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

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Chapter

8

Chapter 8

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

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

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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.

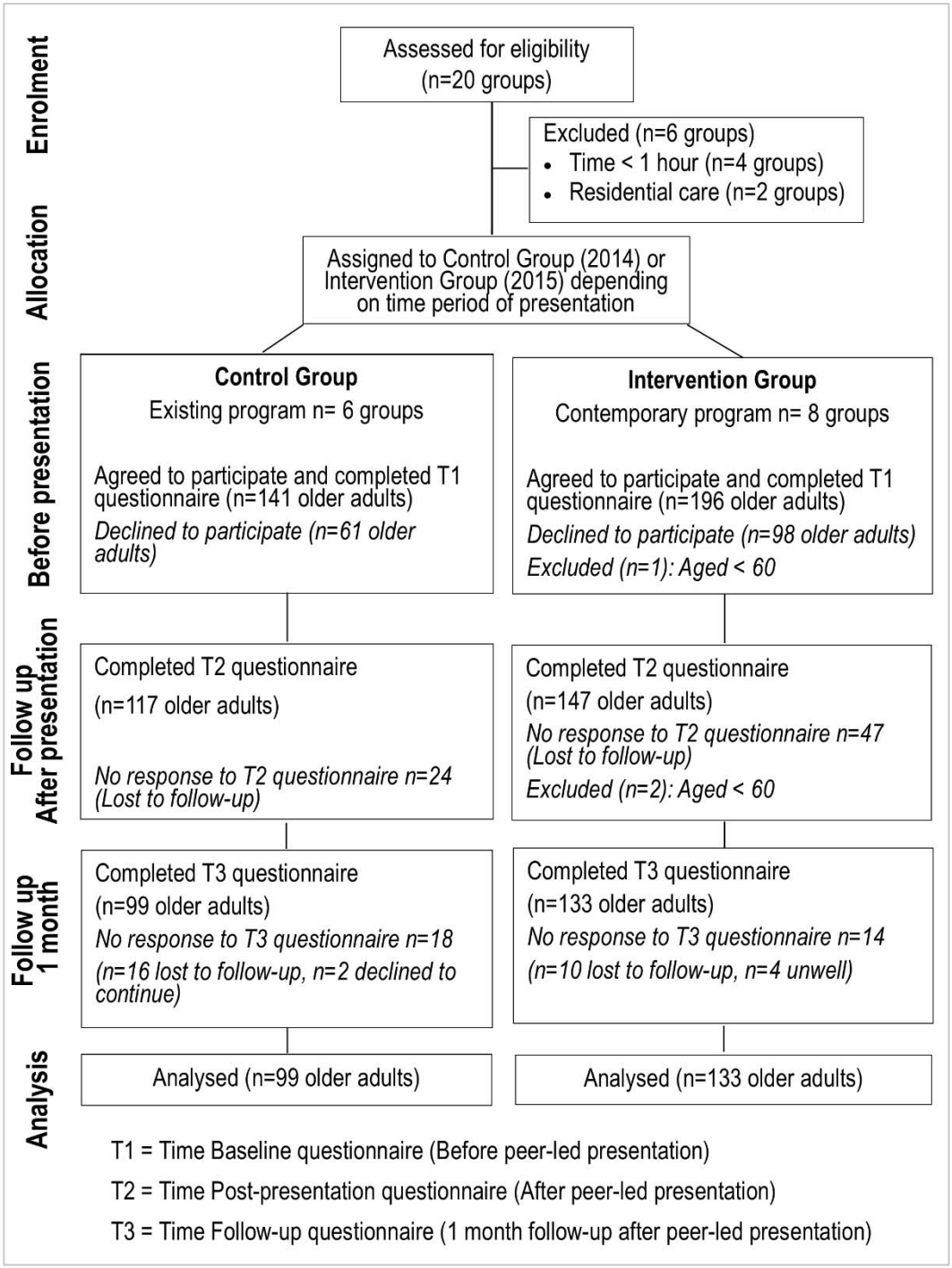

Figure 8.1 Flow Diagram of the Recruitment of Participants and Data Collection Process for Study 4

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

* Statistically significant difference between groups

[A] Previously discussed falls prevention with health professional/doctor or received information

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.

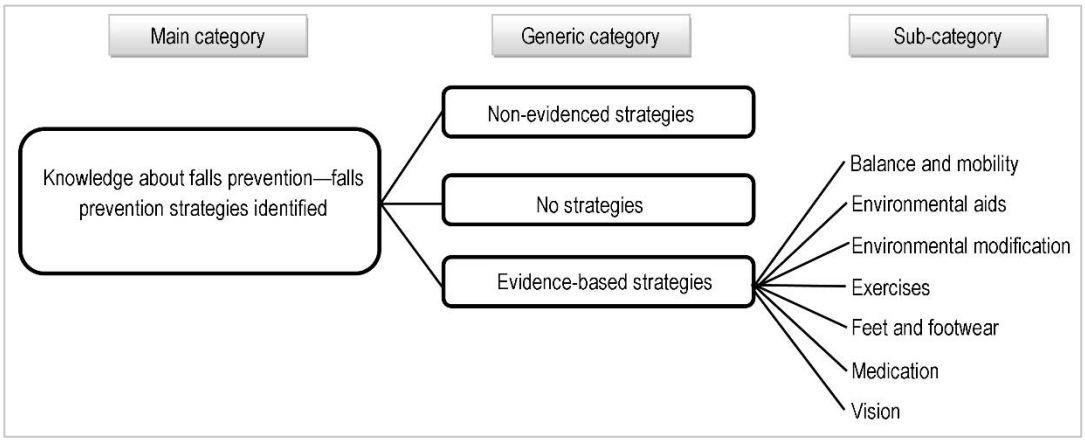

Figure 8.2 Categorisation Matrix: Participants' Knowledge of Falls Prevention Strategies Identified from Their Qualitative Responses

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

		Control		Intervention	
Generic Category	**Sub-category**	**Baseline** *n=197*[a] **n (%)**	**Follow-up** *n=217*[a] **n (%)**	**Baseline** *n=266*[a] **n (%)**	**Follow-up** *n=291*[a] **n (%)**
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.