfortable and encouraging positive learning environment	• Build rapport with audience • Positively validate audience when they make a contribution
Peer learning is facilitated by group interaction	• Encourage audience to engage in peer dialogue during presentation
Information has been adapted appropriately for the age group of the audience	• Audience can see and hear the presentation • Provide opportunity for discussion • Be flexible and adaptable, while still delivering key elements of the presentation
Learning requires frequent opportunity for reinforcement and practice	• Hand out resources • Provide information on where to seek follow-up • Encourage audience to review information provided • Offer to return for follow-up presentation

Ref: Knowles et al (2012) The Adult learner

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Behaviour Change Techniques

Providing your audience with knowledge and information does not automatically result in making them change their behaviour. We all know things we should do but yet we do not! There is an underlying theory that helps to explains how people can be helped to change their behaviour in the area of health. This is called health behaviour change theory.

Why don't adults change their behaviour when they receive health information such as knowledge about preventing falls?. For behaviour change to occur, health education is best delivered using the principles of psycho-social learning. These help us to undertand how an adult will process new health information but also how they can become motivated to change their behaviour.

By learning about health behaviour change, you as a peer educator will be able to use these techniques to help your peers to take up the information you present to them and hopefully take action.

Why are you (peer educator) the right person to do this presentation?

Behaviour Change Technique	Definition	Reason(s)	How to use technique in presentation
Credible source	Information deemed to come from a credible source in favour of the falls prevention	• You are trained, supported by research team & ICCWA with latest information	• Inform the audience that you are trained in falls prevention at the start of the presentation
Social comparison (peer)	Draw attention to others' performance to allow comparison with the person's own performance	• You are a similar age • You are at a similar stage of life or life experience	• Share similar concerns about falls and challenges in falls prevention • Personal stories in falls prevention that the audience (peers) can relate to and compare
Verbal persuasion about capability	Tell the person that they can successfully perform the desired behaviour, arguing against self-doubts and asserting that they can and will succeed	• You are seen as a role model • Possess positive mindset • Demonstrate you apply those falls prevention strategies	• While there are challenges but if "I can do it so can you" • **Talk about the positive angle to falls prevention**

Behaviour Change Technique Taxonomy (http://www.ucl.ac.uk/healthpsychology/bcttaxonomy) **14**

What do I (as peer educator) need to remember to impart during the presentation?

During presentation, introduce your audience with knowledge about falls, help them see how to apply the knowledge in their life as well as provide them with a positive picture and the motivation to take up falls prevention.

The following table is an overview of the content that may be covered in presentations.

Provide information about various consequences of falls		
Behaviour Change Technique	**Definition**	**Content**
Information about the health consequences	Provide information (e.g. Written, verbal, visual) about health consequences of falls	• Provide statistics and facts of falls and hospitalisation
Information about the social and environmental consequences of falls	Provide information about social and environmental consequences of falls	• Provide information regarding the impacts of falls on overall health, wellbeing, independence and autonomy
Information about emotional consequences of falls Significant consequences of falls	Provide information about emotional consequences of falls Use methods specifically designed to emphasise the consequences of falls with the aim of making them more memorable	• Highlight the possibility that "fear of falling" may occur after fall (s) • Show pictures of health consequences e.g. Hospitalisation and compare to independence

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Costs and benefits of Falls Prevention

Behaviour Change Technique	Definition	Content
Framing/ reframing	Suggest another way of viewing preventing falls to change the thoughts and emotions about falls prevention	- Discuss falls prevention also impact on your overall health, wellbeing, independence and autonomy - People tend to think "falls happen to others, not to me". Therefore, personalise the risk of falls to the individual. Highlight the importance of being frank and honest with yourself about your own risk of falling
Pros and cons	Advise the individual to identify and compare reasons for wanting (pros) and not wanting to (cons) change the behaviour	- Discuss, list or compare the reasons why person would wish or not wish to make changes to prevent falls Highlight positive nature of falls prevention
Focus on past success	Advise to think about or list previous successes in performing falls prevention behaviours	- Discuss what/which falls prevention strategies (eg. exercise) worked in the past for participants or their family / friends

How to prevent falls

Behaviour Change Technique	Definition	Content
Instructions on how to perform behaviour	Advise or agree on how to prevent falls	• Show the video demonstrating the steps and strategies on falls prevention • Highlight the steps as described in the booklet
Demonstration of the behaviour	Provide an observable sample of preventing falls, directly in person or indirectly eg. via pictures for the person to aspire to or imitate	• Demonstration of posture, simple kind of exercise eg. sit-to-stand. • Demonstrate sample of recommended footwear or medication (Webster) pack

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Develop Falls Prevention Action Plan

Behaviour Change Technique	Definition	Content
Goal-setting	Set or agree a goal defined in terms of falls prevention to be achieved	• Provide specific goal setting eg. "remove mats"
Problem-solving	Prompt audience to think what factors may influence their behaviour	• Consider potential barriers to achieving the goals and ways to overcome them
Action-planning	Prompt detailed planning of performance of the behaviour (falls prevention)	• Encourage planning of 3 falls prevention measures for the next month
Framing/Reframing	Suggest another way of viewing preventing falls to change the thoughts and emotions about falls prevention	• Provide positive emotions regarding these actions, they are "going to be fun or sociable"

Useful reading/links:
- Michie S, Atkins L, West R. The Behaviour change wheel: A guide to designing interventions. UK: Silverback Publishing; 2014

- See also http://www.behaviourchangewheel.com/

- Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. Ann Behav Med, 46(1), 81-95. doi: 10.1007/s12160-013-9486-6

- Falls Prevention video : John Hopkins interview (3:38mins) https://www.youtube.com/watch?v=d4Zv4QSNCQM

- TEDx on Three myths of behaviour change- what you think you know that you don't (18:30 mins) https://www.youtube.com/watch?v=ISd8GW6GdR0

- Presenting & public speaking tips - How to improve skills & confidence (6:10 mins) https://www.youtube.com/watch?feature=player_detailpage&v=Q5WT2vweFRY

- Effective presentations skills-playlist https://www.youtube.com/playlist?list=PLE493C03289BB9628

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Session Plan Quick Guide

Time for activity	Exercise activity	Topic	Comments
Arrival		Preparation	Leave a booklet on chair to save time later
01 min		Welcome and opening	
01 min		Introduction and presentation overview.	
02 mins	1	What is a fall?	Show pictures
05 mins	2	To raise awareness that falls are not part of ageing	
05 mins	3	Consequences, costs and benefits of falls.	
15 mins	4	Encourage re-think and beliefs about falls; steps to prevent falls	Play video
05 mins	5	Role modelling about how to prevent falls	Share personal stories on falls prevention only. Show items
10 mins	6	Making falls prevention personally relevant	
10 mins	7	Problem-solve and develop an action plan	Booklet
05 mins	8	Summarise and conclude presentation	

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Session plan

Welcome and opening (1 minute)

Thank the participants for attending the talk. Thank the organiser/organisation who helped organise the presentation.

Introduction and presentation overview (1 minute)

"My name is _____ and I am a trained falls prevention volunteer with Injury Control Council of WA. I am here to present to you about falls and falls prevention and share some of my experience with you on how to reduce falls and how to stay in good health. (add your personal positive slant)

This presentation will take about 45 minutes, finishing with you leaving with an action checklist for home. Homework! I would like to encourage you to listen, participate and share actively. Please feel free to stop me if you require any clarification at any time by raising your hand."

REMEMBER:

- Introduce yourself
- Introduce ICCWA
- Thank participants for attending
- Thank organisation that organised presentation
- Inform audience that you are trained!
- Address presentation topic; falls and falls prevention
- Overview of presentation schedule
- "Feel free to ask any questions!"

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Exercise 1: What is a fall? *(2 minutes)*

Resource(s)
Pictures of an older person with a (1) **stumble**, (2) **trip** and a (3) **slip**.

THOUGHTS

This exercise aims to introduce the definition of a fall by comparing and differentiating a stumble, a trip or a slip. To emphasise accuracy of information.

This initial informal group discussion will serve three purposes:

1) To gain the participants' attention on the topic at the start of the presentation

2) To stimulate their thinking process in the area of falls

3) Applying adult learning principle by building on the "Prior experience of the Learner" to arrive to their conclusion of what a fall is.

Show pictures of a stumble, trip and slip

Question: True or False. A fall is a trip, stumble or a slip?

A trip, stumble or a slip may lead to a fall.

Question: Which of the following three pictures is a fall?

If you hit the ground or lower level, it's becomes a fall!

"A fall is an unexpected event which results in a person coming to rest on the ground or floor or other lower level."

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(1) Stumble

(2) Trip

(3) Slip

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Exercise 2: To raise awareness that falls is not part of ageing
(5 minutes)

True/False Quiz
Statement: Falls only occur in young people or only in older people?

False. Falls can occur in all people, young and old. However, they are more common in older people over the age of 65.

Statement: Falling is a normal part of ageing?

False. Falls is not a normal part of ageing. There are things/actions you can do. You will find out and learn how during this session.
(Show enthusiasm)

For discussion with the group:
Question: Why is it so easy to fall and more often when one gets older?

• As we get older our bodies change
• Balance, strength and flexibility decrease

Question: Why are we more concerned about falls in older people?

• Risk of having a fall increases with age
• Falls can lead to loss of independence and mobility
• 1 in 3 people over the age of 65 will have a fall each year
• Injuries – minor to serious fractures
• Hospitalisation
• Poorer quality of life
• Reduction in activity
• Increased fear of falling

Question: What might help prevent an older person from falling?

• Activities that incorporate strenghth, flexibility and balance
• Having medications reviewed regularly
• Wearing safe and appropriate footwear
• Having their eyesight tested on a regular basis and wearing the correct glasses
• Managing chronic health conditions such as diabetes or arthritis
• Removing any hazards inside and outside their home

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Exercise 3: Consequences, costs and benefits of falls
(5 minutes)

Objectives
- To raise awareness of the thinking that "falls happen to others, but not to me"
- To reflect on their own or someone they know about the history/experience of falling
- To list and describe the consequences and costs of falls
- To raise the awareness that a lack of self-confidence or fear of falls after a fall can occur
- To raise awareness to inform doctors/GPs regardless of seriousness of fall(s)

Resource(s)
Picture of older person with consequences after a fall and when no falls occur.

Thoughts

Research has shown that older people tend to think that "**falls happen to others and not to me**". Hence, this session aims to encourage the audience to feel that the falls information in this presentation is personally relevant by the following means:

1) Participants will be asked to share/think in pairs to reflect, discuss and personalise their experience.

2) Benefits of preventing falls are more than simply not falling. They are health gains and maintenance of independence.

3) Potential consequences after a fall may be injury, bruising and fractures, which can lead to early admission to nursing home.

Behaviour Change Techniques used in this session:
Significance of consequences of falls
Information about health consequences
Information about social and emotional consequences

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Picture: Hospitalisation after a fall may occur

Picture: Quality of life (strong and healthy)

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Exercise 3 *(Continued)* Share with group/discuss in pairs

Part I:

Question : Have you or someone you know ever had a fall?
- How did it happen?
- What happened to you/someone you know after a fall?
- How did you / someone you know feel after the fall?
- How might it have been prevented?

Part II:

Question : Why might people believe that a fall will never happen to them?

Question : Do you know anyone who had this belief and yet had a fall?
Did their attitude change as a result of the experience?

Question : What are some of the costs/consequences of having a fall?

Answer
- Injuries
- Hospitalisation
- Reduction in activity and mobility
- Loss of independence
- Increased fear of falling

Question : What are some of the benefits of engaging in activities that can help prevent falls:

Answer
- Maintain independence
- Better quality of life
- Impacts on overall health, well-being and autonomy

Show pictures of consequences after a fall and when there is no fall

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Part III:

Question : Did anyone tell their GP about your falls even if it was not serious?

Question : Did anyone start to be very cautious, slow down, or curb their activities soon after a fall?

Question : Why do people start to be very cautious, slow down or curb their activities after a fall?

Answer
- Injury
- Lack of confidence
- Increased fear of falling

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Exercise 4: Encourage re-think and beliefs about falls; steps to prevent falls (15 minutes)

Objectives
- To recognise why falls prevention is important
- To identify how common a fall is
- To relate how falls prevention can improve overall health, wellbeing, independence and autonomy
- To show that falls can be prevented with falls prevention strategies which help to keep you strong and independent
- To list steps to reduce risk of falls

Resource(s): ICCWA video, script on facts and statistics

Thoughts

In an earlier study of this project involving a community forum, older adults have stated a preference for statistics in the area of falls.

Make sure you are familiar with the script below.

Behaviour Change Techniques used in this session:
- Credible source
- Beliefs about consequences on health
- Social, environmental and emotional consequences
- Framing/reframing (suggest new perspective on behaviour)

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Part I: Presentation Script; Statistics

- 1 in 3 people over the age of 65 in the community fall every year
- In WA, falls are the leading cause of injury-related death and hospitalisation in people over 65
- More than 40 older Australians break their hip daily
- Less than 50% of those who have broken their hip will be walking in 1 years' time
- Falls have a great impact on your overall health, wellbeing, independence and autonomy
- The risk factors for falls include reduced vision (poor eyesight), taking 4 or more medications, reduced strength of legs, history of falls or if you are 65 years and older

Part II: Play the Video

Watch ICCWA 12 minute video

Behaviour Change Techniques used in this session:
- Instructions on how to perform the behaviour
- Demonstration of the behaviour

Notes

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Exercise 5: Role modelling about how to prevent falls
(5 minutes)

Objectives
- To list feasible strategies that can help to reduce risk of falling
- To describe how these strategies can help to reduce risk of falling and maintain health and independence
- To demonstrate how these can be done/performed

Resource(s)
Samples to pass around (kinaesthetic feedback) e.g. footwear, medication pack /Webster pack

As a quick selective recap of the video, apply

Peer Educator role-modelling and persuasion
- Share your personal stories you have used to prevent or reduce risk of falling.
- Encouragement: "If I can do it, so can you"
- Demonstration: example posture
- Role model- vision/medication/bone health
  Also Role model- perform exercises for strength and balance (at home/ or in a group)
- Role model- home hazards (not footpath hazards)

Thoughts

Behaviour Change Techniques used in this session:
- Instructions on how to perform the behaviour
- Demonstration of behaviour
- Verbal persuasion about capability
- Adding objects to the environment

Note: Tailor your personal stories to the audience. Also refer to FAQ at the back as a guide to responding to questions.

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Example:

Kinesthetic stimulation eg. Get to feel and look at different types of footwear.

Describe features of a 'safe' shoe.

Stress that a "safe" shoe is NOT the same as "appropriate", "good", "proper" or "sensible" shoe.

Characteristics of a safe shoe are:
-low square heel no more than 2.5cm
-thinner firm soles
-lace-up or firm fastening
-a firm heel collar for extra support
-fit any prescribed orthotics

What makes a shoe safe?

Laces or strong fastening to hold the foot firmly

Supporting collar, preferably high

Low, square heel to improve stability

Thin, firm midsole for the feet to 'read' the underlying surface

Slip-resistant sole
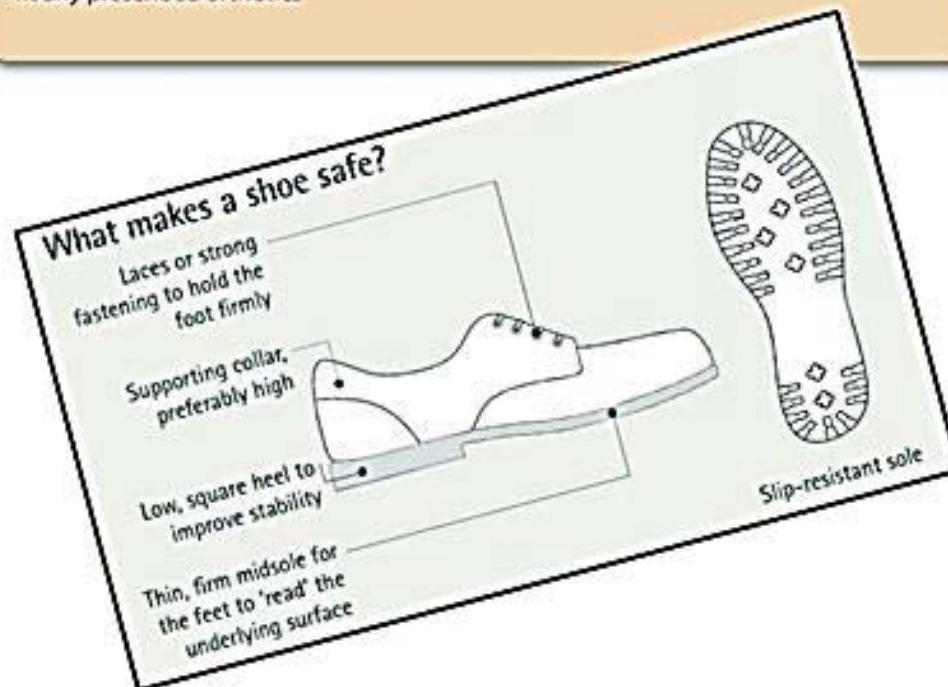
Source: Lord S, Sherrington C and Menz H (2007). Falls in Older People: Risk Factors and Strategies for Prevention. New York: Cambridge University Press.

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Exercise 6: Making falls prevention personally relevant
(10 minutes)

Objectives
- To analyse and discuss which factors may increase their own risk of falling
- To relate/associate which/how strategies may help to prevent them from falling in future
- To identify potential factors (barriers) that may make it difficult for them to take up action to prevent falls

Resource(s)
Booklet space to jot down their ideas

Thoughts

Make sure you are familiar with the information booklet and have ICCWA's business cards with you.

Allow for reading information, discussion and interaction time to jot down risk factors x 1 or more.

Compare their experience and thoughts with their peers.

Behaviour Change Techniques used in this session:
- Social comparison
- Focus on past success
- Problem-solving

Group work or work in pairs

- "Compare your experience and thoughts with your peers about particular risk factor(s) that may increase your personal chance of falling"
- OR "Discuss what has worked for your vision, balance or home safety and why?"
- "What might make it difficult for you to exercise, address home hazards? That is what barriers?"
- After you discuss I will ask the audience to share our personal examples of successes and barriers in these areas

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Exercise 7: Problem- solve and develop an action plan
(10 minutes)

Objectives
- To self-reflect own individual/personal risk factors
- To list 3 goals for personal risk factors
- To develop an action plan and list strategies
- To identify 3 potential barriers to personal success of action plan
- To think of ways and solutions to overcome the barriers

Resource(s)
Booklet for action plan and priorities
Questionnaire

Thoughts

Ask 2-3 people to share their action plan with the group.

Behaviour Change Techniques used in this session:
- Problem-solving
- Action-planning

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Exercise 8: Summarise and conclude Presentation *(5min)*

Thanks for listening

My key message today was
1. Falls are very common and cause much injury in older people
2. Falls are NOT a normal part of ageing
3. Taking actions like exercise and managing your health will keep you strong and independent and help to prevent falls – and you can have fun doing this!

Peer statement – "I can do it you can do it" type sentence

You can use any of the resources to get more information and back up to take up your plan

Let's all improve move and remove to stay strong and independent and lets tell others

Remember:

- Thank audience for listening
- Falls are very common
- Cause much injury in older people
- Falls not normal part of ageing
- Taking action like exercise
- Positive Benefits-stay strong and independent; have fun
- Emphasise " I can do it so can you!"
- Resources available- for action plan

Resources
The following resources will help to implement the falls presentations.

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Frequently asked questions

"How do I get up off the floor?"

Possible response:
Unfortunately I am not able to tell you or show you how to get up off the floor. If you are concerned about your risk of having a fall it is best to speak to your GP or if you would like further information you can take a business card and contact the Stay On Your Feet WA* at the Injury Control Council of WA.

"Can you give me some exercises to do?"

Possible response:
Everyone has different needs when it comes to exercise. It's important to remember that exercise can be carried out at home or gym; on your own or in a group and may be economical cost to cater for everyone.

It is best to consult with your GP to ensure that you are doing exercises that suit your needs and requirements. If you are looking for or are interested in specific exercise program and activities in your area you can take a business card and contact the Stay On Your Feet WA* at the Injury Control Council of WA.

"How do I talk to my doctor about my risk of having a fall?"

Possible response:
Your GP is the best person to speak to if you are concerned about your risk of having a fall. They can refer you on to a range of different services that can assist you and help you to reduce your risk of having a fall. Sometimes it is not always easy to talk to your doctor about your concerns.

Some of the best ways to approach the subject with your doctor are:
- Bring along your falls action plan from today
- Bring a friend or family member along with you to your appointment
- If you have difficulty hearing things take a long a note pad so your and your doctor can write down notes and points of discussion

If you would like further information on what to speak to your GP about you can take a business card and contact the Stay On Your Feet WA* at the Injury Control Council of WA.

"I prefer to do walking, why do I have to do exercises?"

Possible response:
Walking is good to keep active. Exercise helps you stay stronger and improve your balance and mental health. Exercises do not need to be too hard, simple exercises work just as well.

"Are herbal medicines a risk for having a fall?

Possible response:
Yes. All medicines, whether they are available as a prescription, over the counter or herbal medicines, are a risk for falls. They all have different effects and interactions and need to be considered when reviewing your medications. Check with your pharmacist or GP, or take a business card and contact the Stay On Your Feet WA* at the Injury Control Council of WA for further information.

Tip sheet

- Be credible
- Be enthusiastic
- Be positive
- Keep it simple
- Encourage self-reflection
- Keep the session interactive
- Use a mix of sensory learning aids e.g., lecture, video, discussion
- Use the audience's life experiences to share and stimulate discussion
- Share stories related to falls prevention only
- Maintain flexibility and manage your time. The peers in the audience have varying needs and learning pace so your flexibility and ability to moderate these differences yet keeping to the time in mind, will have an impact on the success of your presentation session. Refer to your After-Presentation checklist to identify the key elements of the presentation
- Direct any queries on professional issues back to ICCWA's hotline
- Refer to the checklist and Self-Reflection after the presentation
- Call ICCWA staff for further support where required

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Presentation kit

1. Stay On Your Feet WA* polo shirt

2. Name badge

3. Speakers' Kit
   - SOYFWA* resources
      - Your home safety checklist booklet
      - Stay On Your Feet* flyer
   - Pencil case – with pencils and sharpener
   - Medicine lists
   - Pictures of fall, trip, slip
   - Pictures of hospitalisation, happy active older people
   - Session evaluation sheet
   - Presentation checklist
   - Presentation evaluation sheet
   - Your mileage claim form
   - Photo consent form
   - Webster packs
   - Business cards

This is the basic kit which each volunteer receives prior to becoming an educator. It is at the volunteer's discretion to ask for more resources for any additional presentations. This information is collated into a suitcase.

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Pre-Presentation Checklist

☐ I have received a letter/email from ICCWA confirming the details of the presentation

☐ I have spoken with the contact person organising the presentation at the club/group

☐ I have confirmed the venue of the presentation with the contact person

☐ I have confirmed the number of people attending the presentation

☐ I have sufficient resources for the presentation? If I do not have enough resources I have spoken with Stay On Your Feet WA staff for more to be sent to me prior to the presentation?

☐ I have confirmed the availability of a DVD player and monitor and that it is working and someone knows how to operate the equipment?

After Presentation Checklist (ICCWA Review)

☐ An overview of the presentation was provided prior to the start of the talk

☐ Advised the peers/audience that he/she "was a trained peer educator"

☐ Played the falls prevention video

☐ Encouraged peers to reflect on their personal falls risk factors

☐ Shared personal stories relevant to only falls prevention

☐ Provided Knowledge/Capability (Excellent-----------------Need improvement)

☐ Provided Motivation (Excellent-----------------Need improvement)

☐ Encouraged Problem-solving (barriers & solutions) in an Action Plan (in booklet)

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Self-reflection

Successes Experienced What worked well? What pleased you?	Challenges Encountered What frustrated you? Describe any disappointments

Possible Revisions
Do you think there are any changes that need to be made to future presentations?
If yes, please describe.

Critical or Interesting Incidents
What was unexpected? What questions were raised in your mind?

Collaborating with Others
Who can you share your successes with?
Who can you problem solve with?

Note: KCCWA encourages you to maintain regular contact (catch up over coffee or on the phone) with your community engagement officer for feedback and support for your volunteering effort

Adapted from Source: Bennett BB, Rolheiser C, Stevahn L. Cooperative learning: where heart meets mind : an interactive resource book. In. Toronto: Educational Connections; 1991. p. 293.

Notes

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Evaluation questionnaire

We would like to find out what your views on falls prevention are **before the talk starts**.

1. Whether or not you have had any falls, please share with us the level to which you agree or disagree with the following statements. (Please tick ☑ one option for each question)

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A. For me, taking measures to reduce my risk of falling would be useful					
B. Most people whose opinion I value approve of me taking measures to reduce my risk of falling					
C. I am aware of the measures needed to reduce my risk of falling					
D. I feel positive about reducing my overall risk of falling					
E. I am confident that if I wanted to, I could reduce my risk of falling					
F. In the next month, I intend to take measures to reduce falls or my risk of falling					
G. I have a clear plan of how I will take measures to reduce falls or my risk of falling					

2. List up to 3 ways (measures) that you could take in the next month, which will help you avoid falling or the risk of falling:

3. What are the reasons that would stop you from taking these measures?

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Information about you

Your first name: _____ Your last/family name: _____

Your mailing address: _____

4. What is your gender? (Please tick one) ☐Male ☐Female

5. What is your age? _____ years old

6. In general, would you say your health is: (Please tick one)
☐Poor ☐Fair ☐Good ☐Very Good

7. How many prescribed medications (by your doctors) are you taking? None
Indicate number: Morning: ____ Noon: ____ Afternoon: ____ Bedtime: ____

8. Do you have any difficulty walking? ☐No ☐Yes

9. Do you use a walking aid when inside the house? (Please tick one most suitable):
☐Nil ☐Walking stick ☐Walking frame ☐Other _____

10. Do you use a walking aid when outside the house? (Please tick one most suitable):
☐Nil ☐Walking stick ☐Walking frame ☐Other _____

11. How far can you walk without a rest on level ground? (Please tick only one)
☐less than 400 metres (less than ¼ mile)   ☐400 to 800 metres (¼ to ½ mile)
☐801 metres to 1.6 km (½ to 1 mile)   ☐1.61 km to 3.2km (1 to 2 miles)
☐3.3km or more (2 or more miles)

12. A fall is an unexpected event which results in a person coming to rest on the ground or floor or other lower level. Please tell us your best guess at the number of falls that you have had during the last 12 months: _____

13. Have you ever discussed the issue of falls with your doctor or health provider or received falls prevention information from them? (Please tick only one)
☐Yes ☐No ☐Not sure ☐Prefer not to answer

Thank you for your time in completing this survey

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Information about you

Your first name: _____ Your last/family name: _____

Your mailing address: _____

4. What is your gender? (Please tick one) ☐Male ☐Female

5. What is your age? _____ years old

6. In general, would you say your health is: (Please tick one)
☐Poor ☐Fair ☐Good ☐Very Good

7. How many prescribed medications (by your doctors) are you taking? None
Indicate number: Morning: ____ Noon: ____ Afternoon: ____ Bedtime: ____

8. Do you have any difficulty walking? ☐No ☐Yes

9. Do you use a walking aid when inside the house? (Please tick one most suitable):
☐Nil ☐Walking stick ☐Walking frame ☐Other _____

10. Do you use a walking aid when outside the house? (Please tick one most suitable):
☐Nil ☐Walking stick ☐Walking frame ☐Other _____

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☐less than 400 metres (less than ¼ mile)   ☐400 to 800 metres (¼ to ½ mile)
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☐3.3km or more (2 or more miles)

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13. Have you ever discussed the issue of falls with your doctor or health provider or received falls prevention information from them? (Please tick only one)
☐Yes ☐No ☐Not sure ☐Prefer not to answer

Thank you for your time in completing this survey

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Additional References

Australian Institute of Health and Welfare (AIHW). Bradley C 2013. Hospitalisations due to falls by older people, Australia 2009–10. Injury research and statistics series no. 70. Cat. No. INJCAT 146, Canberra: AIHW

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Lord S, Sherrington C and Menz H (2007). Falls in Older People: Risk Factors and Strategies for Prevention. New York: Cambridge University Press

Australian Institute of Health and Welfare (AIHW). 2012. Australia's Health 2012 : The thirteenth biennial health report of the Australian Institute of Health and Welfare. Australia's health series no. 13. Cat. No. AUS 156. Canberra: AIHW

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Appendix Q

Peer-Led Falls Prevention Education Program: Fidelity Checklist for use by Community Organisation or Peer Educators
(Chapter 7)

- An overview of the presentation was provided prior to the start of the talk

- Advised the peers/audience that he/she "was a trained peer educator"

- Played the falls prevention video

- Encouraged peers to reflect on their personal fall risk factors

- Shared personal stories relevant to only falls prevention

- Provided Knowledge/Capability (Excellent ---------- Need Improvement)

- Provided Motivation (Excellent ---------- Need Improvement)

- Encouraged Problem-solving (barriers and solutions) in an Action Plan (in booklet)