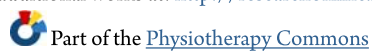


The impact of peer-led falls prevention education on community-dwelling older adults: A mixed methods evaluation

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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.

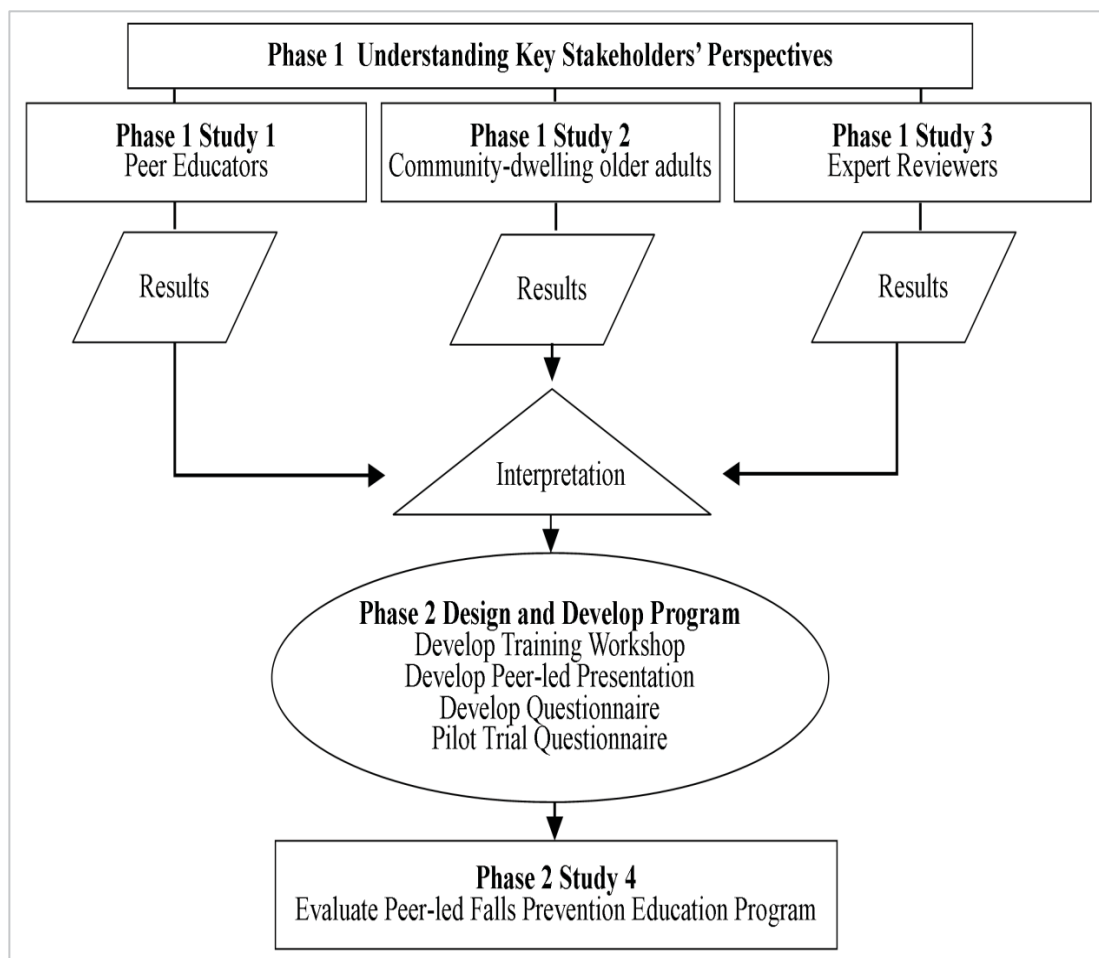


Figure 3.1 Mixed Methods Design of Research

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.

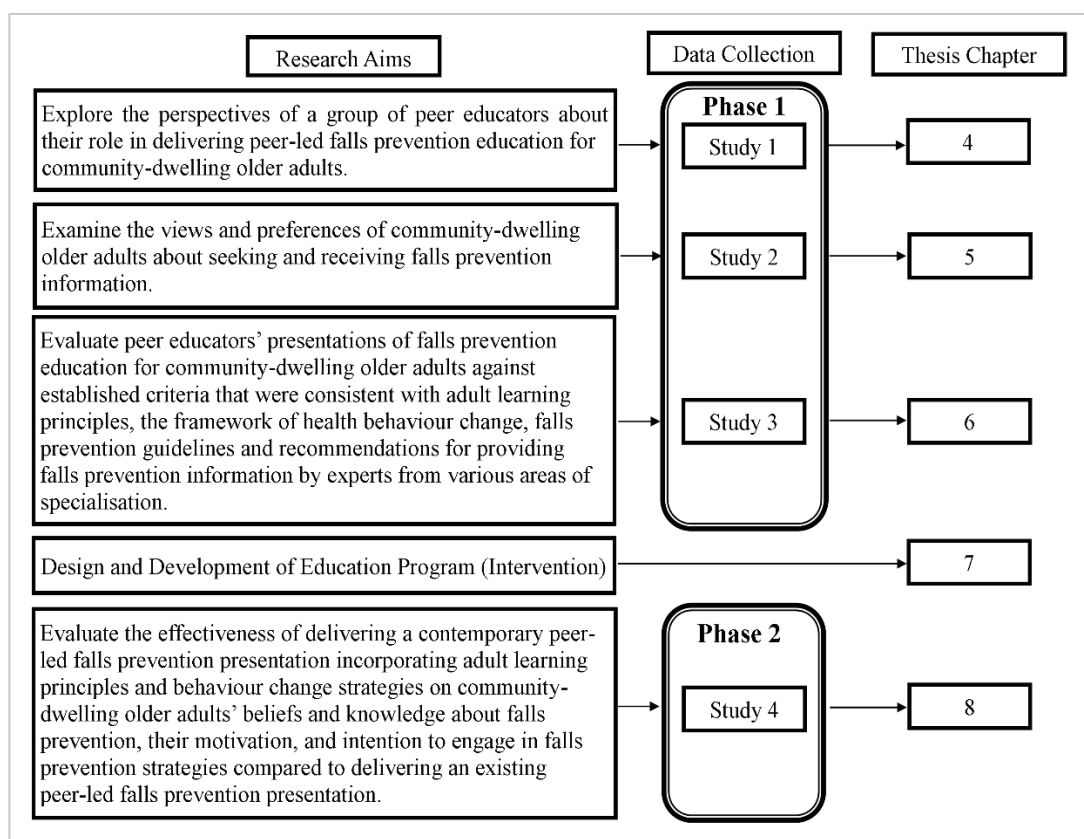


Figure 3.2 Structure of the Thesis

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 adaptations 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 & Mocerri, 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: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Progress to a topic or questions after each round
7. Harvest and share collective discoveries	Member-checking	<ul style="list-style-type: none"> • 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 Café's conversational process was guided by the topic areas and questions to elicit participant's perspectives. Several "round-robin" small group conversations led by café 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, & McKeivitt, 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.