

# **An evaluation of the falls prevention practice of community-based allied health professionals working in primary care**

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## **Statement of Authenticity**

I, Thomas Price, certify that this submission is my own work and contains no material previously published or written by another person except where acknowledged in the text.

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## *Table of Contents*

<b>Acknowledgements</b> .....	<b>2</b>
<b>Statement of Authenticity</b> .....	<b>2</b>
<b>Thesis Abstract</b> .....	<b>6</b>
<b>Literature Review</b> .....	<b>7</b>
Introduction .....	7
Definitions.....	8
Search Strategy.....	8
Risk Factors.....	8
Interventions for Falls Prevention .....	9
Climbing Falls Incidence .....	11
Barriers to Falls Prevention.....	11
Client Referral .....	12
Evidence Based Practice .....	13
Communication and Rapport.....	14
Other Factors .....	14
Extent of Current Evidence-Based Practice .....	15
Initiatives to Promote Research Dissemination.....	17
Clinical Guidelines .....	17
Knowledge Translation Programs .....	18
Conclusion.....	21
References .....	23

### **An evaluation of the falls prevention practice of community-based allied health**

**professionals working in primary care** ..... Error! Bookmark not defined.

**Abstract** ..... Error! Bookmark not defined.

    Key Words ..... **Error! Bookmark not defined.**

**Background** ..... Error! Bookmark not defined.

<b>Methodology</b> .....	Error! Bookmark not defined.
Theoretical Framework .....	<b>Error! Bookmark not defined.</b>
Recruitment .....	<b>Error! Bookmark not defined.</b>
Workshops.....	<b>Error! Bookmark not defined.</b>
Data Collection.....	<b>Error! Bookmark not defined.</b>
Analysis.....	<b>Error! Bookmark not defined.</b>
<b>Results</b> .....	Error! Bookmark not defined.
Falls Prevention in Practice .....	<b>Error! Bookmark not defined.</b>
Confidence .....	<b>Error! Bookmark not defined.</b>
Difficulties in Practice.....	<b>Error! Bookmark not defined.</b>
Falls Risk Assessments .....	<b>Error! Bookmark not defined.</b>
Falls Prevention Interventions.....	<b>Error! Bookmark not defined.</b>
Knowledge Questionnaires.....	<b>Error! Bookmark not defined.</b>
Perceived Change in Practice Following Intervention .....	<b>Error! Bookmark not defined.</b>
<b>Discussion</b> .....	Error! Bookmark not defined.
<b>Authors Note</b> .....	Error! Bookmark not defined.
Acknowledgements .....	<b>Error! Bookmark not defined.</b>
Declaration of Conflicts of Interest.....	<b>Error! Bookmark not defined.</b>
<b>References</b> .....	Error! Bookmark not defined.
<b>Appendix A. Journal Submisison Guidelines</b> .....	Error! Bookmark not defined.

### ***Table of Figures***

Figure 1. Participants' self-reported falls prevention practice.....	42
Figure 2. Comparison of participant's self-reported confidence in falls prevention practice .	43
Figure 3 Comparison of participant's difficulties in falls prevention using a $\chi^2$ test.....	44

### ***Table of Tables***

Table 1. Health Professionals participating in each workshop .....	38
Table 2. Participant employment status and service sector. ....	40
Table 3. Participant's reported assessments used in falls prevention practice (based on total number of assessments reported) .....	45
Table 4. Participant's reported interventions used in falls prevention practice (based on total number of interventions reported) .....	47

## Thesis Abstract

**Background:** Despite a substantial body of literature demonstrating effective falls prevention strategies, incidence of falls amongst older individuals continues to increase every year.

Allied health professionals (AHP) are key providers of falls prevention services in the community, insufficient dissemination of best practice evidence amongst AHP has been proposed, however little is known about AHP current practice in falls prevention.

**Aim:** This study aimed to explore AHP understanding evidence based falls prevention, their current practice in falls prevention and to examine the potential for intervention-specific professional development workshops as a means to facilitate knowledge translation and evoke changes changes in practice.

**Methods:** This these is presented in two components:

Firstly, a review of the current literature was performed. It explore the current evidence for interventions in falls prevention and the incidence of falls in the community. It then examines potential issues identified in falls prevention, understanding of current practice by AHP and finally previously knowledge translation initiatives in the area. Secondly is a journal manuscript comprising of a pre-post quantitative design utilising AHP self-reported surveys before and after an intervention-specific professional development workshop. Participant's current practice, confidence, difficulties in, and knowledge of falls prevention practice were explored as well as any changes following the workshop.

**Findings:** Regular screening for falls risk and collaboration with general practitioners and other health professionals were identified as key issues at baseline. Professional development workshops were found to be an effective means of translating knowledge of falls and eliciting changes in practice amongst AHP.

# Literature Review

## Introduction

The prevalence and risks of accidental falls amongst the elderly have been a prominent concern to health professionals and service providers for some time now. Defined as "inadvertently coming to rest on the ground, floor or other lower level" (World Health Organisation [WHO], 2008, p. 1), falls affect approximately one in three individuals over the age of 65 per year (Australian Commission on Safety and Quality in Healthcare [ACSQHC], 2009). Significant injuries resulting from falls include fractures to the hip and neck of femur, traumatic brain injuries and injuries to the upper limb (WHO, 2008). However while 66% of falls result in a degree of injury (Centre For Health Advancement and Centre For Epidemiology And Research, 2010)), regardless of injury falls are associated with a decline in function, confidence, mortality and overall quality of life in the individual (American Geriatrics Society, British Geriatrics Society, & American Academy of Orthopaedic Surgeons Panel on Falls Prevention, 2010).

In addition to costs to the individual, falls place a significant burden on the national healthcare system, costing \$648 million in acute care alone in 2007-08 (Bradley, 2012). Older individuals with falls related injuries accounted for just over 20% of all Australian hospital admissions due to injury between 2012-13 (Pointer, 2015). Furthermore, falls pose a serious barrier to the continued independence and well-being of many elderly living in the community. The area was identified as one of the priorities of the Australian National Injury Prevention Plan in 2004 (Pointer, Harrison, & Bradley, 2003) and highlighted in a 2008 WHO report. Due to the prevalence of falls and their significant cost there has been a considerable degree of research into preventing falls within the community.

## Definitions

For the purpose of this review a *falls prevention program* will refer to a planned service delivery format or plan offered by a healthcare provider targeted at reducing falls. A *falls prevention intervention* will refer to a specific modality of treatment or component implemented by a health professional.

## Search Strategy

A review of the literature was undertaken to explore the prevalence and epidemiology of accidental falls and examining current evidence and initiatives in falls prevention. Literature was searched through a number of databases – Medline, CINAHL, PsycINFO and Web of Science, as well as google scholar and by searching the references of relevant articles. Key words searched for included ‘allied health personnel’, ‘accidental falls’, ‘falls prevention’, ‘knowledge translation’, ‘knowledge transfer’, ‘community’, ‘evidence-based practice’, ‘research dissemination’, ‘continuing professional development’, ‘interprofessional education’ and ‘aged’.

## Risk Factors

A major issue contributing to the prominence of falls is that they are complex and multifaceted - a plethora of factors may contribute to an elevated falls risk and may be either external or internal to the individual. These factors can largely be described by four broad categories (WHO, 2008) (Deandrea et al., 2010):

- **Behavioural** (multiple medications, alcohol, lack of exercise, inappropriate footwear)
- **Biological** (demographic, chronic illness, gait, vertigo, visual and cognitive deficits)
- **Socioeconomical** (social interaction, access to resources, socioeconomic status)
- **Environmental** ( physical hazards, lighting, building design)



Age is a key indicator of falls risk, due to compounding likelihood of co-morbidities and a decline in function with increasing age, many older people in the community are at high risk of falls. Furthermore, having fallen in the past 12 months or a fear of falling is associated with a nearly 3-fold risk of falling (Deandrea et al., 2010) indicating that once an individual has experienced a fall they are at increased risk of recurrence. A number of falls risk assessment tools exist to support practitioners in identifying those at risk of falling. These may be comprehensive (e.g. Falls risk for Older People in the Community (FROP – Com) (Russell, Hill, Blackberry, Day, & Dharmage, 2008) or specific to one area of risk (such as the Home Falls and Accidents Screening Tool - HOME FAST (Mackenzie, Byles, & D'Este, 2009)). These tools allow professionals to identify individuals in their practice who may benefit from early falls prevention interventions and target interventions to specific risk factors.

## **Interventions for Falls Prevention**

Identification and development of strategies to reduce falls risk and incidence has been a prominent focus in the literature for over two decades. There is now conclusive evidence that falls can be prevented with a range of interventions. A comprehensive review in 2012 found good evidence for the effectiveness of Tai Chi, group and home-based exercise programmes as well as home safety interventions in reducing falls and supported some medication review interventions (Gillespie et al., 2012).

Additional studies have found exercise programs to both reduce the rate of falls and on falls-related injuries, having the largest impact on individuals deemed to be at greater risk of falls (El-Khoury, Cassou, Charles, & Dargent-Molina, 2013). Furthermore, there is some evidence to suggest that these programs are cost-effective in those at greatest risk, in particular single factor interventions (Davis et al., 2010). Targeted medication reviews in fall prevention have

been found to be effective when supplementing vitamin D in individuals with low vitamin D levels and in the withdrawal of psychotropic medication (Gillespie et al., 2012). A randomised control trial investigating the effectiveness of a medication program in NSW found a significant reduction in rate of falls amongst people over the age of 65 (Pit et al., 2007). Home and environment assessments have been additionally found to reduce the number of falls when administered by an occupational therapist (Pighills, Ballinger, Pickering, & Chari, 2016) and when comprehensive with adequate follow up (Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008).

Despite this however, there is some contention as to the best modality to provide falls prevention programs in terms of being multifactorial or single targeted, that is, providing a number of interventions based on an individual's assessed risk factors such as home modifications and exercise or only providing a single intervention such as an exercise program. It is generally supported that both approaches have the potential to reduce falls, although there is uncertainty as to which approach provides the greatest impact and in what setting (L. M. Day, 2013). Gillespie et al's review found that multifactorial interventions reduced rate of falls, however also found that the current body of studies were too heterogeneous in methodology to recommend either approach over the other (Gillespie et al., 2012). Alternatively, a systematic review evaluating programs that provide multiple fixed interventions without being tailored to an individual's risk factors (multiple component) found them to be effective in reducing falls rate, however this was not compared to a single interventions (Goodwin et al., 2014). In summary there is good evidence to show support for single, multifactorial and multiple component interventions, however there is still debate regarding which is most effective or appropriate in a given setting.

Ultimately these three intervention modalities –Exercise prescription, medication reviews and home modifications are recommended in the prevention of falls amongst elderly in the

community and promoted to health professionals by best practice guidelines published by both the American & British Geriatrics societies (2010) and the ACSQHC (2009). Due to their nature, these interventions and thereby community falls prevention, are typically implemented by allied health professionals (AHP) including exercise physiologists, occupational therapists, physiotherapists and pharmacists.

## **Climbing Falls Incidence**

Nationally, there was an estimated 178,780 hospitalisations due to falls during 2012-13, of these 55% occurring in adults aged 65+, a substantial increase from the amount of reported falls in 1999-00 (112,747) (Pointer, 2015). Although an aging population certainly contributes to this, the age standardised rate of falls has increased from 606 per 100,000 to 735 per 100,000 in the same time frame, a statically significant increase of 2.4% annually on average (Pointer, 2015). Despite advances in and identification of proven falls prevention strategies, there has been a continual increase in the amount of injurious falls per year. While this only accounts for falls resulting in injuries significant enough to require hospital admission, it is safe to assume this is reflected in the overall falls incidence of the population, with approximately one in three individuals over the age of 65 falling per year (ACSQHC, 2009). So while it there a large number of studies demonstrating success with a range of interventions in trial conditions, it seems these findings are not translating or have yet to translate to visible outcomes in the real world.

## **Barriers to Falls Prevention**

As previously discussed, falls are complex in nature, and the task of preventing falls is daunting - in particular in the community. In practice, community falls prevention is approached in a range of modalities including but not limited to public health and education, publicly and privately funded group classes or clinics, and through community programs

offered by a range of AHP. Programs or interventions offered may target either certain risk factors such as balance and strength or may be multifactorial to include a range of risks. Furthermore interventions are complex, and may either be a targeted falls prevention strategy, or incorporated in the overall treatment of a contributing condition such as osteoporosis (Speechley, 2011). While this delivers great breadth in range of services and interventions on offer, the scope of intervention areas as well as professions involved leads to complications in gaining a comprehensive understanding of the difficulties faced by service providers in delivering effective falls reduction. Despite this a number of potentially contributing factors have been identified in the literature.

### ***Client Referral***

Priorities in funding on preventing secondary falls in individuals who have already experienced a fall, as opposed to the prevention of falls prior to occurrence in the first place, has been raised as a concern by health professionals who feel that greater focus should be given to initial prevention (Child et al., 2012) (Mackenzie, 2009). It has been demonstrated that falls can be prevented (Gillespie et al., 2012), and that this can be cost effective or even cost saving (Davis et al., 2010). This suggests that a greater focus on initial prevention of falls would not only reduce the occurrence of injury and decrease in quality of life amongst older individuals, but may further reduce hospital admissions as well as healthcare costs. Furthermore, General practitioners (GPs) admitted that while they were aware of the evidence supporting effective falls-prevention strategies, they were less likely to refer patients to services as a preventative measure and instead focused the consequences after they occurred. In a primary care setting where GPs are often seen as gatekeepers to further services including AHP (Grant, Mackenzie, & Clemson, 2015), they are a key point of contact for not only the assessment of falls risk in an individual, but also in initiating early intervention strategies. One of the current referral pathways that GPs may adopt is the

Chronic Disease Management Plan (CDM) however it is not routinely implement in regards to falls with GP's reporting they felt it was long and tedious and admitting it inhibited their likeliness to refer patients. (Mackenzie & Clemson, 2014; Mackenzie, Clemson, & Roberts, 2013).

Both health professionals and GPs are aware of the effectiveness of community services in reducing falls, however it appears that there is insufficient utilisation of these services by primary care gateways (GPs). This may be in part due to perceived difficulties in falls referral pathways and in part due to decreased prioritisation in falls reduction when compared to other more prominent chronic conditions patients may present with. Nevertheless increased collaboration between these service providers and recognition of the dangers of falls would likely be beneficial in greater falls reduction in community settings.

### ***Evidence Based Practice***

A number of studies and policy guidelines have called for increased dissemination of falls prevention literature amongst professionals to tackle climbing incidence rates (Fixsen, Scott, Blase, Naoom, & Wagar, 2011; Speechley, 2011) (Edwards, 2011) (Lord, Sherrington, Cameron, & Close, 2011). Despite this however, few studies have explored health professional's current practice and understanding of best practice recommendations.

AHP in Australia working in falls prevention reported difficulties in the access and availability of research and in implementing it into practice (Mackenzie, 2009). Difficulties in accessing literature were based around pragmatic constraints including time, competing workloads and organisational restraints as well as difficulties in being able to locate and interpret quality research (Mackenzie, 2009). Likewise it was found that there were gaps between health professional's practice and current evidence following a falls prevention training program in the United States, suggesting further education was necessary (Fortinsky et al., 2004). These difficulties reported by professionals in finding evidence and a divide

between what is currently practiced and what is current recommended suggests insufficient dissemination of the literature in an accessible manner for practice.

### ***Communication and Rapport***

A systematic review of studies addressing professional's and participant's perceptions towards falls prevention interventions found that amongst other factors, access to intervention, social and cultural relevance to the community and tensions between the participant and the healthcare professional all impacted on the program's effectiveness. Recognising the expertise of each party in regards to the cause of falls was highlighted in particular as an area of tension, with participants expressing frustration about professional's reluctances to acknowledge their own understanding of their day to day function (Child et al., 2012). However professionals in a separate study identified the importance of patient-centred care and the belief that long-term adherence to interventions could only be achieved with self-motivated clients (Mackenzie, 2009). This suggests rapport and good communication with older adults is key to be able to convince them of the relevance and benefit of an intervention, and foster long term adherence after service cessation, thereby facilitating effectiveness.

### ***Other Factors***

Financial costs surrounding assistive technology, transportation and attendance fees were identified as concerns regarding the access to and sustainability of community falls prevention programs (Child et al., 2012; Mackenzie, 2009). Ability to physical access interventions was also highlighted as a concern, with independence in driving being a key facilitator in participation while public transport posed barriers in regards to classing timing and organisation (Child et al., 2012).

## **Extent of Current Evidence-Based Practice**

It is one of the inevitable facts of life in health care that there will always be a gap between what the most recent research evidence supports, and what is currently being practiced by service providers. This due to a number of reasons, principle of which being that it takes time for research to be easily accessible to health professionals, who rarely have enough time or resources to constantly cover the literature themselves.

Knowledge Translation (KT) refers to efforts made close the gap between what is known in research, and what is currently practiced by health professionals (Pentland et al., 2011). As previously discussed, health providers felt overwhelmed with the challenges faced in staying up to date with current research and practice (Mackenzie, 2009). Due to the complex nature of falls and the incredible range of services and professions involved in its treatment, it is difficult to accurately gauge the degree in which best supported practice is currently being adopted in the real world setting. (Speechley, 2011). Compounding this issue is the fact that there have only been a few studies performed exploring the extent of ideal-practice amongst community service providers.

A team implementing a comprehensive knowledge translation initiative in Connecticut, U.S have produced a number of studies exploring health professional's practice prior to attending educational workshops. Fortinsky et al found hospital based and primary care physicians reported a greater likelihood to intervene for identified mobility or balance risks, but less likely for sensory and foot or footwear risks post educational intervention (Fortinsky et al., 2004). Although providing an insight into the priorities of intervention priorities in Primary care settings by physicians, this study does not contribute to understanding in regards to intervention strategies and of AHP. A further study from the project explored physiotherapist's self-perceptions of practice before participation in an educational program (Brown, Gottschalk, Peter, Fortinsky, & Tinetti, 2005), however little data was presented

regarding perceptions of initial practice beyond the fact that a majority of physiotherapists reported only occasionally utilising falls prevention behaviours in their practice before an educational intervention. These studies suggest gaps between AHP and community physician's knowledge of current evidence and best practice recommendations, however may not be generalisable to the Australian setting and were furthermore performed more than a decade ago.

Secondly, a study in Victoria explored exercise prescription and medication reviews for fall prevention being delivered through a community program aimed at older individuals with high risk of hospital admission in Victoria (L. Day, Trotter, Hill, Haines, & Thompson, 2014). The study received good participation rates and results indicated there was good support for evidence-based practice, however there was room for further development upon including consistent reduction/ replacement of falls risk medications and greater level of challenge in exercise prescription (L. Day et al., 2014). While it is hard to get a comprehensive picture through self-reported data, this study presents positive findings on the uptake of evidence-based practice amongst practitioners within the targeted community service. These findings may be due internal organisational factors such as professional development programs, service structure or pragmatics, or may be due to the geographical area and environmental factors.

Ultimately there is a dearth of literature surrounding the prominence of current best-practice recommendations in practice amongst professionals, in particular within Australia. One study within Australia has shown good utilisation evidence-based practice within a geographically confined community service despite some areas requiring further improvement (L. Day et al., 2014). A further study in America found there that clinicians did not adequately intervene on all key falls risk factors in the primary care setting. Self-reports by professionals of difficulties in accessing and implementing evidence into practice amongst practitioners



(Mackenzie, 2009) in combination with climbing falls incidence despite proven strategies suggests health professionals are finding it hard to implement best practice recommendations. Despite this however, there is insufficient information to gain a clear picture and climbing incidence and injury rates suggest further initiatives to understand community health professionals current practice would be beneficial.

## **Initiatives to Promote Research Dissemination**

Staying up to date on current literature and the volume produced on even a single aspect of one's own practice is a daunting task, in one example a physician would have to read for 627 hours per month just to stay on top of all relevant literature (Alper et al., 2004). Furthermore it is important to distinguish between high quality and relevant evidence and evidence which may be more biased or less founded (Grimshaw et al, 2012). In order to consolidate this vast task various tools exist to assist professionals in best guiding their practice. Strategies such as clinical guidelines and professional development workshops and media are often utilised to help translate knowledge to practice amongst professionals. Furthermore, to facilitate this process most professional registration bodies require a minimum of continuing professional development (CPD) hours annually of their registered practitioners, with these hours coming from attendance to a range of approved workshops and educational programs.

### ***Clinical Guidelines***

Clinical guidelines by a range of professional bodies and special interest organisations provide best practice evidence in a specific field of interest in an easy to interpret format for daily practice. Current Australian guidelines regarding the prevention of falls in community settings are maintained by the ACSQHC, however they were last published in 2009 and are two years past their planned five year review date of 2014 (ACSQHC, 2009). These guidelines fail to include the most recent Cochrane review (Gillespie et al., 2012) and are

diminishing in relevance to current practice. Guidelines published overseas by the American & British Geriatrics Society provide a more up to date review (2011), but may not be generalisable to Australian contexts, and are not easily accessible to Australian practitioners. This means that in order to stay up to date with the latest falls prevention research to guide implementation into practice, professionals must rely on other methods to access relevant evidence.

### ***Knowledge Translation Programs***

In the light of literature calling for increased dissemination of the current falls prevention literature (Speechley, 2011) (Fixsen et al., 2011), initiatives have been made to promote the closing of the gap between current practice and ideal practice. The primary goal of KT programs is to provide health professionals with the best supported and current evidence with the goal of evoking changes in behaviour and practice (Grimshaw, 2012).

A program targeting education of clinicians in a geographical area of Connecticut in the United States – ‘Connecticut Collaboration for Falls Prevention’ (CCFP), has been shown to have significant impact on the reduction of falls and injuries amongst the target population. This ongoing program aims to promote falls prevention in practice at a range of service levels has been found to reduce the rate of fall related injuries significantly within the intervention area as opposed to the control. This was achieved by both educational sessions and supportive material, and provides a good example of the potential effectiveness of KT programs (Tinetti et al., 2008). A comparison between regions where the program was implemented and control regions found a significantly reduced rate of hospitalisations due to falls related traumatic brain injury in the areas where the program had been implemented (Murphy, Baker, Leo-Summers, Allore, & Tinetti, 2013). Strategies targeting behaviour changes amongst physiotherapists in the area also included outreach visits, support material and training manuals, peer working groups and procuring the support from service

administrators or managers (Brown et al., 2005). The CCFP demonstrates a great and thorough demonstration of the impacts of translating knowledge to practice in the community. Ongoing now for a number of years, the range of areas targeted and of dissemination strategies has shown good translation in outcome improvements in a number of studies. Of note in regards to facilitating dissemination amongst allied health providers in the community is the researcher's efforts to procure support from administrators and managers amongst services (Brown 2005), as organisational factors and time restraints were identified as a barrier restricting access to and implementation of literature (Mackenzie, 2009). Similarly, a public health initiative in Canada – 'The Canadian Falls Prevention Curriculum (CFPC)', aimed to develop a formal educational framework for knowledge translation of best practice in falls prevention (Scott, Gallagher, Higginson, Metcalfe, & Rajabali, 2011). The curriculum consisted of five lessons guiding AHP through the stages of designing and implementing falls prevention program relevant to their practice. Lessons were designed to be delivered in person by a facilitator and included physical support material. The CFPC was well received by participants who performed significantly better post intervention on content quizzes, and reported sustained involvement in practice of a majority of the lesson areas covered by the program – risk identification, program implementation, data collection and problem identification (Scott et al., 2011). The CFPC is now available electronically to educational institutions allowing ease in adoption by further organisations looking to promote KT within their community or region. Strong results from the CFPC and a model which allows translation to broader communities demonstrates the effectiveness of a knowledge translation framework developed from a public health perspective. A KT program targeting the implementation of a Tai Ji Quan (Tai Chi) program – 'Moving for Better Balance' amongst health providers in a community outpatient setting in Oregon, U.S found success in sustaining program management amongst providers (Li et al., 2013). Implementation was

established through the development of a 6 month bi-weekly Tai Ji Quan program in community centres, as well as the education in and referral to the program by local health providers including physicians and physiotherapists. The study was successful in encouraging healthcare providers to refer at risk patients to the program, as well as strong maintenance following cessation of the intervention. The study furthermore found a successful reduction of falls amongst participants (Li et al., 2013) with Tai Chi having been found to have good evidence in reducing falls rates (Hu et al., 2016). Li et al demonstrate a successful example of both the promotion of falls prevention referrals by community physicians and the education of AHP in an evidence based program which was then implemented to a positive reduction in falls.

In Toronto a KT program was implemented targeting the promotion of balance training within pulmonary rehabilitation procedures amongst patients with Chronic Obstructive Pulmonary Disease (COPD) by physiotherapists and nursing staff at large healthcare centre. All involved therapists were given a one-hour workshop on balance training, with continued advice and supervision from researchers over the course of the study (eight months) (Harrison et al., 2015). The study found good adoption of the program amongst patients and participants with continued maintenance following intervention cessation. While no measure was made of falls rate or injury there was a statistically significant increase in balance measures amongst patients post intervention. Affiliation with the healthcare centre involved in the study likely influenced the strong maintenance rates seen by AHP who may have been encouraged to utilise these procedures by their workplace, and may not be representative of outcomes that representative of the general population of physiotherapists. Nevertheless, the study provides a good example of the implementation of a KT program by a service provider with successful results, despite limitations in evaluating falls as an outcome measure.

Finally, more recently a study exploring the potential of interprofessional educational workshops as a means of promoting multidisciplinary collaboration and knowledge transfer (McKenzie et al, 2016). Workshops targeted multidisciplinary health professional teams and found that knowledge and confidence improved significantly, as well increased cross-disciplinary practice. Of the participants who returned the twelve-month follow up surveys, all reported at least one positive change however this number was relatively small – 40% of total teams (n=10). Nevertheless, McKenzie et al's interprofessional model shows good support for the effectiveness of educational workshops in not only promoting adoption of evidence based guidelines but in promoting multidisciplinary collaboration amongst professionals within their practice.

There is substantial literature evaluating the trial and implementation of a number of different KT program designs. Prominent methods to disseminating knowledge appear to be through educational workshops in a class setting. Regardless of modality this review has found good evidence for the effectiveness of KT programs in reducing falls rates amongst older individuals in the community when targeted at AHP. Improvements following KT initiatives further supports literature suggesting gaps between current evidence and real world practice amongst AHP (Fixsen et al., 2011; Speechley, 2011).

## **Conclusion**

This review evaluated the evidence exploring limitations and barriers towards community falls prevention, and the difficulties faced by AHP in demonstrating evidence based practice. It was found that little is known about the extent in which allied health professionals demonstrate evidence-based practice in regards to falls prevention in the community. Of the studies that have, the message is mixed and the picture unclear. Despite this, increasing rates of falls amongst community dwelling elderly defy a substantial body of literature showing

falls can be prevented. Barriers identified in implementing best-practice in community settings include difficulty in locating good literature, and implementing this in practice due to time, resource and organisational factors. Previous programs facilitating the dissemination of evidence amongst community professionals have found good results supporting the notion that knowledge transfer, especially to a real world setting, is a key barrier faced by these professionals.

This study aims to target gaps identified in understanding of the current practice of Australian community AHP in falls prevention. AHP have been identified as the target demographic due to be the predominant providers of evidence based interventions within the community setting. Intervention-specific professional development workshops will be designed with the aim of facilitating knowledge translation amongst community AHP. Furthermore this study aims to fill a gap in understanding of current practice of AHP in falls prevention, and to identify barriers and obstacles in effective falls prevention practice.

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**An evaluation of the falls prevention practice of community-based allied health  
professionals working in primary care**

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# **An evaluation of the falls prevention practice of community-based allied health professionals working in primary care**

## **ABSTRACT**

**Objectives:** This study aimed to explore allied health professional's (AHP) current practice and understanding of falls prevention and to investigate self-reported change following a professional development workshop. **Methods:** Four professional development workshops were designed targeting exercise, home safety interventions, the LiFE program and medication reviews. Self-reported surveys were collected pre, post and at three-month follow-up. **Results:** Seven workshops were run in Northern Sydney with 161 participants. AHP identified practice barriers were regularly assessing falls risk and collaborating with other service providers. At three months, change in practice was reported by participants in the exercise (88.1%), home safety (48%), LiFE (78.6%), and medication review (62.5%) workshops. **Discussion:** These findings provide good support for the effectiveness of professional development workshops in knowledge translation for medication review and exercise based interventions. Further studies and initiatives into promoting screening for falls risk and greater collaboration between community service providers is recommended.

## **Key Words**

accidental falls, allied health occupations, community-residing, older adults, knowledge transfer

## **An evaluation of the falls prevention practice of community-based allied health professionals working in primary care**

### **BACKGROUND**

Falls are a prominent cause of injury and reduced quality of life amongst older individuals, an issue that is familiar to many health professionals. The second leading cause of death from accidents and injury worldwide, falls are defined as “in-advertently coming to rest on the ground, floor or other lower level” (World Health Organisation [WHO], 2008, p. 1) and affect approximately 1 in 3 individuals over the age of 65 per year (Australian Commission on Safety and Quality in Healthcare [ACSQHC], 2009). Injuries associated with hospitalisation due to falls include hip fractures, traumatic brain injuries and injuries to the upper limb (WHO, 2008). In addition to costs to the individuals, falls cost the national health system more than \$648 million a year in acute care alone (Bradley, 2012). For these reasons, falls pose a serious barrier to the well-being and continued independence of many older people living in the community and were prioritised in the Australian National Injury Prevention Plan for the new millennia in 2004 (Pointer, Harrison, & Bradley, 2003).

Falls are complex in nature and are affected by a number of risk factors categorised by four groups - behavioural, biological, socioeconomic and environmental (Deandrea et al., 2010). As the prevalence of many of the associated risk factors and co-morbidities increase with age, age is a key indicator of falls risk, consequentially many older people in the community are at high risk of falls. Knowledge of these factors is essential in enabling recognition of at-risk individuals and intervening before a fall or injury occurs. There is a substantial body of literature showing the effectiveness of interventions aimed at reducing falls risk and incidence in trial environments. A comprehensive Cochrane review conducted in 2012

compiled more than two decades of evidence surrounding prominent falls interventions. This review found that there was strong evidence for a number of exercise interventions, as well as supporting interventions related to home safety and medication reviews (Gillespie et al., 2012). Due to the nature of these interventions they are typically provided by allied health professionals (AHP). However, despite numerous studies demonstrating a reduction in falls risks or incidence, there appears to be barriers in implementing this evidence into the community, with age standardised rates of falls increasing by 2.4% per year from 1999-2012 (Pointer, 2015). A central issue identified regarding the lack of impact of current evidence in producing a reduction in falls on a community scale is AHP difficulty in accessing quality literature and translating and implementing evidence into practice (Child et al., 2012; Mackenzie, 2009). Further to this, there have been few studies that have explored health professional's current practice in this area, and even less within the Australian context.

Apparent difficulty in translating knowledge about successful methods to prevent falls into observable results has led to the development of the Integrated Solutions for Sustainable Fall Prevention project (iSOLVE). iSOLVE is an ongoing partnership between the University of Sydney, the NSW Clinical Excellence Commission and the Sydney North Primary Health Network (SNPHN). The project was established with the aim of developing a healthcare model that facilitates increased communication between General Practitioners (GPs) and community service providers to allow for greater partnership in falls prevention interventions (Clemson et al., 2016). In order to achieve this, the project aims to facilitate sustainable knowledge acquisition amongst GPs and allied health professionals and improve access to multidisciplinary falls prevention interventions for patients.

As part of iSOLVE's aim to enhance falls prevention services in the community, professional development workshops have been provided for allied health professionals (AHP) in the SNPHN area. These workshops were developed with the goal of disseminating best practice



guidelines and evidence to community AHP and provide guidance in the implementation of these strategies into daily practice. Knowledge translation refers to the process of promoting the use of current evidence and recommendations by health professionals in their practice (Pentland et al., 2011). Through adopting a knowledge translation framework in providing education on current evidence and translating this to practice it is hoped that professionals will be able to improve their practice and provide a more effective service, ultimately leading to decreased falls in the community. Furthermore, an understanding of the current falls prevention practice amongst AHP is important in guiding the design and implementation of policy and any future community falls prevention initiatives. Therefore, this study aims to explore AHP understanding of evidence based falls prevention, examine AHP current practice in preventing falls amongst older people living in the community and to explore any perceived changes in practice amongst AHP following attendance to a professional development workshop.

## **METHODS**

A pre-post design was used to explore participants' practice and beliefs through surveys before and after attendance to a professional development workshop. The study was carried out within the North Sydney Local Health District (NSLHD), which is the geographical area covered by SNPHN. Eligibility criteria for workshop attendance were that a health professional must work within the target area, service community patients and receive or have the capacity to receive GP referrals to their practice. Ethics approval was granted by The University of Sydney Human Research Ethics Committee (#2014/316).

### ***Theoretical Framework***

The RE-AIM framework (Glasgow, Vogt, & Boles, 1999) was used in the design of the methodology and research questions of this study and to structure the evaluation of the

workshops. The RE-AIM framework (reach, efficacy, aim, impact and maintenance) is intended to assist in designing and implementing health programs by highlighting important elements to consider such as validity and sustainability.

### ***Recruitment***

Although workshops were open to any health professional working in falls prevention, a number of recruitment methods were used to increase reach within the target demographic. All participants who were not contacted directly were screened for eligibility criteria before being admitted to a workshop.

The primary method of recruitment was via an advert in the newsletter circulated by the SNHN to members who had elected to receive the organisation's regular newsletter. In addition, direct contact was made to AHP identified through service provider listings on the website of relevant professional organisations, searching through Google using key words of professions and utilising the map feature to identify services within the target district, providers identified by GPs as services they regularly referred to, and through a surveillance of services surrounding the location of any GP practice recruited into a parallel randomised controlled trial run by the iSOLVE project. The final process was through snowballing by word of mouth and through the invitation of past participants to attend a second iSOLVE workshop if it was relevant to their practice or to refer on to other members of their organisation.

### ***Workshops***

Four workshops were designed around specific interventions in falls prevention – exercise prescription, home safety, home medication reviews (HMR) and the LiFE program.

Workshops were designed and lead by an expert in the relevant field or intervention. These interventions are supported by numerous studies and reviews showing support for the

reduction in falls risk and frequency in older individuals (Gillespie et al., 2012; James, Kimmons, Schasberger, & Lefkowitz, 2014; Pighills, Ballinger, Pickering, & Chari, 2016). The LiFE program incorporates supported exercises into every-day activities of daily living of older individuals and has been shown to reduce falls incidence amongst participants (Clemson et al., 2012). HMRs are commonly performed by community pharmacists to optimise medicine use and reduce drug related problems (Department of Health, 2015). One workshop at a time was run per month in cooperation with SNPHN. Workshop topics alternated non-randomly based on participant demand, which was greatest for home safety and exercise prescription. Workshops were held at a range of function venues within the geographical region of the SNPHN. Time frames were tailored according to target audiences and intervention –LiFE & home safety workshops were held in the afternoon, medication workshops in evening and the exercise workshop ran for a full day. Food and refreshments were provided at all events. Workshop delivery consisted of a mixture of didactic presentations as well as group case studies, problem solving and discussions. Supplementary educational and reference material was provided to all participants.

### ***Data Collection***

Two instruments were administered: a short knowledge questionnaire briefly assessing participants' understanding of the workshop content, and an in-depth survey exploring participants' practice.

The knowledge questionnaire, which was completed by participants immediately before and after workshop attendance, briefly assessed participants' understanding of workshop content. The questionnaires consisted of six multiple choice questions specific to the intervention covered in each workshop. Questions included knowledge of falls risk factors related to the

current intervention, and focused on prioritising which group of intervention strategies would be most successful for the target population.

In-depth practice surveys were administered at baseline and at 3 months follow-up. Surveys consisted of 14 items addressing attitudes, difficulties, confidence, assessments and interventions related to falls prevention practice as well as services provided and communication with other health professionals / service providers. Questions were predominantly quantitative through four and five point Likert items but also included some qualitative items, allowing for further comments and listing of current assessments and interventions used in practice by the AHP. The item addressing confidence was workshop specific and measured intervention-specific confidence. Follow-up surveys were identical to baseline surveys with the addition of a 15<sup>th</sup> item assessing belief regarding any change in practice in the previous three months.

The short knowledge questionnaires were completed in-person by participants immediately before and after a workshop. The in-depth baseline surveys were sent electronically to participants upon enrolling in a workshop and the study, or could also be completed in-person at the workshop. Follow-up surveys were sent electronically to participants three months following a workshop. A reminder to complete the survey was then e-mailed for three consecutive weeks, followed by a physical copy of the survey and finally a direct call was made to request participants to complete the follow-up survey. Individuals who attended multiple workshops completed questionnaires and surveys separately for each workshop they attended. Electronic surveys were administered utilising the browser based electronic data software - Research Electronic Data Capture (REDCap).

### ***Analysis***

The Statistical Package for the Social Sciences 24 (SPSS) was used to compile and analyse all study data. Descriptive statistics were reported as percentages, means and standard

deviations as well as visually via clustered bar graphs. Confidence items were dichotomised to form two items: 'less confident' ("not at all confident" and "a little confident") and 'more confident' ("quite confident" and "very confident"), and assessed using  $\chi^2$  analyses. A similar method was applied to the difficulty items, so two variables were analysed using a  $\chi^2$  test: "more difficult" ("very difficult" and "a little difficult") and "less difficult" ("somewhat easy" and "very easy"). The fifth Likert item on the difficulty scale, "never done this before" was reported as a third category. A Wilcoxin signed-rank test was used to investigate variance between mean total score on pre and post knowledge questionnaires. Assessment items reported by participants were compiled into three categories – "no assessment used", "standardised assessment" and "non-standardised or falls screen"), for participants reporting multiple assessments, each assessment was coded separately resulting in multiple counts. Participants recorded their falls interventions qualitatively via an open-ended question. These results were then interpreted by the authors and coded into key categories based on modality and type. Some participants reported multiple intervention approaches; in these instances, each individual intervention was coded separately.

## **RESULTS**

Seven workshops were run between February 2015 and January 2016: three exercise, two home safety, one LiFE and one medication review workshop. Workshops were attended by 145 unique participants and 16 of these participants attended two workshops for a total of 161 participants. Attendance lists of attendee's names were taken during each workshop however, both pre and post surveys were anonymous allowing identification of individuals attending multiple workshops but not the ability to track an individual's changes over time or between workshops. Three-month follow-up surveys were completed by 118 participants (73.3%). Professions represented by participants were exercise physiology (EP), occupational therapy (OT), physiotherapy (PT), nursing, pharmacy, psychology, chiropractic and general

practice (GP), with a majority (n=150, 93.2%) coming from PT, EP, OT or pharmacy backgrounds (see Table 1). See Table 2 for participant service sector and employment status.

	Workshop Type									
	Exercise		Home Safety		LiFE		Medication		Total	
	n=60	%	n=46	%	n=33	%	N22	%	N161	%
Physiotherapist	30	50.0%	16	34.8%	22	66.7%	0	0.0%	68	42.2%
Exercise Physiologist	15	25.0%	4	8.7%	2	6.1%	0	0.0%	21	13.0%
Occupational Therapist	13	21.7%	19	41.3%	5	15.2%	0	0.0%	37	23.0%
Pharmacist	0	0.0%	2	4.3%	0	0.0%	22	100.0%	24	14.9%
Nurse	1	1.7%	3	6.5%	2	6.1%	0	0.0%	6	3.7%
Other	1	1.7%	2	4.3%	2	6.1%	0	0.0%	5	3.1%
Total	60	100.0%	46	100.0%	33	100.0%	22	100.0%	161	100.0%

Table 1. Health Professionals participating in each workshop

	Workshop Type									
	Exercise		Home Safety		LiFE		Medication		Total	
	n=60	%	n=46	%	n=33	Percent	n=22	Percent	n=161	Percent
Full-time	31	51.7%	19	42.2%	17	54.8%	0	0.0%	67	49.3%
Part-time	24	40.0%	18	40.0%	9	29.0%	0	0.0%	51	37.5%

Casual	1	1.7%	7	15.6%	3	9.7%	0	0.0%	11	8.1%
Contract	3	5.0%	0	0.0%	1	3.2%	0	0.0%	4	2.9%
Other (please specify)	1	1.7%	1	2.2%	1	3.2%	0	0.0%	3	2.2%
Total	60	100.0%	45	100.0%	31	100.0%	0	0.0%	136	100.0%
<hr/>										
Self-employed	15	25.0%	10	21.7%	14	42.4%	0	0.0%	39	24.2%
Private practice	10	16.7%	7	15.2%	1	3.0%	0	0.0%	18	11.2%
Private health service	12	20.0%	12	26.1%	5	15.2%	0	0.0%	29	18.0%
Public health service	16	26.7%	11	23.9%	8	24.2%	0	0.0%	35	21.7%
Community pharmacist	0	0.0%	0	0.0%	0	0.0%	7	31.8%	7	4.3%
HMR consultant employed in a community pharmacy	0	0.0%	0	0.0%	0	0.0%	2	9.1%	2	1.2%
Self-employed HMR consultant	0	0.0%	0	0.0%	0	0.0%	5	22.7%	5	3.1%

Other	5	8.3%	6	13.0%	2	6.1%	6	27.3%	19	11.8%
Multiple	2	3.3%	0	0.0%	3	9.1%	2	9.1%	7	4.3%
service sectors										
Total	60	100.0%	46	100.0%	33	100.0%	22	100.0%	161	100.0%

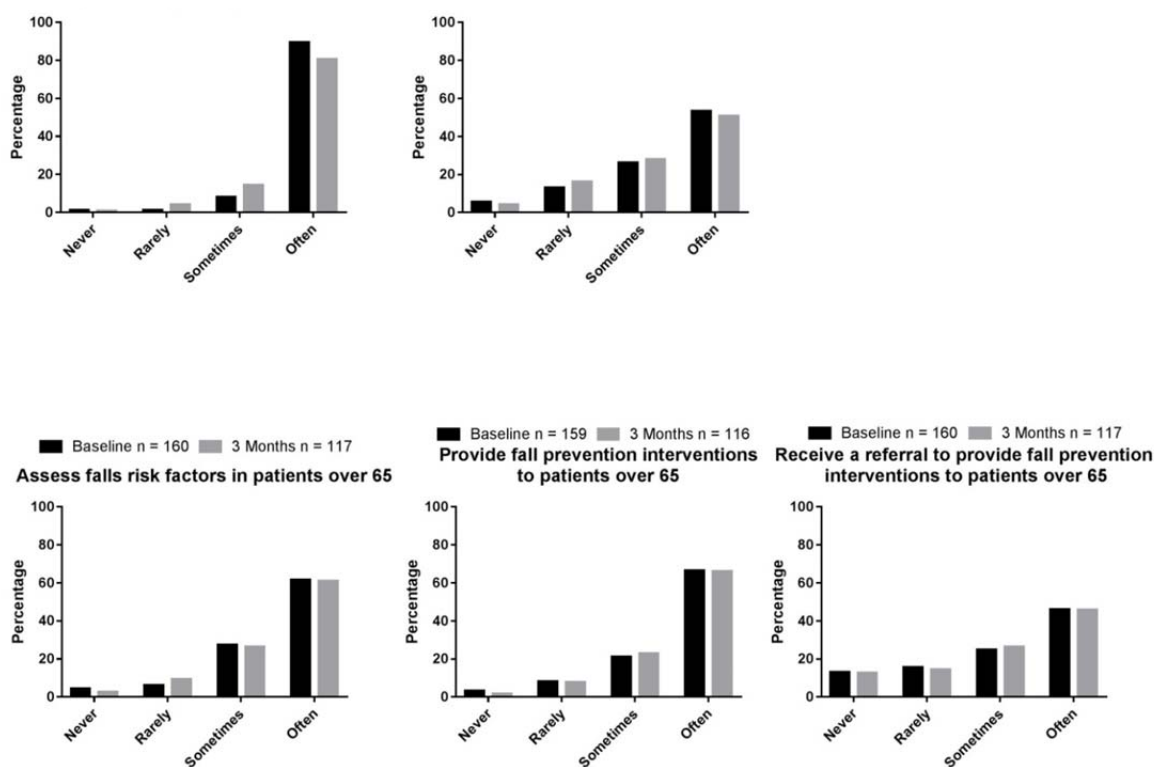
*Table 2. Participant employment status and service sector.*

### ***Falls Prevention in Practice***

There was little difference between participant’s frequency in providing falls related services before and after the intervention (see Fig 1). Nearly all participants saw patients aged 65 or over and provided falls interventions to some level of frequency. In regards to attitudes towards falls prevention, all participants reported believing that it was possible to identify falls risks and reduce an individual’s risk of falling to some degree. A majority of participants believed it was possible to identify individuals at risk of falling to a “moderate” or “great extent”, with no significant change following intervention (baseline n=152, 95%; 3 months n=111, 94.07%,  $p = 0.734$ ). Similarly, a majority of participants believed it was possible to reduce the risk of falling in an individual, with no significant change after the workshops (baseline n=154 96.9%; 3 months n=108, 92.3%,  $p = 0.089$ ).



Figure 1 Participants' self-reported falls prevention practice.



### Confidence

Figure 2 shows the confidence outcomes from each of the workshops. A  $\chi^2$  analysis of dichotomised confidence outcomes indicated a significant increase in all confidence outcomes amongst exercise and home safety participants ( $p < 0.01$ ). A majority of LiFE participants scored 'high confidence' in all outcomes however there was no significant increase amongst these participant's confidence in identifying at risk individuals. Two outcomes from the LiFE workshop could not be assessed for statistical significance due to insufficient participants in the 'low confidence' quartiles. A majority of medication workshop participants were confident in identifying at risk individuals, or recommending medication management strategies, and there was no significant difference in these outcomes post intervention. There were insufficient counts within the 'low confidence' quartiles to

statistically analyse these participant's confidence in identifying medications contributing to falls risk.

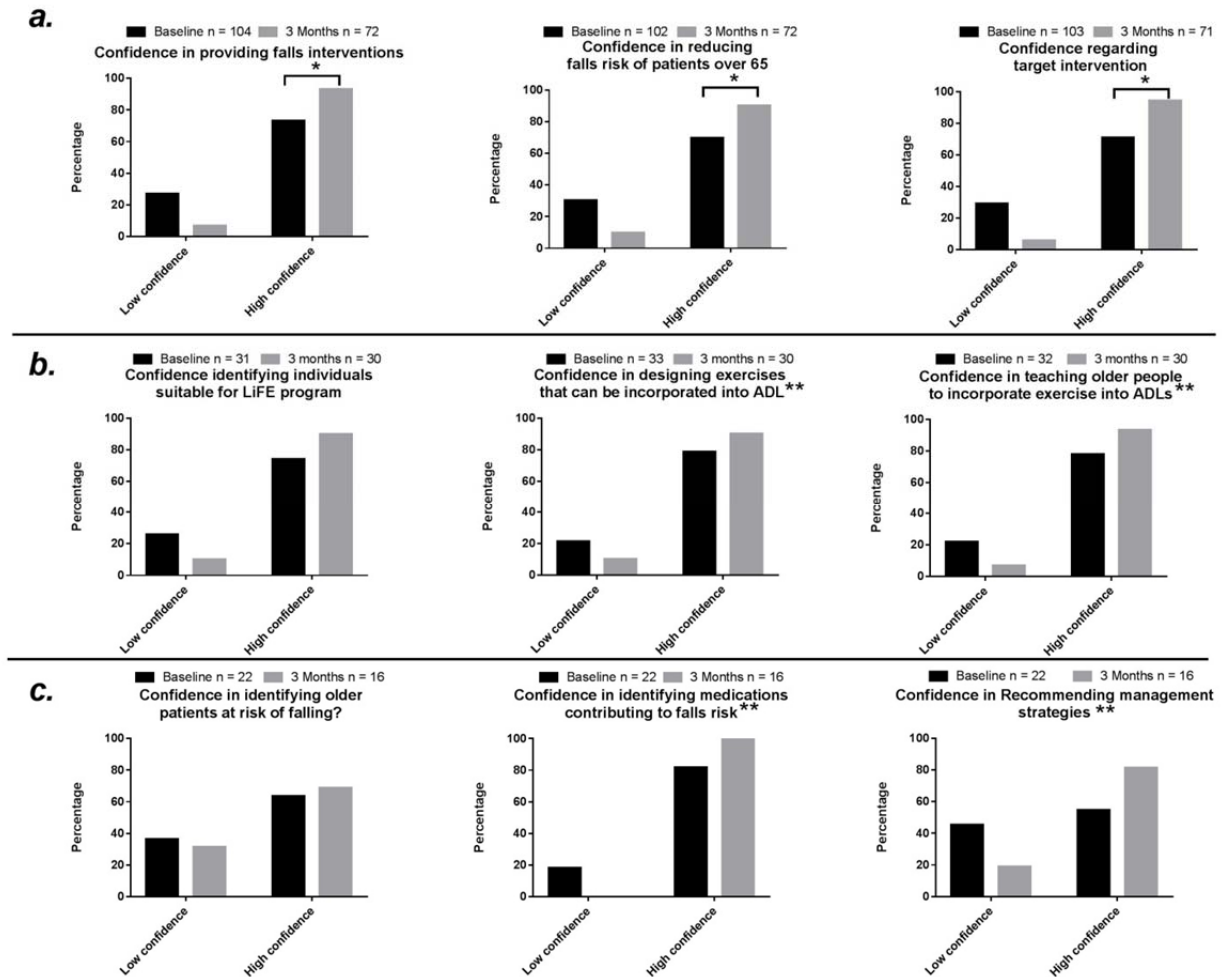


Figure 2. Comparison of participant's self-reported confidence in falls prevention practice using a  $\chi^2$  test, \*  $p < 0.01$ . \*\* insufficient data to analyse. a) outcomes from exercise and home safety workshops, b) outcomes from LiFE workshop, c) outcomes from medication review workshop.

## Difficulties in Practice

Figure 3 provides an overview of participant-reported difficulties in falls prevention practice. Areas highlighted as the greatest difficulty in practice were liaising with other falls prevention providers, engaging with GPs and referring to other fall prevention services, with no significant improvements to these areas post intervention. Participants reported assessing, managing and sourcing evidence-based information as the easiest areas of practice, with a significant increase post intervention. Nearly all participants found discussing falls prevention with their patients as “less difficult”, and this did not change post intervention.

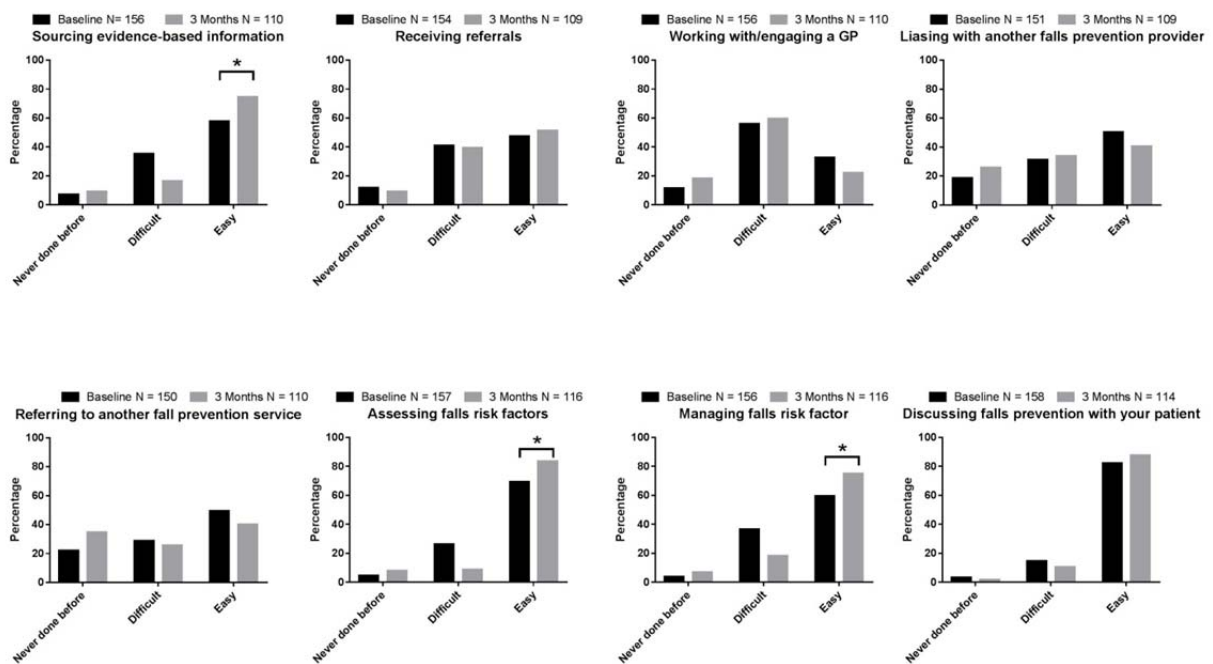


Figure 3 Comparison of participant's difficulties in falls prevention using a  $\chi^2$  test, \*  $p < 0.01$ .

### ***Falls Risk Assessments***

Table 3 provides a summary of the total falls risk assessments reported by participants.

Prominent assessments were the Berg balance assessment (Berg et al. 1992), timed up and go test (Podsiadlo & Richardson, 1991), sit to stand test (Bohannon, 1995) as well as discussing current medications.

Exercise workshops	Baseline		3 months	
No assessment used	1	0.90%	1	0.90%
Non standardised or falls screen	57	30.65%	28	25.00%
Standardised	128	68.82%	83	74.10%
Total	186	100.00%	112	100.00%

Home safety workshops	Baseline		3 months	
Standardised	16	25.40%	16	34.00%
No assessment used	16	25.40%	7	14.90%
Non standardised or falls screen	31	49.20%	24	51.10%
Total	63	100.00%	47	100.00%

LiFE workshop	Baseline		3 months	
No assessment used	5	8.80%	2	5.10%
Non standardised or falls screen	13	22.80%	11	28.20%
Standardised	39	68.40%	26	66.70%
Total	57	100.00%	39	100.00%

Medication workshop	Baseline		3 months	
Standardised	3	9.70%	4	23.50%
No assessment used	5	16.10%	4	23.50%
Non standardised	23	74.20%	9	52.90%
Total	31	100.00%	17	100.00%

*Table 3. Participant's reported assessments used in falls prevention practice (based on total number of assessments reported)*

### ***Falls Prevention Interventions***

Table 4 provides a summary of the total falls prevention interventions reported by participants.

Exercise workshops	Baseline		3 months	
Tai Chi	0	0.00%	3	3.80%
No intervention provided	2	2.10%	0	0.00%
Mobility	8	8.20%	0	0.00%
Falls program	9	9.30%	7	9.00%
Nonspecified exercise	11	11.30%	13	16.70%
Client education	13	13.40%	9	11.50%
Assistive technology and environmental modification	14	14.40%	10	12.80%

Strength Exercises	17	17.50%	15	19.20%
Balance Exercises	23	23.70%	21	26.90%
Total	97	100.00%	78	100.00%

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Home Safety workshops	Baseline		3 months	
No intervention provided	5	6.00%	5	<b>9.30%</b>
Home or environment modifications	14	16.90%	7	13.00%
Assistive Technology	15	18.10%	9	16.70%
Exercise Program	19	22.90%	23	42.60%
Patient education	30	36.10%	10	18.50%
Total	83	100.00%	54	100.00%

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LiFE workshops	Baseline		3 months	
No intervention provided	2	3.70%	1	2.30%
Mobility	2	3.70%	2	4.70%
Tai Chi	2	3.70%	2	4.70%
Falls program	5	9.30%	7	16.30%
Nonspecified exercise	7	13.00%	6	14.00%
Assistive technology and environmental modification	7	13.00%	2	4.70%
Strength Exercises	9	16.70%	6	14.00%
Client education	9	16.70%	8	18.60%

Balance Exercises	11	20.40%	9	20.90%
Total	54	100.00%	43	100.00%
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Medication workshops	Baseline		3 months	
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Education	3	11.50%	3	15.00%
exercise	4	15.40%	2	10.00%
Assistive technology	4	15.40%	2	10.00%
No intervention provided	5	19.20%	6	30.00%
Medication recommendations	10	38.50%	7	35.00%
Total	26	100.00%	20	100.00%

*Table 4. Participant's reported interventions used in falls prevention practice (based on total number of interventions reported)*

### ***Knowledge Questionnaires***

In regards to the knowledge questionnaire, there was a statistically significant increase in participant's scores from before and after the workshops on exercise (pre M=5.17, SD = 0.795, post M = 5.44, SD = 0.883,  $p = .032$ ), home safety (pre M = 4.04, SD = 0.884, post M = 4.60, SD = 1.005,  $p = .018$ ) and LiFE (pre M = 4.84, SD = 1.019, post M = 5.34, SD = 0.787,  $p = 0.034$ ). There was no significant increase amongst the medication review participants (pre M=4.42, SD = 0.929, post M = 4.52, SD = 0.846,  $p = 0.430$ ).

### ***Perceived Change in Practice Following Intervention***

In the three-month follow-up survey, 88.1% (n=37/42) from the exercise workshop reported they believed they had changed their practice in the past three months, as did 48% (n=14/29)

from home safety, 62.5% (n=10/16) from medication review and 78.6% (n=22/29) from the LiFE workshops.

Predominant practice changes cited by exercise participants were: the adoption of new screening methods or tools (n=7, 18.9%), adjustment of exercise program prescriptions to adopt new exercises, methods or routines taught in the workshop (43.2%, n=16), increasing the difficulty of exercises previously prescribed (n=8, 21.6%) and increasing frequency of referral to community services for falls prevention (n=2, 5.4%). Of the participants who felt their practice had not changed following the workshop, 83.3% (n=5) stated they were already practicing what was covered during the workshop, and 16.7% (n=1) stated he/she had not had any opportunity to work in falls prevention in the last three months.

Practice changes reported amongst home safety participants were: improved client education in regards to falls prevention (n=5, 35.7%), the use of new assessments and screens (n=5, 35.7%), the use of new interventions (n=2, 14.3%), adjustments of existing interventions (n=1, 7.1%), and that the workshop had guided them in developing a new falls prevention program (n=1, 7.1%). Three (20%) participants reported they had not changed their practice as they felt they were already practicing what was taught in the workshops, two (13.3%) reported that they were unable to or no longer worked in a service where they could implement home safety interventions and six (40%) reported they had not had the opportunity to work in falls prevention in the past three months.

Of LiFE workshop participants, twelve (54.5%) participants reported they had begun to incorporate exercises into their client's lifestyle and activities of daily living (e.g. a number of participants referenced educating clients to perform sets of calf raises while waiting for the kettle to boil, or modifying the kitchen so that materials for tea were at different heights). Two (9.1%) participants reported that they had begun to encourage patients to keep a diary of daily routines, four (18.2%) participants reported they had begun to incorporate education or



discussion of the LiFE program to elderly clients, two participants (9.1%) reported they performed staff in-services about content covered in the workshop, and two (9.1%) participants stated their practice had changed however weren't specific about how they had done this. Of the participants who had cited no change, two (28.6%) stated they hadn't had any time to incorporate the content into their practice, one (14.3%) cited illness, one (14.3%) awaiting "NSHNS" approval in their service, one (14.3%) the belief that the program was not suitable for all patients and one (14.3%) reported a lack of specific falls prevention referrals. Changes in practice reported amongst participants to medication workshops were: a greater awareness of falls risk factors (n=3, 33.3%), 'greater attention and care' (n=2, 22.2%), improved confidence and recommendations (n=1, 11.1%), review of a previous medication review program (n=1, 11.1%), improved education (n=1, 11.1%), and they had begun to assess falls history (n=1, 11.1%). Reasons cited for having no change in practice in the past three months were: no opportunity to practice (n=4, 80%) and no opportunity to review practice (n=1, 20%).

## **DISCUSSION**

This study explored the current practice and understanding of community AHP in regards to falls prevention interventions, as well as if there were any changes elicited by participation in specific professional development workshops. Difficulties in regularly screening for falls risk, implementing evidence based practice, collaborating with community services and confidence in implementing interventions were highlighted as key issues at baseline. Positive improvements were seen in participant's difficulty in assessing and managing falls risk factors and understanding of evidence.

The target demographic was primarily met; attendance to workshops was predominantly by professions that would be typically expected to provide a falls prevention service in their

practice, as well as those who practice in the target geographical area. A good response rate to the three month follow up surveys was attributed to repeat efforts to request participants complete and return surveys.

Low rates of falls risk screening may negatively impact the frequency in which professionals can correctly identify or recognise older people at risk of falling. A strong belief in the effectiveness of assessments to identify individuals at risk suggests that the omission of falls screening in practice is not because participants are unaware of screening methods or their effectiveness. Therefore, this discrepancy may be due to an over-reliance on the content of a referral to guide their practice. This concern may be reflected in the number of participants who reported using no assessment tools in their falls prevention practice, in particular amongst the home safety workshops. As falls are such a multifaceted issue, screening for falls risk not only identifies individuals at risk, but can also identify specific areas of concern such as vision, cognition or muscle atrophy. (James et al., 2014). Multifactorial interventions (interventions delivering more than one component) that also include an individual risk assessment have been shown to reduce rate of falls (Gillespie et al., 2012). By neglecting to screen for falls risk, AHP are missing the opportunity to provide tailored and individualised interventions to their patients and are potentially reducing the effectiveness of their service. Nevertheless, good success in the workshops promoting uptake of falls screening highlights the potential for knowledge translation initiatives, such as professional development workshops to elicit professionals to modify their practice. This is in line with previous programs finding decreased falls rates following educational programs amongst health professionals (Tinetti et al, 2008; Grimshaw et al, 2012).

Little communication in terms of falls prevention between AHPs and GPs or traditional referral pathways reflects concerns in the literature regarding the level of cooperation amongst community service providers (Grant, Mackenzie, & Clemson, 2015; Mackenzie,

2009). GPs are often seen as gatekeepers for AHP to access older people in the community, and for older people to access AHP (Grant et al., 2015). As falls prevention interventions are typically provided by allied health professionals rather than GPs, it is important that there is good cooperation and communication between GPs and AHP to facilitate greater quality of client care and to ensure at-risk older people are receiving evidence based interventions. It may be unrealistic to expect a visible difference in outcomes for workshop participants regarding engagement between GPs and liaising with other service providers at three months after the workshop. However, the findings highlight an area of challenge that may benefit from further study or ongoing initiatives. Indeed, positive results have been from similar workshops promoting interprofessional collaboration (Mckenzie et al, 2016).

Furthermore, AHPs difficulty sourcing evidence based information similarly reflects concerns in the literature regarding the application of current evidence amongst professionals (Child et al., 2012; Speechley, 2011). Difficulties in sourcing evidence to guide practice would suggest that these professionals are not currently implementing best practice guidelines. This study suggests that there is a greater dissemination of knowledge in exercise in falls prevention, but not in home safety and medication. Greater efforts to increase ease of access to good quality evidence including systematic reviews and to consolidate literature to facilitate ease of translation into practice may assist AHP in this regard. It is pleasing to note that the workshops were successful in translating explicit understanding of workshop content in the knowledge questionnaires. This indicates potential for workshops as a means for disseminating knowledge of literature in line with previous research (Tinetti et al, 2008; Grimshaw et al, 2012).

Positive rates of perceived change in practice post exercise and LiFE workshops suggests that a majority of participants were not implementing the full scope of best-practice recommendations covered during the workshop, and were therefore able incorporate learned

content into their practice. Furthermore, exercise participants demonstrated strong increases in confidence at follow-up, and although confidence from the LiFE workshop was unable to be analysed, there were strong scores on all outcomes. Strong rates of change in practice may be due to less effort and resources being required to modify practice in these areas than other interventions. It is positive to note that high rates of change from these workshops indicate the willingness of professionals to modify their practice, and that the workshop modality was effective in eliciting these changes. These findings support previous studies finding interprofessional training increased both knowledge and confidence amongst health professionals (McKenzie et al, 2016).

Despite good increases in outcomes measures including confidence, knowledge and use of assessments, the lowest rates of perceived change in practice at three months was amongst home safety participants. Reasons cited for a lack of change were participant's belief that they were already practicing what was taught or that due to pragmatic factors they had not had the opportunity in the past three months. However it may be that the workshops did not meet the participant's needs for change or that they found implementing recommendations in home safety difficult. The most frequently cited change was the addition of falls assessments, which while positive, is not specific to home safety interventions.

Workshops were also successful in eliciting change amongst medication participants. Yet despite positive findings the reasons cited by participants were vague. HMR pharmacists did not feel significantly more confident post intervention but reported strong overall levels of confidence in all outcomes except for identifying individuals at risk at baseline. Furthermore, in regards to falls screening, nearly three quarters of assessments used by pharmacists at baseline were non-standardised, which may provide inconsistent measurement of falls risk, and contribute to the only moderate levels of confidence in identifying individuals at risk of falls. It is positive to note that substantially more standardised assessments were reported at

follow-up, suggesting the importance of assessing risk was successfully conveyed through the workshops. In contrast to the other three workshops, there was no significant change in scores on the knowledge questionnaire by medication participants after the intervention, with overall moderate results before and after workshop. Strong levels of confidence, despite a lack of significant difference in confidence and knowledge scores, suggests that pharmacists may be more competent at baseline, and therefore have less to gain from the workshop in regards to recommending medication management strategies.

There were some limitations in the study design that may have impacted on the outcome of results. Participation in the workshops was voluntary with recruitment via snowballing and word of mouth. This likely produced a volunteer bias; professionals who volunteered to attend a workshop and participate in the study had a vested interest in falls prevention and were looking to develop their skills in the area. Therefore, the results from this study may not be generalisable to all community AHP, however there were a broad range of professions and service sectors present. Secondly the survey question asking participants to list the assessments and interventions they typically used in falls prevention was in a qualitative, open-ended format, resulting in varying levels of depth in which participants reported their practice. Therefore, these results were interpreted and coded by the authors for presentation and should be interpreted with caution. Thirdly, an important factor which would likely impact on confidence is the amount of experience each participant had in falls prevention, but this was not specifically measured in the current study. Finally, there are a number of inherent limitations to self-reported surveys. Measurement outcomes in this study relied on participant reports of their own practice, which may lead to a social desirability bias i.e. the participant's desire to be seen in a positive light may lead to reporting scores to be better than what they really are.

This study set out to provide insight into community AHP awareness of current evidence and their practice in preventing falls. This study also explored the potential for professional development workshops as a means to promote knowledge translation of evidence based falls practice amongst community AHP. These findings identify issues regarding frequency of falls screening and engagement with community GPs and service providers by AHP. Good evidence was found for the effectiveness of intervention-specific professional development workshops in promoting knowledge translation and practice change in community AHP. Further studies and ongoing initiatives into the promotion of regular screening of older individuals and collaboration between community providers would assist in the reduction of falls amongst older community dwelling individuals.

## AUTHOR'S NOTE

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### **Declaration of Conflicts of Interest**

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