Understanding fear of falling levels in community-dwelling older adults: A mixed methods study

Danielle Cho-Young, RN, BScN

Thesis submitted to the University of Ottawa in partial fulfillment of the requirements for the Master's Degree of Science in Nursing

School of Nursing

Faculty of Health Sciences

University of Ottawa

Thesis Abstract

Background: Fear of falling is now recognized as an independent fall risk factor due to its prevalence in older adults. **Objectives:** The purpose of this study was to gain a better understanding of fear of falling levels in community-dwelling older adults before and after attending a fall prevention clinic. **Methods:** An explanatory sequential mixed methods design was used. The Falls Efficacy Scale-International (FES-I) tool assessed fear of falling levels before and after attending a fall prevention clinic (n=32). Semi-structured interviews were then conducted in a sample of these participants (n=12). **Results:** There was no statistically significant difference in the before (M=30.44, SD=9.8) and after (M=31.72, SD=8.3) FES-I scores. Three themes emerged from the qualitative analysis: 1. Concerns about falling, 2. Decreased concerns about falling and 3. An increased self-awareness of fall risks. **Conclusion:** Further use of cognitive-behavioural therapy should be considered in falls risk reduction interventions for community-dwelling older adults with fear of falling.

Co-Authorship

1. Chantal Backman RN, PhD
   Assistant Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa
   Affiliate Investigator, Bruyère Research Institute
   Affiliate Investigator, Clinical Epidemiology Program, The Ottawa Hospital Research Institute

As my thesis supervisor, Dr. Backman co-authored the manuscript and provided guidance on the overall thesis design including a substantial contribution to the development of the final document.

2. Janet Squires RN, PhD
   Associate Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa
   Senior Scientist, Clinical Epidemiology Program, Ottawa Hospital Research Institute

As a member of my thesis committee, Dr. Janet Squires co-authored the manuscript. She provided substantial guidance on the overall thesis design and final document, with a particular contribution to the quantitative phase.

3. Taryn Mackenzie RN MN ENC(C)
   Advanced Practice Nurse, Geriatric Medicine Ambulatory Services & Day Hospital, The Ottawa Hospital, Regional Geriatric Program of Eastern Ontario

As a member of my thesis committee, Ms. Mackenzie co-authored the manuscript. She provided guidance on the overall thesis design and final document.

Acknowledgements

This thesis project would not be possible without the many individuals who encouraged me throughout my undergraduate nursing degree and early nursing career to pursue a graduate degree. Although I am limited to name but a few, there are many individuals who have made this possible.

First off, to my supervisor Dr. Chantal Backman, thank you for your support and confidence in my abilities throughout this entire process. You truly took me under your wing and provided me with so many amazing opportunities since I started graduate school. I am eternally grateful for your guidance and helping to launch my career in research. I would also like to acknowledge the unparalleled support, expertise and guidance from my supervisory committee: Dr. Janet Squires and Taryn Mackenzie. Dr. Squires, your expertise throughout this process has been invaluable and I am truly proud of the final product due to your guidance. Taryn, it was such a blessing to work with you during my practicum and I am indebted to the fall prevention clinic and the study participants that shaped this thesis project.

Thank you to my biggest supporters since day one: Mom, Dad, Mike and Leigh. Your unwavering love and guidance has shaped who I am today and you are a big part of this milestone as much as I am. Mom and Dad, thank you for the subtle (and sometimes not-so-subtle) “push” to become the best person I can be. You always have my best interest at heart, and I will always be grateful for the importance you both place on education. To my friends both near and far, thank you for always listening and making sure that I have a social life. Last but not least, Brandon- my shining star throughout this entire process, I could not have done this without your encouragement, patience and unconditional love.

Table of Contents

List of Tables

Chapter 2, Literature Review

Chapter 4, Understanding fear of falling levels in older adults: A mixed methods study

List of Figures

Chapter 2, Literature Review

Glossary

Extrinsic Factors: Factors present in an individual's environment (e.g., slippery floors, tripping hazards, etc.) (Masud & Morris, 2001).

Fall: "Inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects" (WHO, 2007, p.1).

Falls Risk Reduction Intervention: A program or intervention designed to reduce falls by targeting evidence-based falls risks (Deandrea, Lucenteforte, Bravi, Foschi, La Vecchia & Negri, 2010).

Incidence: The occurrence, rate, or frequency of a disease or phenomenon; which is typically considered undesirable.

Intrinsic Factors: Factors specific to an individual (e.g., age, sex, general health and functioning, behaviour, postural control, etc.) (Masud & Morris, 2001; O'Loughlin, Robitaille, Boivin & Suissa, 1993).

Multifactorial Intervention: An intervention that consists of more than one main category of intervention; participant typically receive different combinations of interventions based on their individual needs and/or risks (Gillespie et al., 2012).

Prevalence: The proportion of a particular population found to be affected by a medical condition (e.g., disease or a risk factor).

References

Deandrea, S., Lucenteforte, E., Bravi, F., Foschi, R., La Vecchia, C., & Negri, E. (2010). Risk Factors for Falls in Community-dwelling Older People:" A Systematic Review and Meta-analysis". *Epidemiology*, 658-668.

Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*, *9*(11).

Masud, T., & Morris, R. O. (2001). Epidemiology of falls. *Age and ageing, 30*(suppl_4), 3-7.

O'Loughlin, J. L., Robitaille, Y., Boivin, J. F., & Suissa, S.(1993). Incidence of and risk factors for falls and injurious falls among the community-dwelling elderly. *American journal of epidemiology, 137*(3), 342-354.

World Health Organization, & Organization, W. H. (2007). *WHO global report on falls prevention in older age*. Retrieved from http://www.who.int/ageing/publications/Falls_prevention7March.pdf

Chapter One

Introduction

Introduction

In the community, between 20% and 30% of older adults aged 65 and above will experience a fall each year (Public Health Agency of Canada, 2014), and half of these individuals will fall again in the following year (Pérula et al., 2012). The incidence of falls in older adults is considered a major global issue due to the economic burden on health care systems, and our rapidly aging population (WHO, 2007). In an estimate, one-quarter of the entire Canadian population will be over the age of 65 by the year 2031 (The Economic Burden of Injury in Canada, 2009).

According to the last reported data from the Canadian Community Health Survey (CCHS)* in 2009/2010, over four million older Canadians reported a fall without a fall-related injury, and 256,011 experienced a fall with a fall-related injury (Public Health Agency of Canada, 2014). Fall-related hospitalizations are the leading cause of all injury hospitalizations for this age group, with most resulting in a fracture or broken bone (Public Health Agency of Canada, 2014). In Canadian acute care settings, the length of stay for these individuals is approximately 70% longer than those for any other hospitalization reasons (Public Health Agency of Canada, 2014). In addition, these fall-related injuries place a significant economic burden on the Canadian health care system (The Economic Burden of Injury in Canada, 2009). In 2004, four billion dollars was spent on fall-related injuries, and it is expected to double by the year 2031 (The Economic Burden of Injury in Canada, 2009). Furthermore, these older adults typically experience a significant decline in functioning after a fall (Public Health Agency of Canada, 2014), and at least a third of these older adults are discharged to long-term care facilities (Scott, Wagar, & Elliott, 2010).

Older adults experience falls due to a complex interaction between intrinsic (e.g., gait and balance issues, visual deficits, etc.) and extrinsic (e.g., environmental factors such as slippery floors) factors (WHO, 2007). ‘Accidental falls’ are the most reported reason for older adults experiencing a fall when they are unable to safely navigate an environment that results in

a slip or trip (Rubenstein, 2006). Gait and balance disorders are the second most frequent reason for falls in this age group (Dargent-Molina et al., 1996; Swanenburg, de Bruin, Uebelhart & Mulder, 2010), followed by other physical risk factors such as poor visual acuity (Dargent-Molina et al., 1996), urinary incontinence (Tromp et al., 2001) and vitamin D deficiency (Lord, Sherrington, Menz & Close, 2007). In addition, according to a recent study that integrated current knowledge on fall risk assessment and management strategies, fall-related psychological concerns are now recognized as an independent fall risk factor (Vieira, Palmer & Chaves, 2016).

Fall-Related Psychological Concerns

The term 'fall-related psychological concerns' is an umbrella term that includes two distinct concepts: falls-efficacy or balance confidence and fear of falling (Denkinger, Lukas, Nikolaus & Hauer, 2015; Scheffer et al., 2008; Vieira et al., 2016). While these concepts are related, their theoretical origins differ (Hadjistavropoulos et al., 2011; Moore & Ellis, 2008; (Payette, Belanger, Léveillé, & Grenier, 2016). The classification of these fall-related psychological concerns is based on previous systematic reviews (Jørstad et al., 2005; Payette et al., 2016) and a theoretical and empirical review of fall-related psychological concerns in community-dwelling older people (Hughes, Kneebone, Jones & Brady, 2015). Before researching a specific construct, it is important to distinguish between their theoretical differences.

Falls-efficacy or balance confidence

Falls-efficacy or balance confidence refers to one's confidence in their ability to manage a threat, such as a fall (Payette et al., 2016). These constructs were developed from Bandura's self-efficacy theory (1977), and based on two central concepts of his social cognitive theory: self-efficacy and outcome expectations (1986). According to Bandura (1986), an individual's self-efficacy is influenced by one's ability to perform a particular behavior and the expectations that one has about the outcome from performing that behavior. In relation to community-

dwelling older adults, Tinetti and colleagues (1990) argued that efficacy is linked to an individual's functional decline, and therefore a low perceived self-efficacy with regard to participating in a specific activity may lead an individual to avoid that activity. However, it has also been argued that an individual's self-efficacy may act as a resilience factor and therefore influence the level of fear experienced in the face of a threat (i.e. when experiencing a fall) (Payette et al., 2016).

Fear of falling

Fear of falling was first associated with the term "ptophobia" by Bhala, O'Donnell and Thoppil (1982, p. 187), and described as the "phobic reaction to standing or walking." They studied the gait of six older adults for two years and concluded that this fear could successfully be treated like other phobias due to its focal psychological etiology. Since then, definitions of this term have included: "post-fall syndrome" (Murphy & Isaacs, 1982, p. 189), "low perceived self-efficacy" (Tinetti, Richman, & Powell, 1990, p. 239), "a loss of confidence in ability to maintain balance" (Maki, Holliday & Topper, 1991, p. 123) and "concerns about falling" (Yardley et al., 2005, p. 615). However, the most inclusive and readily used definition describes a fear of falling as the "lasting concern about falling that can lead an individual to avoid activities that he/she remains capable of performing" (Tinetti et al., 1990, p. 239).

Fear is described as the "temporary state of apprehension towards an explicit threat," where a fall would be considered the threat (Payette et al., 2016, p. 2). The concept of fear of falling is often described as "multidimensional," and encompasses three major components: 1) emotional or cognitive; 2) behavioural; and 3) physiological (Hadjistavropoulos et al., 2011, p. 6). Researchers acknowledge the psychological underpinnings of fear of falling, and the inclusion of both emotional (i.e., anxiety) and behavioural (i.e., avoidance) elements (Hughes et al., 2015; Hadjistavropoulos et al., 2011). The behavioural element of "avoidance" is commonly associated with high levels of fear of falling in older adults, specifically with the avoidance of activities and community engagement (Hughes et al., 2015). Fear of falling has also been

described as having a physiological component, where an individual with a high fear of falling levels would exhibit increased autonomic reactivity when exposed to a certain level of danger to avoid a fall (Hadjistavropoulos et al., 2011).

Factors Associated with Fall-Related Psychological Concerns

A systematic review included studies between 1990 to December 2006 and identified risk factors associated with fear of falling among older adults aged 65 years and above (Scheffer et al., 2008). A total of 28 studies were included in this systematic review, with 19 cross-sectional and nine prospective cohort, were quality assessed using the Centre for Evidence-Based Medicine Critical Appraisal Tools and found adequate to good methodological quality (Scheffer et al., 2008). Studies were published in Dutch or English and included older adults aged 65 years and above, who were cognitively intact and independently living in the community or community-dwelling with home care services (Scheffer et al., 2008). The prevalence of fear of falling was reported in 21 out of the 28 studies (Scheffer et al., 2008). Sample sizes ranged from 18 to 2,497 subjects, with 13 studies that included 500 individuals or less (Scheffer et al., 2008). Fear of falling was found in 21 to 85% of these community-dwelling older adults, including those who had not experienced a fall (Scheffer et al., 2008). Seventeen of the case-control studies noted that an increased age, female gender, dizziness, self-rated health (i.e., poor self-rated health), depression and gait and balance were risk factors associated with fear of falling. However, these researchers used fear of falling as an umbrella term instead of a distinct concept from falls-efficacy or balance confidence. In addition, these findings should be taken with caution due to the use of different assessment tools for the fall-related psychological concerns (i.e., fear of falling, falls-efficacy and balance confidence) between studies. Moreover, the researchers of this systematic review did not critically appraise the included body of literature.

Denkinger et al. (2015) tested and identified additional factors associated with fall-related psychological concerns in their systematic review. Their search was purposefully

conducted after 2006, due to the time period of the Scheffer and colleagues (2008) review, until October 2013 (Denkinger et al., 2015). A total of 20 articles were synthesized, and factors were categorized into three main domains: fear of falling, fear of falling-related activity restriction and falls-efficacy (Denkinger et al., 2015). In comparison to the original Scheffer and colleagues review, only the most robust associations were highlighted across all three domains (i.e., fear of falling, fear of falling-related activity restriction and falls-efficacy). These include 1) impaired function and balance; 2) female gender; and 3) use of a walking aid (Denkinger et al., 2015). However, similar to the Scheffer et al. (2008) systematic review, this review also used fear of falling as an umbrella term and did not formally assess the quality of their included studies, which is necessary for interpreting a large body of evidence (Guyatt et al., 2008).

In a more recent and robust systematic review and meta-analysis, 20 studies measured both anxiety and fall-related psychological concerns in community-dwelling older adults aged 65 years and above (Payette et al., 2016). These researchers included studies published from 1990 to 2015, with an equal amount of studies measuring fear of falling and falls-efficacy or balance confidence, and ten different anxiety measurement scales. This review concluded that anxiety was moderately and significantly associated with fall-related psychological concerns in community-dwelling older adults, regardless of the construct (i.e. fear of falling, falls-efficacy or balance confidence). A random-effect meta-analysis discovered that the mean effect sizes for fear of falling ($r=0.32$; 95% CI: 0.22-0.40, $Z=6.49$, $p<0.001$) and falls-efficacy or balance confidence ($r=0.31$; 95% CI: 0.23-0.40, $Z=6.72$, $p<0.001$) were very similar (Payette et al., 2016). Therefore, these authors believe that anxiety should be considered when managing older adults with fall-related psychological concerns (Payette et al., 2016).

Falls Risk Reduction Interventions Targeted Towards Fall-Related Psychological Concerns

A systematic review of randomized, controlled trials included 19 studies that evaluated the effectiveness of interventions on fall-related psychological concerns in community-living

older adults aged 65 years and above (Zijlstra et al., 2007). This review found significant improvements in fear of falling levels after patients participated in home-based exercise interventions, a community-based tai chi intervention and several exercise programs (Zijlstra et al., 2007). Methodological quality was assessed in this systematic review using an adapted version of the Cochrane Back Review Group list of criteria (van Tulder, Assendelft, Koes, Bouter & Editorial Board of the Cochrane Collaboration Back Review Group). Out of the 19 studies, 12 were considered of "higher methodological quality" meaning that they fulfilled at least 4 out of 8 validity items from their adapted tool. However, the majority of these interventions did not explicitly focus on reducing fall-related psychological concerns (n=16), and instead aimed to reduce falls. All of the studies (n=3) that aimed to reduce fear of falling in community-dwelling older adults were considered of higher methodological quality (Clemson et al., 2004; Tennstedt et al., 1998; Zhang, Ishikawa-Takata, Yamazaki, Morita & Ohta, 2006). Although, these studies used different fear of falling assessment tools (Clemson et al., 2004; Tennstedt et al., 1998; Zhang et al., 2006) and therefore it is difficult to compare results. More recently, authors of a Cochrane systematic review and meta-analysis focused solely on exercise interventions for reducing fear of falling. They included 30 randomized and quasi-randomized controlled trials of community-dwelling older adults aged 65 years and above, of which 36 exercise interventions were evaluated. There were 24 exercise interventions associated with a small to moderate reduction in fear of falling immediately after the intervention (Kumar et al., 2016). However, all of the studies in this systematic review were considered low methodological quality based on The Cochrane Collaboration's tool for assessing the risk of bias (Kumar et al., 2016).

After factoring in these previously mentioned systematic reviews (Zijlstra et al., 2007; Kumar et al., 2016), there still remains a gap in the literature. The first review is dated (Zijlstra et al., 2007) (i.e. more than 10 years old), and the other review only focused on exercise interventions (Kumar et al., 2016). Therefore, an updated summary of 17 primary studies was completed (see Appendix A, p. 137) to add more recent interventions that explicitly focused on

fall-related psychological concerns (i.e. fear of falling, falls-efficacy or balance confidence) in older community-dwelling adults. Most of the interventions incorporated exercise or balance components, while some also combined cognitive-behavioural therapy or educational sessions on falls risk reduction. A randomized control trial found that a Pilates intervention for community-dwelling older women with chronic lower back pain significantly decreased ($p<0.05$) fear of falling levels after 6-weeks (Cruz-Diaz et al., 2015). However, there was only one follow-up assessment completed after the last week of the Pilates intervention, which may have inaccurately captured participants' fear of falling levels post-intervention. Two studies evaluated the effects of a community and home-based cognitive-behavioural program, "A Matter of Balance," which is a multicomponent intervention that aims to instill a realistic view of fall risk, increase confidence and change behaviour for older adults that avoid some activities due to their concern about falling (Dorresteijn et al., 2016; Zijlstra et al., 2009). However, neither of these studies found significant reductions ($p<0.05$) in participants' concerns about falling. Another intervention also incorporated cognitive-behavioural therapy with intense Tai Chi exercises and found improved levels of fear of falling and falls self-efficacy at the 5-month follow-up post-intervention (Huang, Yang & Liu, 2011). Whereas, in comparison to a control group enrolled in Tai Chi, an exercise intervention that was developed to improve dynamic and static balance in China demonstrated a statistically significant ($p<0.05$) reduction in fear of falling levels using the FES-I after 12-weeks (Zhao, Chung & Tong, 2016).

There is insufficient evidence to conclude whether specific interventions reduce fall-related psychological concerns in community-dwelling older adults. Although there was a statistically significant reduction in fear of falling after an exercise intervention to improve dynamic and static balance (Zhao, Chung & Tong, 2016), further studies in different contexts are needed to verify these results. Overall, more well-designed randomized trials that focus on interventions that aim to reduce each fall-related psychological concern (i.e. fear of falling, falls-efficacy or balance confidence) should be conducted.

Problem Statement

Fall-related psychological concerns are now considered an independent risk factor for falls due to its prevalence in older adults (Vieira et al., 2016; Scheffer et al., 2008; Denkinger et al., 2015; Payette et al., 2016). Fear of falling is considered a distinct concept under the umbrella term 'fall-related psychological concerns' (Hughes et al., 2015), and is described as the "lasting concern about falling that can lead an individual to avoid activities that he/she remains capable of performing" (Tinetti et al., 1990, p. 239). The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) recently acknowledged that excessive amounts of fear of falling in older adults might take the form of an anxiety disorder and "can lead to reduced mobility and reduced physical and social functioning" (American Psychiatric Association, 2013, p. 201).

The majority of research on fall-related psychological concerns in older community-dwelling adults uses a quantitative, biomedical approach, with a particular focus on the prevalence, incidence, and interventions aimed at reducing these concerns (Chippendale & Raveis, 2017). Although there are numerous qualitative studies that explore older adults' perspectives of experiencing a fall and the consequences associated with these falls (Brogårdh, Lexell & Hammarlund, 2017; Carling, Forsberg & Nilsagård, 2018; Dollard, Barton, Newbury & Turnbull, 2012; Kong, Lee, Mackenzie & Lee, 2002; McInnes, Seers & Tutton, 2011; Roe et al., 2008, 2009; Rutledge, Martinez, Traska & Rose, 2013; Nyman, Ballinger, Phillips & Newton, 2013; Overcash, Rivera & Van Schaick, 2010; Shuman et al., 2016), there are few qualitative studies that explicitly focus on fear of falling in this population (Ward-Griffin et al., 2004; Tischler & Hobson, 2005; Lee, Mackenzie & James, 2008; Jellesmark, Herling, Egerod & Beyer, 2012; Honaker & Kretschmer, 2014; Mahler & Sarvimäki, 2012; Chippendale & Lee, 2018). Moreover, authors from only two studies use a validated measurement tool to assess their participants' fear of falling before conducting in-depth interviews to understand their perspectives (Honaker & Kretschmer, 2014; Jellesmark, Egerod & Beyer, 2012).

Within the literature that focuses on fall-related psychological concerns in this population, there continues to be a discrepancy between the construct being investigated (i.e., fear of falling, falls-efficacy or balance confidence), the assessment tool and theoretical framework used to guide the research. A study by Chippendale & Lee (2018) used Bandura's theory of self-efficacy as part of their proposed theoretical model to compare the experiences and characteristics of community-dwelling older adults with and without fear of falling. However, Bandura's self-efficacy theory does not align with the conceptual underpinning of fear of falling. Another qualitative study by Honaker & Kretschmer (2014) assessed participants' fear of falling levels, but their measurement tool (ABC scale) was developed to assess balance confidence. In summary, there is a lack of research that appropriately explores the concept of fear of falling in community-dwelling older adults which necessitates the need for further qualitative research.

Personal Impetus

I worked almost three years on a Clinical Neurosciences unit at the start of my nursing career, where I provided care to both neurology and neurosurgery patients. It was during my time working on this unit that I realized how often older adults experience falls, and I actively became involved in falls risk reduction strategies on my unit and throughout London Health Sciences Centre. This led me to the Registered Nurses' Association of Ontario's Best Practice Guideline on 'Preventing Falls and Reducing Injury from Falls' (2017), where I became even more interested in knowledge translation and quality improvement programs in health care settings. From there, I decided to pursue my graduate studies and delve further into the research behind falls risk reduction. In my first year of the MScN program, I focused on the incidence of falls in older community-dwelling women and learned of their heightened falls risk in comparison to men (Scott et al., 2010). I completed a practicum and interviewed several key informants who were involved in the care of older adults in the Ottawa, Canada region, and quickly learned that a large proportion of this population subgroup were prescribed antidepressants but not necessarily diagnosed or given alternatives to treatment for mental

health issues. In learning this, and the correlation between taking antidepressant medications and the heightened risk for falls in older adults (Diem et al., 2007; Diem et al., 2011; Rauma, Honkanen, Williams, Tuppurainen, Kröger & Koivumaa-Honkanen, 2016; Iaboni & Flint, 2013), I became very interested in the psychosocial aspect of falls risk reduction. This interest in the health and well-being of older adults falls risk reduction, and mental health ultimately led to the development of this thesis and my focus on fear of falling.

Overall Study Purpose and Objectives

The purpose of this study was to understand fear of falling levels in community-dwelling older adults before and after attending a fall prevention clinic. There were two main objectives of this thesis project: 1) to determine if fear of falling levels in older community-dwelling older adults changed after attending a fall prevention clinic; and 2) explain the factors that improved or hindered fear of falling levels, and how fear of falling levels are managed in older community-dwelling adults, after attending a fall prevention clinic.

Theoretical Framework: Theory of Emotional Processing

The Theory of Emotional Processing was chosen to guide this thesis project. Specifically, this theory was chosen due to its typical use in patients with anxiety disorders (e.g., post-traumatic stress disorder), and evidence that shows a significant association between anxiety and fall-related psychological concerns (Payette et al., 2016).In addition, since fear of falling was the construct chosen for this study, the Theory of Emotional Processing aligns with the three significant components of fear of falling: emotion/cognitive, behavioural and physiological.

The Theory of Emotional Processing originated from Lang's study of behaviour therapy in fear reduction and analyses of fear-relevant imagery (1977). This theory posits that a fear image is a cognitive structure containing a stimulus, a response and a meaning that act together as a program to help one avoid or escape from danger (Lang, 1977, 1984). Rachman (1980) later defined emotional processing as "a process whereby emotional disturbances are absorbed

and decline to the extent that other experiences and behaviours can proceed without disruption" (p. 51). However, in the literature, Rachman is commonly criticized for failing to provide a theoretical explanation of emotional processing. Therefore, Lang's original fear structure concept has been used to define the emotional processing theory and explain the psychopathology and treatment of anxiety and its disorders (Foa & Kozak, 1985, 1986).

The fear structures of emotional processing were distinguished into two categories, normal and pathological (Foa & Kozak, 1986). A normal or adaptive fear structure reflects reality. In this case, a normal fear structure is activated by a dangerous situation that then leads to adaptive maneuvering by the individual to avoid danger (Foa & Kozak, 1986). By contrast, a pathological or maladaptive fear structure includes excessive response elements and distortions of reality between the stimulus, the response and the meaning representations (e.g., avoidance of certain activities of daily living due to high levels of fear of falling) (Foa & Kozak, 1986). It is proposed that persistent behavioural and cognitive avoidance, in addition to cognitive biases in processing information at various stages (i.e., encoding, interpretation, and retrieval) result in pathological or maladaptive fear structures (Foa, Huppert & Cahill, 2006).

The fear structure may contain a multitude of stimuli and contexts (Foa et al., 2006). For instance, an older adult may be highly concerned about falling (i.e., fear structure) when performing various activities of daily living (i.e., stimulus representations). The fear structures associated with fear of falling may also be activated if trauma-related stimuli are experienced (e.g., experiencing a fall-related injury while walking in a place with a crowd) (Jayasinghe et al., 2014). Fear structure activation triggers physiological arousal, feelings of fear and anxiety associated with avoidance or escape behaviours (Foa & Kozak, 1986). In alignment with previous research on fear of falling in older adults, one of the most detrimental consequences is activity restriction (Scheffer et al., 2008). The Theory of Emotional Processing recognizes that avoidance or escape behaviours provide relief. Therefore the individual learns to rely on these behaviours and deprives him or her of the opportunity to safely discover and tolerate the

situation (Foa & Kozak, 1986; Jayasinghe et al., 2014). Therefore, individuals with high levels of fear of falling may continue to exhibit avoidance or escape behaviours and self-perpetuate their fear structures until successfully addressed (Jayasinghe et al., 2014).

Thesis Outline

This thesis is composed of five chapters:

Chapter One begins with an introduction to the thesis, describes the term 'fall-related psychological concerns', and the primary concept of this thesis (i.e. fear of falling). In addition to the factors associated with fall-related psychological concerns and the interventions targeted toward them. I also provide the problem statement, my personal impetus, and the overall purpose and objectives for the thesis project. Lastly, I describe the theoretical framework used to guide this research.

Chapter Two includes two separate literature reviews, which identify relevant quantitative and qualitative literature. The phase one (quantitative) literature review provides a summary of the existing assessment tools that measure fall-related psychological concerns, and the phase two (qualitative) literature review explores older community-dwelling adults' experiences with falls and/or fear of falling.

Chapter Three includes information on mixed methods research, the rationale for conducting this study design and the methods from each phase of the study.

Chapter Four is a structured manuscript that will be submitted to The Journal of Aging & Health and includes the results from the study. This manuscript is entitled, "Understanding fear of falling levels in older adults: a mixed methods study." Through an explanatory sequential design, the researchers of this study explore the concept of fear of falling in community-dwelling older adults before and after attending a fall prevention clinic.

Chapter Five provides an integrated discussion between the literature review and findings from both phases of the study, in addition to future implications from these research findings.

* The CCHS is a cross-sectional survey that collects household information from all Canadian provinces and territories (Public Health Agency of Canada, 2014). Although, full-time members of the Canadian Armed Forces, individuals on Indian reserves or Crown lands and certain remote areas are excluded from the CCHS data (Public Health Agency of Canada, 2014).

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change.Psychological Review, 84(2), 191-215.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of social and clinical psychology, 4*(3), 359-373.

Bhala, R. P., O'Donnell, J. O. H. N., & Thoppil, E. P. (1982). Phobic fear of falling and its clinical management. *Phys Ther*, *62*(2), 187-90.

Brogårdh, C., Lexell, J., & Hammarlund, C. S. (2017). Experiences of falls and strategies to manage the consequences of falls in persons with late effects of polio: A qualitative study. *Journal of rehabilitation medicine*, *49*(8), 652-658.

Carling, A., Forsberg, A., & Nilsagård, Y. (2018). Falls in people with multiple sclerosis: experiences of 115 fall situations. *Clinical rehabilitation*, *32*(4), 526-535.

Chippendale, T., & Lee, C. D. (2018). Characteristics and fall experiences of older adults with and without fear of falling outdoors. *Aging & mental health*, 1-7.

Chippendale, T., & Raveis, V. (2017). Knowledge, behavioral practices, and experiences of outdoor fallers: Implications for prevention programs. *Archives of gerontology and geriatrics*, *72*, 19-24.

Clemson, L., Cumming, R. G., Kendig, H., Swann, M., Heard, R., & Taylor, K. (2004). The effectiveness of a community-based program for reducing the incidence of falls in the

elderly: A randomized trial. *Journal of the American Geriatrics Society*, *52*(9), 1487-1494.

Cruz-Díaz, D., Martínez-Amat, A., Manuel, J., Casuso, R. A., de Guevara, N. M. L., & Hita-Contreras, F. (2015). Effects of a six-week Pilates intervention on balance and fear of falling in women aged over 65 with chronic low-back pain: A randomized controlled trial. Maturitas, 82(4), 371-376.

Dargent-Molina, P., Favier, F., Grandjean, H., Baudoin, C., Schott, A. M., Hausherr, E., ... & EPIDOS Group. (1996). Fall-related factors and risk of hip fracture: the EPIDOS prospective study. *The Lancet*, *348*(9021), 145-149.

Denkinger, M. D., Lukas, A., Nikolaus, T., & Hauer, K. (2015). Factors associated with fear of falling and associated activity restriction in community-dwelling older adults: a systematic review. *The American Journal of Geriatric Psychiatry*, *23*(1), 72-86.

Diem, S. J., Blackwell, T. L., Stone, K. L., Yaffe, K., Haney, E. M., Bliziotes, M. M., & Ensrud, K. E. (2007). Use of antidepressants and rates of hip bone loss in older women: the study of osteoporotic fractures. *Archives of internal medicine*, *167*(12), 1240-1245.

Diem, S. J., Blackwell, T. L., Stone, K. L., Cauley, J. A., Hillier, T. A., Haney, E. M., ... & Study of Osteoporotic Fractures Research Group. (2011). Use of antidepressant medications and risk of fracture in older women. *Calcified tissue international*, *88*(6), 476.

Dollard, J., Barton, C., Newbury, J., & Turnbull, D. (2012). Falls in old age: a threat to identity. *Journal of clinical nursing*, *21*(17-18), 2617-2625.

Dorresteijn, T. A., Zijlstra, G. R., Ambergen, A. W., Delbaere, K., Vlaeyen, J. W., & Kempen, G. I. (2016). Effectiveness of a home-based cognitive behavioral program to manage concerns about falls in community-dwelling, frail older people: results of a randomized controlled trial. BMC geriatrics, 16(1), 2.

Foa, E. B., & Kozak, M. J. (1985). Treatment of anxiety disorders: Implications for

psychopathology.

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: exposure to corrective information. *Psychological bulletin*, *99*(1), 20.

Foa, E. B., Huppert, J. D., & Cahill, S. P. (2006). Emotional Processing Theory: An Update.

Freiberger, E., Häberle, L., Spirduso, W. W., & Rixt Zijlstra, G. A. (2012). Long-term effects of three multicomponent exercise interventions on physical performance and fall-related psychological outcomes in community-dwelling older adults: a randomized controlled trial. Journal of the American Geriatrics Society, 60(3), 437-446.

Gusi, N., Adsuar, J. C., Corzo, H., del Pozo-Cruz, B., Olivares, P. R., & Parraca, J. A. (2012). Balance training reduces fear of falling and improves dynamic balance and isometric strength in institutionalised older people: a randomised trial. Journal of physiotherapy, 58(2), 97-104.

Guyatt, G. H., Oxman, A. D., Vist, G. E., Kunz, R., Falck-Ytter, Y., Alonso-Coello, P., & Schünemann, H. J. (2008). GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ (Clinical research ed.)*,*336*(7650), 924-926.

Hadjistavropoulos, T., Delbaere, K., & Fitzgerald, T. D. (2011). Reconceptualizing the role of fear of falling and balance confidence in fall risk. Journal of aging and Health, 23(1), 3-23.

Halvarsson, A., Franzén, E., & Ståhle, A. (2015). Balance training with multi-task exercises improves fall-related self-efficacy, gait, balance performance and physical function in older adults with osteoporosis: a randomized controlled trial. Clinical rehabilitation, 29(4), 365-375.

Huang, T. T., Yang, L. H., & Liu, C. Y. (2011). Reducing the fear of falling among community-

dwelling elderly adults through cognitive-behavioural strategies and intense Tai Chi exercise: a randomized controlled trial. Journal of Advanced Nursing, 67(5), 961-971.

Hughes, C. C., Kneebone, I. I., Jones, F., & Brady, B. (2015). A theoretical and empirical review of psychological factors associated with falls-related psychological concerns in community-dwelling older people. *International Psychogeriatrics*, *27*(7), 1071-1087.

Honaker, J. A., & Kretschmer, L. W. (2014). Impact of fear of falling for patients and caregivers: perceptions before and after participation in vestibular and balance rehabilitation therapy. *American journal of audiology*, *23*(1), 20-33.

Iaboni, A., & Flint, A. J. (2013). The complex interplay of depression and falls in older adults: a clinical review. *The American Journal of Geriatric Psychiatry*, *21*(5), 484-492.

Jayasinghe, N., Sparks, M. A., Kato, K., Wilbur, K., Ganz, S. B., Chiaramonte, G. R., ... & Evans, A. T. (2014). Exposure-based CBT for older adults after fall injury: description of a manualized, time-limited intervention for anxiety. *Cognitive and behavioral practice*, *21*(4), 432-445.

Jellesmark, A., Herling, S. F., Egerod, I., & Beyer, N. (2012). Fear of falling and changed functional ability following hip fracture among community-dwelling elderly people: an explanatory sequential mixed method study. *Disability and rehabilitation*, *34*(25), 2124-2131.

Jørstad, E. C., Hauer, K., Becker, C., & Lamb, S. E. (2005). Measuring the psychological outcomes of falling: a systematic review. *Journal of the American Geriatrics Society*, *53*(3), 501-510.

Karinkanta, S., Nupponen, R., Heinonen, A., Pasanen, M., Sievänen, H., Uusi-Rasi, K., ... & Kannus, P. (2012). Effects of exercise on health-related quality of life and fear of falling

in home-dwelling older women. Journal of aging and physical activity, 20(2), 198-214.

Kapan, A., Luger, E., Haider, S., Titze, S., Schindler, K., Lackinger, C., & Dorner, T. E. (2017). Fear of falling reduced by a lay led home-based program in frail community-dwelling older adults: A randomised controlled trial. Archives of gerontology and geriatrics, 68, 25-32.

Kim, B. H., Newton, R. A., Sachs, M. L., Glutting, J. J., & Glanz, K. (2012). Effect of Guided Relaxation and Imagery on Falls Self-Efficacy: A Randomized Controlled Trial. Journal of the American Geriatrics Society, 60(6), 1109-1114.

Kong, K. S. W., Lee, F. K., Mackenzie, A. E., & Lee, D. T. (2002). Psychosocial consequences of falling: the perspective of older Hong Kong Chinese who had experienced recent falls. *Journal of advanced nursing*, *37*(3), 234-242.

Kumar, A., Delbaere, K., Zijlstra, G. A. R., Carpenter, H., Iliffe, S., Masud, T., ... & Kendrick, D. (2016). Exercise for reducing fear of falling in older people living in the community: Cochrane systematic review and meta-analysis. *Age and ageing*, *45*(3), 345-352.

Kwok, B. C., & Pua, Y. H. (2016). Effects of WiiActive exercises on fear of falling and functional outcomes in community-dwelling older adults: a randomised control trial. Age and ageing, 45(5), 621-627.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. *Behavior Therapy*, *8*(5), 862-886.

Lang, P. J. (1984). Cognition in emotion: Concept and action. *Emotions, cognition, and behavior*, 192-226.

Lee, F., Mackenzie, L., & James, C. (2008). Perceptions of older people living in the community about their fear of falling. *Disability and rehabilitation*, *30*(23), 1803-1811.

Levy, F., Leboucher, P., Rautureau, G., Komano, O., Millet, B., & Jouvent, R. (2016). Fear of

falling: efficacy of virtual reality associated with serious games in elderly people. Neuropsychiatric disease and treatment, 12, 877.

Liu, Y. W. J., & Tsui, C. M. (2014). A randomized trial comparing Tai Chi with and without cognitive-behavioral intervention (CBI) to reduce fear of falling in community-dwelling elderly people. Archives of gerontology and geriatrics, 59(2), 317-325.

Lord, S. R., Sherrington, C., Menz, H. B., & Close, J. C. (2007). *Falls in older people: risk factors and strategies for prevention*. Cambridge University Press.

Mahler, M., & Sarvimäki, A. (2012). Fear of falling from a daily life perspective; narratives from later life. *Scandinavian journal of caring sciences*, *26*(1), 38-44.

McInnes, E., Seers, K., & Tutton, L. (2011). Older people's views in relation to risk of falling and need for intervention: a meta-ethnography. *Journal of advanced nursing*, *67*(12), 2525-2536.

Moore, D. S., & Ellis, R. (2008). Measurement of fall-related psychological constructs among independent-living older adults: a review of the research literature. *Aging and mental health*, *12*(6), 684-699.

Murphy, J., & Isaacs, B. (1982). The post-fall syndrome. *Gerontology*, *28*(4), 265-270.

Nick, N., Petramfar, P., Ghodsbin, F., Keshavarzi, S., & Jahanbin, I. (2016). The effect of yoga on balance and fear of falling in older adults. PM&R, 8(2), 145-151.

Nyman, S. R., Ballinger, C., Phillips, J. E., & Newton, R. (2013). Characteristics of outdoor falls among older people: a qualitative study. *BMC geriatrics*, *13*(1), 125.

Oh, D. H., Park, J. E., Lee, E. S., Oh, S. W., Cho, S. I., Jang, S. N., & Baik, H. W. (2012). Intensive exercise reduces the fear of additional falls in elderly people: findings from the Korea falls prevention study. The Korean journal of internal medicine, 27(4), 417.

Overcash, J. A., Rivera, H. R., & Van Schaick, J. (2010, September). An analysis of falls experienced by older adult patients diagnosed with cancer. In *Oncology nursing forum* (Vol. 37, No. 5).

Payette, M. C., Belanger, C., Léveillé, V., & Grenier, S. (2016). Fall-related psychological concerns and anxiety among community-dwelling older adults: systematic review and meta-analysis. *PLoS one*, *11*(4), e0152848.

Pérula, L. A., Varas-Fabra, F., Rodríguez, V., Ruiz-Moral, R., Fernández, J. A., González, J., ... & Group, E. S. C. (2012). Effectiveness of a multifactorial intervention program to reduce falls incidence among community-living older adults: a randomized controlled trial. *Archives of physical medicine and rehabilitation*, *93*(10), 1677-1684.

Public Health Agency of Canada. (2014). *Seniors' Falls in Canada: Second Report*. Retrieved March 10, 2017 from http://www.phac-aspc.gc.ca/seniors aines/publications/public/injury blessure/seniors_falls-chutes_aines/indexeng.php

Rabenda, V., Bruyère, O., & Reginster, J. Y. (2012). Risk of nonvertebral fractures among elderly postmenopausal women using antidepressants. *Bone*, *51*(4), 674-679.

Rachman, S. (1980). Emotional processing. *Behaviour Research and Therapy*, *18*(1), 51-60.

Rauma, P. H., Honkanen, R. J., Williams, L. J., Tuppurainen, M. T., Kröger, H. P., & Koivumaa-Honkanen, H. (2016). Effects of antidepressants on postmenopausal bone loss—A 5-year longitudinal study from the ostpre cohort. *Bone*, *89*, 25-31.

Registered Nurses' Association of Ontario. (2017). Preventing Falls and Reducing Injury from Falls (4th ed.). Toronto, ON: Author

Roe, B., Howell, F., Riniotis, K., Beech, R., Crome, P., & Ong, B. N. (2008). Older people's experience of falls: understanding, interpretation and autonomy. Journal of advanced nursing, 63(6), 586-596.

Roe, B., Howell, F., Riniotis, K., Beech, R., Crome, P., & Ong, B. N. (2009). Older people and falls: health status, quality of life, lifestyle, care networks, prevention and views on service use following a recent fall. *Journal of clinical nursing*, *18*(16), 2261-2272.

Rubenstein, L. Z. (2006). Falls in older people: epidemiology, risk factors and strategies for prevention. *Age and ageing*, *35*(suppl_2), ii37-ii41.

Rutledge, D. N., Martinez, A., Traska, T. K., & Rose, D. J. (2013). Fall experiences of persons with fibromyalgia over 6 months. *Journal of Advanced Nursing*, *69*(2), 435-448.

Sattin, R. W., Easley, K. A., Wolf, S. L., Chen, Y., & Kutner, M. H. (2005). Reduction in fear of falling through intense tai chi exercise training in older, transitionally frail adults. Journal of the American Geriatrics Society, 53(7), 1168-1178.

Scheffer, A. C., Schuurmans, M. J., Van Dijk, N., Van Der Hooft, T., & De Rooij, S. E. (2008). Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age and ageing*, *37*(1), 19-24.

Scott, V., Wagar, L., & Elliott, S. (2010). Falls & Related Injuries among Older Canadians: Fallrelated Hospitalizations & Prevention Initiatives.

Shuman, C., Liu, J., Montie, M., Galinato, J. G., Todd, M. A., Hegstad, M., & Titler, M. (2016). Patient perceptions and experiences with falls during hospitalization and after discharge. *Applied nursing research*, *31*, 79-85.

Swanenburg, J., de Bruin, E. D., Uebelhart, D., & Mulder, T. (2010). Falls prediction in elderly people: a 1-year prospective study. *Gait & posture*, *31*(3), 317-321.

Tennstedt, S., Howland, J., Lachman, M., Peterson, E., Kasten, L., & Jette, A. (1998). A randomized, controlled trial of a group intervention to reduce fear of falling and associated activity restriction in older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *53*(6), P384-P392.

The Economic Burden of Injury in Canada. (2009). Toronto: SMARTRISK.

Tinetti, M. E., Richman, D., & Powell, L. (1990). Falls efficacy as a measure of fear of falling. *Journal of gerontology*, *45*(6), P239-P243. Velozo, C. A., & Peterson, E. W. (2001). Developing meaningful fear of falling measures for community dwelling elderly. *American journal of physical medicine & rehabilitation*, *80*(9),

662-673.

Tischler, L., & Hobson, S. (2005). Fear of falling: a qualitative study among community-dwelling older adults. *Physical & Occupational Therapy in Geriatrics*, *23*(4), 37-53.

Tromp, A. M., Pluijm, S. M. F., Smit, J. H., Deeg, D. J. H., Bouter, L. M., & Lips, P. T. A. M. (2001). Fall-risk screening test: a prospective study on predictors for falls in community-dwelling elderly. *Journal of clinical epidemiology*, *54*(8), 837-844.

van Tulder, M. W., Assendelft, W. J., Koes, B. W., Bouter, L. M., & Editorial Board of the Cochrane Collaboration Back Review Group. (1997). Method guidelines for systematic reviews in the Cochrane Collaboration Back Review Group for spinal disorders.

Vieira, E. R., Palmer, R. C., & Chaves, P. (2016). Prevention of falls in older people living in the community. *bmj*, *353*(1), 1419.

Vind, A. B., Andersen, H. E., Pedersen, K. D., Joergensen, T., & Schwarz, P. (2010). Effect of a program of multifactorial fall prevention on health-related quality of life, functional ability, fear of falling and psychological well-being. A randomized controlled trial. Aging clinical and experimental research, 22(3), 249-254.

Ward-Griffin, C., Hobson, S., Melles, P., Kloseck, M., Vandervoort, A., & Crilly, R. (2004). Falls and fear of falling among community-dwelling seniors: The dynamic tension between exercising precaution and striving for independence. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *23*(4), 307-318.

World Health Organization, & Organization, W. H. (2007). *WHO global report on falls prevention in older age*. Retrieved from http://www.who.int/ageing/publications/Falls_prevention7March.pdf

Yardley, L., Beyer, N., Hauer, K., Kempen, G., Piot-Ziegler, C., & Todd, C. (2005). Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and ageing*, *34*(6), 614-619.

Zhao, Y., Chung, P. K., & Tong, T. K. (2016). Effectiveness of a Community-Based Exercise Program on Balance Performance and Fear of Falling in Older Nonfallers at Risk for Falling: A Randomized, Controlled Study. Journal of aging and physical activity, 24(4), 516-524.

Zhang, J. G., Ishikawa-Takata, K., Yamazaki, H., Morita, T., & Ohta, T. (2006). The effects of Tai Chi Chuan on physiological function and fear of falling in the less robust elderly: an intervention study for preventing falls. *Archives of gerontology and geriatrics*, *42*(2), 107-116.

Zijlstra, G. A., Van Haastregt, J., Van Rossum, E., Van Eijk, J. T. M., Yardley, L., & Kempen, G. I. (2007). Interventions to reduce fear of falling in community-living older people: a systematic review. *Journal of the American Geriatrics Society*, *55*(4), 603-615.

Zijlstra, G. A., Van Haastregt, J., Ambergen, T., Van Rossum, E., Van Eijk, J. T. M., Tennstedt, S. L., & Kempen, G. I. (2009). Effects of a Multicomponent Cognitive Behavioral Group Intervention on Fear of Falling and Activity Avoidance in Community-Dwelling Older Adults: Results of a Randomized Controlled Trial. Journal of the American Geriatrics Society, 57(11), 2020-2028.

Chapter Two

Literature Review

Literature Review

This chapter includes the literature review, which was separated into two phases based on the two different search aims. The two aims were:

1. To summarize the existing assessment tools that measure fall-related psychological concerns in community-dwelling older adults (Phase One - Quantitative).
2. To gain a better understanding of the exisintg qualitative literature that focuses on older community-dwelling adults' experiences with falling and/or fear of falling (Phase Two - Qualitative).

Phase One

Search Strategy

This literature search was initially completed in April of 2017 and updated in June of 2018. A health sciences librarian at The University of Ottawa assisted in developing this search strategy. The search was adapted and conducted in CINAHL and Ovid MEDLINE and restricted to studies published in English (see Table 2-1, p. 45 for the list of search terms).

Methods

Studies were eligible if they included an assessment tool that measures fall-related psychological concerns in community-dwelling older adults. Ineligible studies focused on community-dwelling older adults with a specific disease or condition (e.g., diabetes, Parkinson's disease, etc.). Studies were uploaded into Covidence software and screened by one reviewer. A total of 88 studies were identified through the databases and hand searching reference lists, of which 11 were relevant. Figure 2-1 (p. 46) displays the selection process for this literature review.

Assessment tools for fall-related psychological concerns

There are numerous assessment tools developed for fall-related psychological concerns in community-dwelling older adults. A recent systematic review and meta-analysis noted that there is no consensus on the best fall-related psychological concern tool to use (Payette,

Belanger, Léveillé & Grenier, 2016). Instead, it is necessary for researchers to identify the construct being measured (i.e. fear of falling, falls-efficacy or balance confidence) and use the corresponding measurement tool (Payette et al., 2016; Ribeiro & Santos, 2015). However, in the existing literature, there is a discrepancy in the use of these measurement tools and the construct being measured (Jørstad et al., 2005; Scheffer et al., 2008). Therefore, it was important to summarize *all* of the existing assessment tools for fall-related psychological concerns for this part of the literature review (see Table 2-2, p. 47), although only the tools that assess fear of falling are briefly described below. For the purposes of this literature review, validity was defined as the extent to which a measure achieves the purpose for which it is intended, and is determined by the "degree to which evidence and theory support the interpretations of test scores entailed by proposed users of tests" (Squires et al., 2011; Nunnally et al., 1967). In addition, reliability was defined as the consistency of measurement obtained when using an instrument repeatedly on a population of individuals or groups (Squires et al., 2011; Nunnally et al., 1967). Both validity and reliability were extracted as reported by study authors.

Survey of Activities and Fear of Falling (SAFFE) Scale

This 22-item tool was developed to measure fear of falling and activity restriction during physical and social activities (Lachman et al., 1998). According to several researchers, it is more useful than the 'Falls Efficacy Scale' because it can differentiate between fear of falling that leads to activity restriction (Greenberg, 2012; Lachman et al., 1998). Content validity was established by an expert group of 3 individuals and convergent validity was demonstrated with 5 other scales or indicators (Revised Falls Efficacy Scale, Short-Form Health Survey-36, Activities Specific Balance Confidence Scale, Short-Form Health Survey-12 and functional balance indicators) (Lachman et al., 1998). Internal consistency found a Cronbach's alpha of 0.96 (Lachman et al., 1998). However, several researchers noted the tool to be long and burdensome for older adults to complete (Lamb, Jorstad-Stein, Hauer & Becker, 2005).

The University of Illinois at Chicago Fear of Falling Measure (UIC-FFM)

The development of this tool was informed by two focus groups of White and African-American community-dwelling older adults (Velozo & Peterson, 2001). These focus groups established a list of 19 activities that triggered a concern about falling, ranging from indoor activities (e.g., getting out of bed) to outdoor activities (e.g., walking outside alone when it might be icy) (Velozo & Peterson, 2001). Although the tool was developed to assess fear of falling, a 4-point scale ranging from “worried” to “not at all worried” was utilized and was criticized due to its use of the words “fear” and “worry” interchangeably (Greenberg, 2012). Researchers used the Rasch model to assess construct validity and found that 97.2% of the responses of the 97 people who received the measure were valid within 2 standard deviations of the expected response (Velozo & Peterson, 2001). These authors also noted a Pearson separation reliability of 0.93 (Velozo & Peterson, 2001). However this tool has rarely been used in research, specifically for community-dwelling older adults (Velozo & Peterson, 2001).

The Modified Survey of Activities and Fear of Falling (mSAFFE) Scale

This is the self-administered version of the ‘Survey of Activities and Fear of Falling Scale’, which also assesses fear of falling and activity restriction (Yardley & Smith, 2002). Five of the activities were omitted from the original tool, leaving it with a total of 17-items (Yardley & Smith, 2002). This tool was developed to determine the degree to which individuals avoid an activity because they are afraid of falling (Yardley & Smith, 2002). Therefore, an advantage of this modified version is that it may actually differentiate fear of falling that leads to activity restriction from a more generalized fear of falling that does not lead to activity restriction (Greenberg, 2012). Although there is improved discriminant validity in a higher-functioning sample of community-dwelling older adults, there is limited use in research (Delbaere, Crombez, Vanderstraeten, Willems & Cambier, 2004; Yardley & Smith, 2002). Convergent validity with the Falls Efficacy Scale (FES), which is a tool that measures falls-efficacy, found a negative

pearson's correlation of 0.76 (Yardley & Smith, 2002). Whereas the internal consistency reliability found a Cronabch's alpha of 0.91(Yardley & Smith, 2002).

Falls Efficacy Scale-International (FES-I)

The 'Falls Efficacy Scale International' measurement tool was developed to expand on the 'Falls Efficacy Scale', and is the most commonly used fall-related psychological tool in clinical practice and research (Kempen et al., 2007; Yardley et al., 2005). This modified version of the FES was created by members of the Prevention of Falls Network Europe (ProFaNE) Committee, a European committee focused on fall prevention and the psychology of falling (Kempen et al., 2007). Although the 'Falls Efficacy Scale International' still contains "falls-efficacy" in its name, the authors contend that this instrument measures fear of falling or the concern or worry about falling (Yardley et al., 2005). The tool focuses on the psychological aspect of falls risk reduction and assesses fear of falling rather than functional abilities (Yardley et al., 2005). In comparison to the FES, it includes instrumental and social activities that may be considered more challenging among more active and functional older adults (Yardley et al., 2005). It also measures the level of concern about falling whether or not the individual actually engages in the activity (Yardley et al., 2005). In comparison to the other four fear of falling assessment tools, the psychometric properties of the FES-I were assessed in several studies (Yardley et al., 2005; Kempen et al., 2007; Delbaere et al., 2010; Hauer et al., 2007). Members of the ProFaNE group ensured content validity of the FES-I. Factor analysis revealed two factors within the tool. The first explained variance (36.8%) in items that assessed concerns of lower demand physical activities, and the second revealed 32.7% of the variance in more demanding physical activities (Yardley et al., 2005). Convergent validity was assessed in a group of older adults (n=284), aged 65 years and older, and found that the FES, FES-I and a shortened version of the FES-I were significantly correlated for the total study group (Hauer et al., 2011). Internal consistency reliability ranged from a Cronbach's alpha of 0.79 (Delbaere et al., 2010) to 0.96 (Yardley et al., 2005).

The Geriatric Fear of Falling Measure (GFFM)

This is the most recently developed tool to assess fear of falling, based on a qualitative study for understanding fear of falling among community-dwelling older adults in Taiwan (Huang, 2006). There are 3 categories, including: psychosomatic symptoms, adopting an attitude of risk prevention and modifying behaviour. This tool was also developed as an outcome measure to evaluate research interventions and as a quick screening tool for healthcare professionals. However, the psychometric properties were only assessed in the previously mentioned Taiwanese study (Huang, 2006), and its generalizability for older adults living in other countries has not been determined.

Phase One Literature Review: Summary

After summarizing the existing tools that assess fall-related psychological concerns, it became evident that it is difficult to compare these tools based on a large variation between several factors, including: authors' definition of the fall-related psychological concern being measured, context, number of items and the item response scale (e.g., likert scale versus percentage) and validation studies. Moreover, the validity and reliability of many of these tools have rarely been tested, and warrant further investigations.

Phase Two

The main purpose of this literature review was to gain a better understanding of the existing qualitative literature that focuses on older community-dwelling adults' experiences with falls and/or fear of falling. The purpose of this part of the literature review was broad and included "experiences with falls" due to the widely acknowledged fact that searching for qualitative studies can be more difficult than searching for quantitative studies (Barroso et al., 2003; Evans, 2002; Ring, Ritchie, Mandava & Jepson, 2011).

Search Strategy and Results

This literature search was completed between May and July of 2018. A health sciences librarian at The University of Ottawa assisted in developing the initial search strategy. The

search strategy was adapted and conducted in two different databases: Ovid MEDLINE and CINAHL (see Table 2-3, p. 52 for the list of search terms). In addition, Web of Science (the database also known as ISI-Web of Knowledge via Thompson) was searched using the topic of "older adults' experiences with fear of falling." Searches were restricted to studies published in English. Studies were uploaded into Covidence software and screened by one reviewer. A total of 529 studies were identified through the databases and hand searching reference lists, of which seven were relevant. Figure 2-2 (p. 53) displays the selection process for this literature review.

Methods

Once the relevant studies were identified, the following information was extracted from each study into Table 2-4 (p. 54): 1) study purpose, 2) sample, 3) methodology and methods, and 4) key findings/themes. An adapted thematic synthesis was conducted to identify recurring themes from the seven primary studies, with guidance from the approach developed by Thomas and Harden (2008). This thematic synthesis did not fully adhere to the three stages established by its developers due to the nature of a literature review (i.e. screening for relevant studies, data extraction and synthesis stages were completed by an independent researcher and subject to bias). There were three stages conducted in this thematic synthesis, including: 1) coding of textual findings from primary studies, 2) organization of codes into descriptive themes, and 3) generation of 'analytical' themes using the descriptive themes. The descriptive themes were grouped into the following four sections: 'quality of life', 'striving for independence', 'exercising precaution' and 'fear of falling and uncertainty of the future.'

Understanding falling and/or fear of falling experiences

Quality of life

In this literature review, 'quality of life' included a description of several facets: functional status, health-related quality of life and well-being (Patrick, Guyatt & Acquadro, 2011). Specifically, this theme included examples that define an individual's ability to perform certain

roles, tasks, or activities that are valued, and subjective bodily and emotional states. Both positive and negative aspects of fear of falling were noted by respondents in three studies (Tischler & Hobson, 2005; Lee, Mackenzie & James, 2008; Jellesmark, Herling, Egerod & Beyer, 2012). From a positive standpoint, some participants reported being satisfied with their life and felt that their activity levels accurately matched their age (Tischler & Hobson, 2005). These individuals also described a good quality of life despite their falling fears (Tischler & Hobson, 2005). One participant expressed "I feel good about myself. That I am able to do what I do. I would love it if I could do more, but I realize that there are factors that are causing me to back off. I accept those and do what I can do and the things I can't do, I don't worry about it" (Tischler & Hobson, 2005, p. 46). Similarly, another participant from this study stated "There are lots of things I would like to do, but I just can't do it and I don't push myself and I don't think about it. My quality of life is very high" (Tischler & Hobson, 2005, p. 46). Likewise, all participants from the study by Lee, Mackenzie and James (2008) were generally satisfied with their levels of activity and described busy social lives. However, these authors also recognize that their participants differed from the typical sample in the literature by stating, "the participants in this study were all satisfied with their lives" and may not be generalizable to similar population groups (Lee et al., 2008, p. 1806)

On the other side of the spectrum, some respondents also reported a poor quality of life due to their inability to participate in previously enjoyed activities (Tischler & Hobson, 2005). One participant from this study stated a difference in their quality of life due to the weather "I will walk anywhere on a summer day…my quality of life is not impacted…It makes me feel good to participate in activities…In the winter my self confidence is lower and my quality of life may be reduced" (Tischler & Hobson, p. 46). Moreover, some individuals felt that their activities of daily living were more time consuming due to their fear of falling (Jellesmark et al., 2012). For instance, a participant described their struggle with getting dressed "…yes, it takes time…and sometimes I can only get one stocking on…it may take all day, because I try and try and try to

get it on, and in the end I often succeed. But it is challenging" (Jellesmark et al., 2012, p. 2128). Another commonly reported negative aspect of fear of falling was a sense of isolation and dependency on others (Lee et al., 2008; Jellesmark et al., 2012). This dependency caused a great deal of frustration for some participants (Mahler & Sarvimäki, 2012; Jellesmark et al., 2012), while others also reported being bored, lonely and an overall sense of helplessness (Jellesmark et al., 2012). One participant said "I don't think I'll ever get used to being dependent on others. I call myself helpless, and it is frustrating" (Jellesmark et al., 2012, p. 2128).

Striving for independence

The authors of three studies note that their participants used strategies and/or believed that their independence was of higher priority than their risk of falling (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Jellesmark et al., 2012). A participant said, "I've got to keep going. I don't want to go into a nursing home. I want to keep my independence as long as possible" (Ward-Griffin et al., 2004, p. 313). Participants expanded their life spaces (i.e. environments that they would walk in) by using strategies such as: minimizing the impact of a fall, using an assistive device (e.g., cane or walker), resisting confinement, running the risk and accessing resources (Ward-Griffin et al., 2004). Other individuals prioritized an active lifestyle that included known fall risk factors (e.g., unpredictable outside environments like uneven terrain) based on a strong desire to stay healthy and fit (Jellesmark et al., 2012). Mahler & Sarvimäki (2012) found that their participants became frustrated with being dependent on others (e.g., family and friends) to complete activities of daily living, but still attempted these activities in order to keep a sense of normalcy in their lives. These participants also acknowledged their fear of falling but still sought very independent lifestyles (Mahler & Sarvimäki, 2012). For example, one participant stated "I manage to wash myself on good days, I don't shower, but I have a bowl I can fill with hot water" (Mahler & Sarvimäki, 2012, p. 41).

However, it is difficult to compare and group these study participants because not all of these authors chose their sample by factoring in 'functional levels.' For instance, a low

functioning level is often indicated by the need for an assistive device to walk (e.g., cane or walker) and/or dependency on others to complete activities of daily living (Bateni & Maki, 2005). In the study by Ward-Griffin and colleagues, participants were community-dwelling elders with either a fear of falling who experienced a fall, individuals with fear of falling but never experienced a fall or those who had fallen but did not fear falling (2004). Likewise, Mahler & Sarvimäki (2012) included participants with variations in gender and socio-economic status, but did not take into account 'functioning levels.' Whereas, Jellesmark and colleagues explicitly state that they chose participants if they had a high degree of fear of falling and varying levels of functional ability (2012). Regardless of functioning levels, these study participants prioritized their independence and exhibited self-confidence that encouraged active lifestyles (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Jellesmark et al., 2012).

Exercising precaution

This theme encompasses the proactive strategies that these participants took to avoid future falls. Some participants used multiple strategies such as: depending on help, resisting activities, elimination of hazards, selecting safe spaces and/or assigning blame (Ward-Griffin et al., 2004). Similarly to 'selecting safe spaces', some individuals planned a strict daily routine in order to avoid walking in unknown environments, and avoided certain activities to ensure the most control over avoiding a fall (Mahler & Sarvimäki, 2012). Likewise, participants in the study by Lee and colleagues (2008) acknowledged 'fall-avoidance behaviours' by making changes to their environment and becoming more aware and careful of fall risks and hazards. Chippendale & Lee (2018) also noted that participants with a fear of falling outdoors, which was assessed by the Outdoor Falls Questionnaire, were more likely to identify fall hazards and use more strategies to avoid these falls (Chippendale & Lee, 2018).

Almost all of the studies (six out of seven) included participants that limited physical and/or social activities due to their fear of falling levels (Jellesmark et al., 2012; Ward-Griffin et al., 2004; Lee et al., 2008; Mahler & Sarvimäki, 2012; Chippendale & Lee, 2018; Honaker &

Kretschmer, 2014). For example, participants limited activities of daily living such as: cleaning their house, gardening, going out to dinner, dancing or attending sporting events (Honaker & Kretschmer, 2014). From this study, one patient noted “I’m just more conscious of the places I go and the things that I do. You know if I’m walking somewhere and I have to go up six or eight steps to get into a place I just won’t go in it” (Honaker & Kretschmer, 2014, p. 26). In the Chippendale & Lee study (2018), more individuals with a fear of falling (26%) than individuals with no fear of falling (8.6%) were cautious and avoided certain areas. One participant described both a proactive strategy to reduce the risk of falling and avoiding their their activity due to a fear of falling, “I nearly wet out on my nose, going out on my balcony. I’m not going to try to have anything out there anymore. I’m better off to forget I have a balcony than to try to use it and fall on my nose” (Ward-Griffin et al., 2004, p. 313).

Fear of falling and uncertainty of the future

Almost all of the participants viewed the future negatively due to their fear of falling (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Jellesmark et al., 2012; Lee et al., 2008; Honaker & Kretschmer, 2014; Tischler & Hobson, 2005). Fear of falling was associated with a negative emotion, and most participants described an uncertainty of the future, losing their independence and being completely dependent on others (Lee et al., 2008; Tischler & Hobson, 2005; Honaker & Kretschmer, 2014; Mahler & Sarvimäki, 2012). The main theme from Tischler & Hobson’s (2005) study highlights participants’ overall fear of falling due to the possible consequences of experiencing an injurious fall. A participant from this study described, “My fear is due to having such bad falls, I have been lucky that I have not broken anything. My back has been so bad from them that I am just scared of falling all the time to go through that again, you know” (Tischler & Hobson, 2005, p. 42). Although not all of these individuals experienced a fall (two out of seven participants had not fallen), they all described a fear of experiencing a physical injury, the negative feelings experienced when falling, becoming an invalid or burden on others and/or confined to a wheelchair or unable to walk (Tischler & Hobson, 2005). In

addition, some respondents felt humiliated after experiencing a fall and became more self-conscious about their fragile conditions (Mahler & Sarvimäki, 2012).

Phase Two Literature Review: Summary

The Mixed Methods Appraisal Tool (MMAT) was used to critically appraise the methodological quality of the studies in this literature review (Pluye et al., 2011). According to the developers, this tool is suited for research questions related to complex interventions in the public health context (Pluye et al., 2011). In comparison to other tools, the MMAT is able to concomitantly appraise quantitative, qualitative and mixed-methods studies (Pluye et al., 2011). It includes 19 items to assess the quality of five types of studies, including: qualitative, randomized controlled trials, non-randomized, quantitative descriptive and mixed methods. For each study, an overall quality score between 25-100% may be assigned, based on the criteria met for each domain (i.e. mixed, qualitative or quantitative). A qualitative thematic data analysis of the quality appraisal procedures used in 17 mixed systematic reviews (i.e. reviews including qualitative, quantitative and mixed method studies) was conducted (Pluye, Gagnon, Griffiths & Johnson-Lafleur, 2009). Findings from this evaluation support the substantive/theoretical and content validity of the MMAT criteria (Pluye et al., 2009). In addition, the reliability of the MMAT tool was evaluated in two studies and showed that agreement between reviewers was fair to perfect on MMAT criteria with Kappa scores between 0.21 and 0.8 (Pace et al., 2012; Souto et al., 2014).

A summary of the studies included in this literature review is displayed in Table 2-4 (p. 54), and includes an MMAT quality appraisal score of each study. The MMAT tool was chosen since three of the studies used a mixed-methods study design (Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Chippendale & Lee, 2018). Between 25-75% of the criteria was met for each domain. One significant critique for all of these studies is that the researchers' roles were not taken into consideration, and how findings relate to the researchers' influence. Specifically, for qualitative studies where researchers are most often gathering sensitive information through

interviews, it is imperative that the researchers situate themselves and acknowledge how their interactions may influence the participants (1985; Guba & Lincoln, 1994).

Overall, through synthesizing this literature, it is clear that the everyday experiences' of older adults is greatly influenced by fear of falling. However, only two of these studies were conducted in a Canadian context and may be considered out of date (Ward-Griffin et al., 2004; Tischler & Hobson, 2005). In addition, although many common themes were found between the studies, it is difficult to compare these studies due to differences in participant samples, methodology and methods. For instance, three of these studies used a mixed-methods study design and assessed for fear of falling using an objective measurement tool to determine fear of falling levels in their participants (Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Chippendale & Lee, 2018). Therefore, this master's project sought to explore older adults' experiences of fear of falling through a mixed-methods study design in a Canadian context.

Table 2-1: Search strategy terms for phase one literature review

Database	Search terms
Ovid MEDLINE; Searched January 3rd, 2017	1. accidental falls/ 2. ((old* or age* or elder* or senior*) adj5 (people or adult* or person*1)).tw. 3. Geriatrics/ 4. aged/ 5. 2 or 3 or 4 6. 1 and 5 7. fear of falling.tw. 8. falls-efficacy.tw. 9. balance confidence.tw. 10. "surveys and questionnaires"/ or patient health questionnaire/ or self report/ 11. 8 or 9 or 10 12. 11 and 12 13. (reliability and validity).mp. 14. 13 and 14
CINAHL; Searched January 3rd, 2017	1. (geriatrics or older adults or elderly) AND 2. (accidental falls or falling or falls or fall) AND 3. (fear of falling or falls-efficacy or balance confidence) AND 4. (measurement tool or assessment tool) AND 5. (reliability and validity)

Figure 2-1: Search results flow chart for phase one literature review

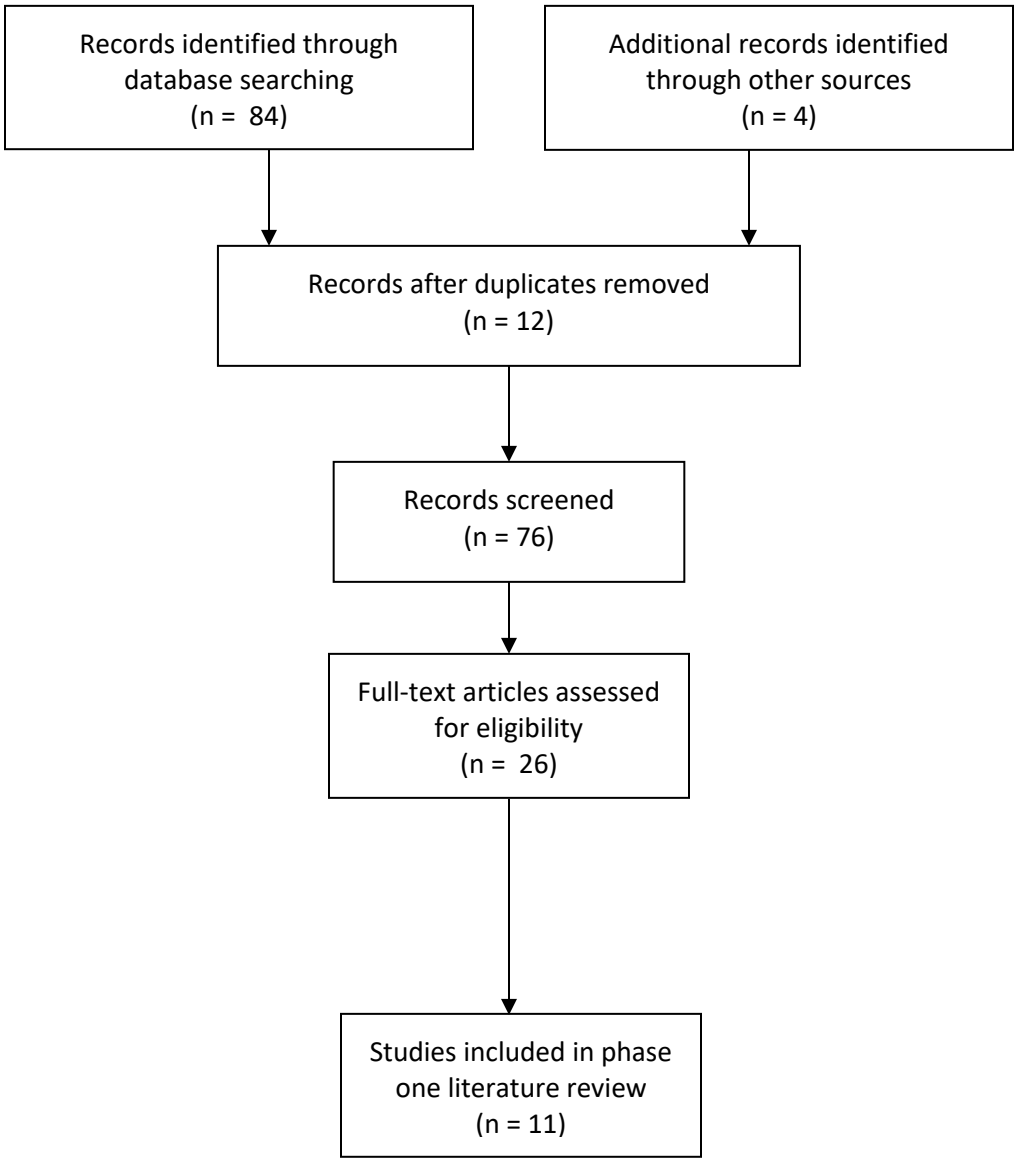


Table 2-2: Fall-related psychological assessment tools for community-dwelling older adults

Instrument	Measurement	Authors	Items	Item Response Scale	Strengths	Limitations	Psychometric Properties
Falls Efficacy Scale (FES)	Falls-efficacy	Tinetti et al. 1990	10	Confidence rating on 10 ADLs 0 = no confidence 10 = complete confidence Scores<70 = FOF	-Valid and reliable scale -Previously used most frequently in literature -Study populations have included both highly functioning adults and frail elderly -May predict future falls and decline in functional capacity (Cumming et al., 2000; Hill et al., 1996; Tinetti, 1996; Tinetti et al., 1994) -Sensitive to change in intervention studies (Cameron et al., 2000; Petrella, Payne, Myers, Overend & Chesworth, 2000; Tennstedt, Howland, Lachman, Peterson, Kasten & Jette, 1998)	-Only basic activities (NO outdoor activities) -Ceiling effect -Argued to be better suited for lower functioning, frail older adults in which this range of activities is appropriate (Lachman et al., 1998; Powell & Myers, 1995) -Fails to accurately capture the fall-related concerns of more active, higher functioning older adults who score at the higher ends of the self-efficacy continuum (Lusardi & Smith, 1997)	Internal consistency=0.90 Test-retest reliability: r=0.71 Content validity: expert panel Convergent validity demonstrated with other scales: -Physical Self-Efficacy Scale: r= -0.33 -Positive and Negative Affectivity Scale: r=0.13 -Construct validity demonstrated with high and low mobility (Scheffer et al., 2008): t=5.7, p<0.001 -Concurrent reliability with the ABC scale (Scheffer et al., 2008; Tinetti et al., 1990): r=0.84
Amended FES (amFES)	Falls-efficacy (among older adults participating in	Buchner et al. 1993	10	*Modified wording to FES; from “how confident” to “how concerned”	-Sensitive to change as evidenced by mean amFES scores that were significantly lower for a	-Argued that this tool measures FOF vs. falls-	ADL-subscale SAFFE r = -0.25 to -0.41 Social Activity Subscale SAFFE r = -0.17 to -0.30 Concurrent: ABC r = -0.65

Instrument	Measurement	Authors	Items	Item Response Scale	Strengths	Limitations	Psychometric Properties
	the Frailty and Injuries: Cooperative Studies of Intervention Techniques (FICSIT) trials			4-point Likert scale 1 = Not at all concerned 2 = somewhat concerned 3 = fairly concerned 4 = very concerned	Tai Chi group (vs. control group) after 8 and 12 months of training	efficacy due to the wording change (“how concerned”) (Jorstad et al., 2005) -Limited use in research	
Revised FES (rFES)	Balance confidence	Tinetti et al. 1994	10	“How confident do you feel in performing each activity without falling?” -relatively nonhazardous activities 0 = not at all confident 10 = completely confident	-Small range in Likert scale (0-10)	-Limited use in research -Few reports of psychometric properties from other researchers (Lachman et al., 1998) -Interview format	Internal consistency: 0.95 Test-retest coefficient ICC = 0.88 Convergent validity demonstrated with other scales: -Social activities (EPESE): r= 0.34 -Yale Physical Activity Survey: r= 0.49 - 10-item ADL-IADL scale r= 0.55 -SAFFE fear of falling -0.69 -SAFFE activity level 0.69 -SAFFE activity restriction -0.59 -SF-36 subscales r= 0.34-0.67
Activities Specific Balance Confidence Scale (ABC)	Balance confidence	Powell & Myers 1995	16	Scale of 0-100% 0% = no balance confidence 100% = complete balance confidence Scores>80 = high functioning/physically active	-Good test/retest reliability -Developed to address limitations of FES; includes broader range of functional activities; more sensitive in detecting loss of confidence for higher-functioning individuals -Canadian developed -Developed with the help of older adults	-Includes activities that individuals may not perform/ encounter daily -Interview format	Content validity: clinicians and outpatients >65 yrs Internal consistency: 0.96 Test-retest coefficient r= 0.92 Convergent validity demonstrated with other scales: -Physical Self-Efficacy Scale: r= 0.49 -Positive and Negative Affectivity Scale: r= 0.12 -Timed Up and Go test r= -0.92 r= -0.59 -Gait speed r=0.47 r=0.65 -Functional rating questionnaire r=0.49 -Pain Intensity ratings r= -0.35 -CES Depression Scale r= -0.33 -Self-report walking distance r=0.44 -amFES r= -0.65 -Physical component summary score r=0.49 -Maximum activity score r=0.57

Instrument	Measurement	Authors	Items	Item Response Scale	Strengths	Limitations	Psychometric Properties
							-Construct validity demonstrated with high and low mobility: t=9.34, p<0.001 -Concurrent reliability with the FES scale (Scheffer et al., 2008; Tinetti et al., 1990): r=0.84
Modified FES (mFES)	-Falls-efficacy	Hill et al., 1996	14	10-point visual analog scale 0 = not confident/not sure at all 5 = fairly confident/fairly sure 10 = completely confident/completely sure Higher scores = higher falls efficacy and lower FOF	-Exhibits less skew than original FES -Used in fall prevention programs -Recommended as a 'standard' psychological consequence of falling measure by ProFaNE consensus (Lamb et al., 2005) -Authors suggest the mFES to be useful in evaluating FOF among older adults with balance or mobility dysfunction	-Controversy between construct measurement: authors contend that it measures FOF but others have classify it as measuring falls efficacy (Jorstad et al., 2005) -Interview format	Not available
Survey of Activities and Fear of Falling in the Elderly (SAFFE)	-Fear of falling -Activity restriction	Lachman et al. 1998	22	For each activity: 1. Dichotomous yes/no 2. If you do the activity, are you worried that you might fall (0=not at all to 3=very worried)	-Adequate evidence as a valid scale -Weak reliability -more useful than the FES because it can differentiate between FOF that leads to activity restriction from FOF that accompanies activity restriction	-Broader range of activities (in comparison to ABC and FES) -"Too long and burdensome" (Lamb, Jorstad-Stein, Hauer & Becker, 2005)	Content validity: expert group Convergent validity demonstrated with other scales: -SAFFE fear of falling with rFES r = -0.76 -SAFFE activity level with rFES r=-0.76 -SAFFE activity restriction with rFES r = -0.59 -SF-36 subscales r =-0.27 to -0.55 -ABC 1.2 and 3 r=-0.24 to -0.33 -SF-12, ADL, Physical Performance r = 0.04 to -0.19 -Functional balance indicators r =-.0.13 to 0.03 Construct validity: 11 out of 22 items account for 98% of the variance of the total score <u>Internal consistency reliability:</u>

Instrument	Measurement	Authors	Items	Item Response Scale	Strengths	Limitations	Psychometric Properties
							Cronbach's alpha = 0.96 Adjusted item-to-item correlations range: 0.49-0.77
University of Illinois at Chicago Fear of Falling Measure (UIC FFM)	Fear of falling *expands of the work of Lusardi & Smith (1997) by using the Rasch analytic approach	Velozo & Peterson 2001	16	3-point Likert scale: 1 = very worried 2 = moderately worried/ a little worried 3 = not worried at all	-Items were developed entirely by older adults	-Limited use in research -Face-to-face interview format	Construct validity (using the Rasch model): 97.2% of the responses of the 97 people who received the measure were valid within 2 standard deviations of the expected response Pearson separation reliability [inter-rater]= 0.93. Pearson separation index was 3.56
Modified version of the Survey of Activities and Fear of Falling in the Elderly (mSAFFE)	-Fear of falling -Activity avoidance	Yardley & Smith 2002	17	*To determine whether they would never avoid, sometimes avoid or always avoid the activity because they are afraid of falling	-Improved discriminant validity in a higher-functioning sample of community-dwelling older adults -Less items (17 vs. 22) -Self-report format	-Limited use in research (Delbaere, Crombez, Vanderstraeten, Willems & Cambier, 2004) & developing authors	Convergent validity: -with FES: r =–0.76 Primary axis factor analysis on 11-item scale: One eigenvalue > 1; hence, one-factor solution accepted 11 out of 22 items were required to account for 98% variance in total scale score Internal consistency reliability: Cronbach's alpha= 0.91
Falls Efficacy Scale-International (FES-I)	-Fear of falling	Yardley et al. 2005	16	4-point Likert scale 1 = not at all concerned 2 = somewhat concerned 3 = fairly concerned 4 = very concerned	-Expansion of FES to evaluate the effect of FOF on social life (i.e. fear of social consequences of falling, such as embarrassment) that independently contributes to avoidance of activity (Yardley & Smith, 2002) -Structured interview or self-report		Content validity: expert group Internal consistency 0.96 Internal reliability: 0.96 Test-retest reliability (intraclass correlation coefficients ([ICC]): 0.96 Interitem correlations averaged 0.55 (range 0.29-0.79) Good internal reliability in community-dwelling older adults -Cronbach's alpha: Germany = 0.90, Netherlands = 0.96, United Kingdom = 0.97

Instrument	Measurement	Authors	Items	Item Response Scale	Strengths	Limitations	Psychometric Properties
Modified version of the Activities-specific Balance Confidence Scale	-Balance confidence -Fear of falling	Williams et al. 2005	16	21-point horizontal box scale (Jensen, Miller & Fisher, 1998) -a continuum with 21 numbers ranging from 0 -100 0 = no confidence 100 = complete confidence		-Limited use in research -Authors use 'low balance confidence' and 'FOF' inter-changeably -Argued that balance confidence is not its own construct	Not available
Geriatric Fear of Falling Measure (GFFM)	-Fear of falling *culturally relevant for community-dwelling older adults in Taiwan *also developed as an outcome measure to evaluate research interventions and as a quick screening tool for heatlh care professionals	Huang, 2006	41	Scoring: 1=never to 5=always 3 subscales: 1. Psychosomatic symptoms 2. Adopting an attitude of risk prevention 3. Modifying behaviour	-Adapted for use in Taiwan	-Developed and tested psychometric properties in Taiwan; generalizability is questioned for other countries	Concurrent validity: Pearson's *r* correlations with the FES were highly significant: $r = .29$, $p = .002$ (Huang, 2006) Construct validity: Factor loadings ranged from 0.47 to 0.85 in Study 1 and from 0.43 to 0.85 in Study 2 Internal consistency reliability: Study 1: Cronbach's alpha for entire tool = .88 Cronbach's alpha for the subscales: PS scale = .82, MB scale = .86, and RP scale = .76 Study 2: Cronbach's alpha for entire tool = .86 Cronbach's alpha for the subscales: PS scale = .79, MB scale = .83, and RP scale = .75 Inter-rater reliability: Spearman rank correlation between the two raters: PS scale = .94, MB scale = .89, and RP scale = .9; all $p < .001$ (Huang, 2006)

Table 2-3: Search strategy terms for phase two literature review

Database	Search terms
Ovid MEDLINE; Searched May 25th, 2018	1. accidental falls/ 2. falls.tw. 3. 1 or 2 4. ((old* or age* or elder* or senior*) adj5 (people or adult* or person*1)).tw. 5. Geriatrics/ 6. aged/ 7. 4 or 5 or 6 8. 3 and 7 9. fear/ 10. ((fear* or fright* or afraid*) adj5 fall*).tw. 11. "fear of falling".tw. 12. 9 or 10 or 11 13. 8 and 12 14. empirical research/ or grounded theory/ or qualitative research/ or hermeneutics 15. 7 and 12 and 14
CINAHL; Searched June 15th, 2018	1. (geriatrics or older adults or elderly) AND 2. (accidental falls or falling or falls or fall) AND 3. (community-dwelling or community dwelling 'living at home') AND 4. fear of falling in older adults AND 5. (fear of falling or fear of falls or balance confidence) AND 6. qualitative research 7. (experiences or perceptions or attitudes or views or feelings)

Figure 2-2: Search results flow chart for phase two literature review

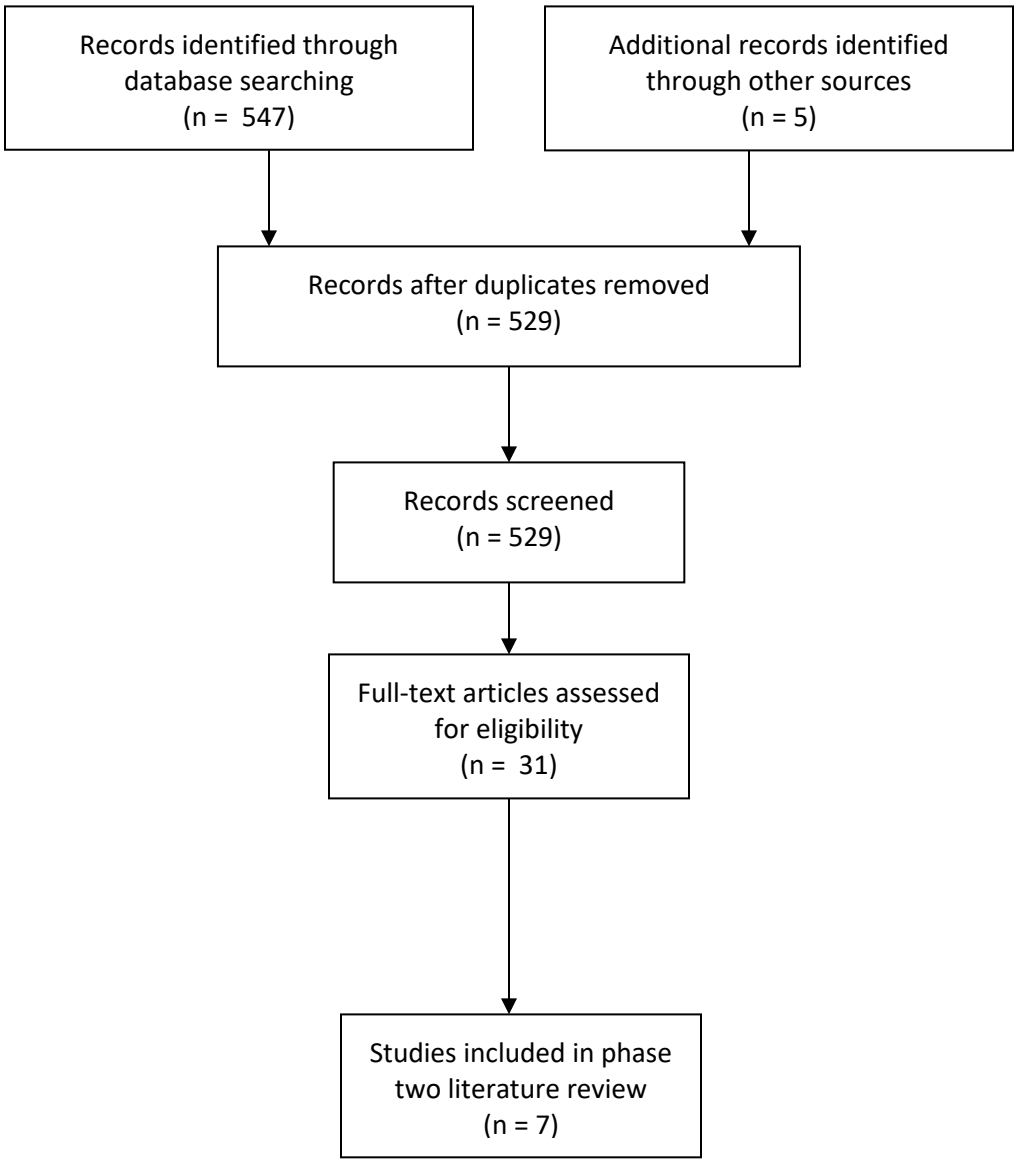


Table 2-4: Studies that explored fear of falling in community-dwelling older adults

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
Ward-Griffin, C., Hobson, S., Melles, P., Kloseck, M., Vandervoort, A., & Crilly, R. (2004). Falls and fear of falling among community-dwelling seniors: The dynamic tension between exercising precaution and striving for independence. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *23*(4), 307-318.	To explore the everyday experiences of community-dwelling elders, with particular attention to the elders' perceptions of safety, fear of falling, independence, and quality of life; also aimed to identify contextual factors that shaped the experiences of community-dwelling elders who had fallen and/or had a fear of falling.	London, Ontario, Canada; Purposive sample of community-dwelling elders: those who had fallen and feared falling, those who had not fallen but feared falling, and those who had fallen but did not fear falling. (n=9)	Interpretive phenomenological methodology; Individual semi-structured interviews.	Found that fear and confidence acted dialectically in the simultaneous shrinking and expansion of life spaces of community-dwelling seniors. **1. <u>Exercising precaution</u>** -external environment as a threatening place -previous fallers were particularly careful and used multiple strategies to prevent future falls -participants were inclined to limit their physical and social activities -participants used 5 major strategies to prevent injury: depending on help, resisting activities, eliminating hazards, selecting safe spaces, and assigning blame **2. <u>Striving for independence</u>** -self-confidence encouraged some participants to seek an active lifestyle -despite the risk of injury, some participants wanted to live good-quality lives -some elders expanded their life spaces using the following strategies: minimizing the impact of the fall, using assistive devices, resisting confinement, running the risk, and accessing resources	MMAT Qualitative 1. Yes 2. Yes 3. Can't tell 4. Can't tell Score: 50%
Tischler, L., & Hobson, S. (2005). Fear of falling: a qualitative study	To uncover why the participants experienced fear of falling and to discover which perceived consequences the	London, Ontario, Canada; Cherryhill Health Promotion and Information	Phenomenological methodology; Individual, semi-structured interviews.	**<u>Feared consequences of a fall:</u>** 1. Physical injury -concerns of the possible injuries they could sustain if they were to fall in the future	MMAT Qualitative 1. Yes 2. Yes

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
among community-dwelling older adults. *Physical & Occupational Therapy in Geriatrics*, *23*(4), 37-53.	participants feared the most. A secondary aim was to explore how these perceived consequences affected the participants' quality of life.	Centre; Inclusion criteria: adults 60 years and older, living in the community, English speaking, and experienced fear of falling. (n=7)		2. The feeling when falling -the negative feelings that the participants experienced when they fell 3. Becoming an invalid or burden -fear of not being able to take care of self and rely on others 4. Confined to a wheelchair or unable to walk -many participants feared the negative consequences of being restricted to a wheelchair instead of being independently mobile **<u>Quality of life and life satisfaction:</u>** 1. Quality of life and life satisfaction is good for my age -quality of life is good despite fear of falling 2. Quality of life and life satisfaction is poorer when I cannot participate in enjoyed activities -quality of life tended to be poorer when they were restricted by the fear of falling and also resulted in decreased life satisfaction **<u>Discussion of fears with others:</u>** -participants noted either being comfortable or uncomfortable with openly discussing their fear of falling **<u>Activities given up as a result of fear of falling:</u>** -participants identified activities that they previously enjoyed but have since given up due to their fear of falling	3. No 4. No Score: 50%

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
Lee, F., Mackenzie, L., & James, C. (2008). Perceptions of older people living in the community about their fear of falling. *Disability and rehabilitation*, *30*(23), 1803-1811.	To explore the perceptions of older people with a self-reported fear of falling about their fall experiences.	Newcastle, Australia; Participants were recruited from the Fall Proofing Program and identified themselves as being at risk for falls; selected for this study if they reported a high or moderate level of fear of falling on a fear of falling screening survey developed for the initial Fall Proofing Program. (n=9)	Phenomenological methodology; Individual, semi-structured interviews.	All participants had experienced a fall, which their fear of falling was closely related to. **<u>Activity levels</u>** -all participants were independent in ADLs and active in the community with a wide range of social contacts; overall, participants reported being satisfied with their levels of activity -activities had changed over time -all participants had begun to limit their activity levels **<u>View of the future</u>** -all participants noted a fear of losing independence, despite acknowledging their strong support systems **<u>Perceptions of fall experiences</u>** -all participants had experience with previous falls, ranging from within the year to 8 years ago -individuals noted decreased confidence, depression, activity restriction and social isolation **<u>Fall-avoidance behaviours</u>** -all participants made concessions on some level in order to avoid falls -participants made lifestyle changes in order to avoid falls: structural (i.e. environmental changes such as removing mats from the floor) or intuitive (e.g. “taking care” or “Be careful. Be careful and watch your footsteps”; being aware of their own safety and avoiding perceived hazards) **<u>Development of a fear of falls</u>** -all but 3 participants stated that their fear of falling developed after a bad fall;	MMAT Qualitative 1. Yes 2. Yes 3. Yes 4. No Score: 75%

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				the other 3 participants stated that they were always aware of falling and have always avoided falling from a young age -all participants described fear of falling as a negative emotion	
Jellesmark, A., Herling, S. F., Egerod, I., & Beyer, N. (2012). Fear of falling and changed functional ability following hip fracture among community-dwelling elderly people: an explanatory sequential mixed method study. *Disability and rehabilitation*, *34*(25), 2124-2131.	To assess self-reported FOF and functional ability among community-dwelling elderly people 3-6 months post hospital discharge after a hip fracture; To investigate the association between FOF and functional ability and to explore the lived experience of FOF and disability when recovering from a hip fracture.	Denmark; Inclusion criteria: hip fracture, aged 65 years and older, community-dwelling, ability to walk independently at discharge and MMSE score within normal range	Sequential explanatory mixed method design; In-person survey, followed by in-depth interviews; Quantitative and qualitative data were considered of equal importance	**<u>Quantitative phase (n=33):</u>** FES-I tool, mSAFFE tool, New Mobility Score (NMS) Description of sample: -majority lived alone -more than 2 chronic diseases -well educated (i.e. more than 15 years of schooling) -all hip fractures were falls related -75% of the participants had experienced more than one fall during the year prior to the fracture Activities most feared on FES-I tool: 1. Walking on a slippery surface 2. Walking on an uneven surface 3. Walking up or down a slope 4. Visiting a friend or family member 5. Participating in social activities The most avoided activities on mSAFFE tool: 1. Going outside when it is slippery 2. Using public transportation 3. Going for a walk NMS tool: -19 participants had reduced mobility **<u>Qualitative phase (n=4):</u>** Participants were chosen if they had a high degree of FOF, varying levels of	MMAT Mixed Methods 1. Yes 2. Yes 3. No MMAT Quantitative Descriptive 1. Yes 2. Yes 3. Yes 4. No MMAT Qualitative 1. Yes 2. Yes 3. No 4. No Score: 50%

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				functional ability and ability to verbalize the situation in detail 4 major themes: **1. <u>FOF</u>** -participants experienced FOF differently (2 were concerned while 2 felt incapacitated) -FOF was a novel experience for 3 participants (i.e. after hip fracture) -limited mobility was in part due to FOF but also pain, muscle weakness, impaired balance and lack of energy **2. <u>Keeping fit vs. Risk avoidance</u>** -some chose an active lifestyle, including certain risk OR became cautious and inactive -some driven by the desire to keep fit **3. <u>ADL</u>** -daily activities were more time and energy consuming because of FOF **4. <u>Isolation and dependency</u>** -all participants were more bound to their homes and dependent on others to go outside -saw friends and family less often and reluctant to make social visits because of environmental barriers (e.g., climbing stairs or getting in or out of cars) -isolation led to boredom and	

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				loneliness which led to frustration and helplessness	
Honaker, J. A., & Kretschmer, L. W. (2014). Impact of fear of falling for patients and caregivers: perceptions before and after participation in vestibular and balance rehabilitation therapy. *American journal of audiology*, *23*(1), 20-33.	Interviewed patients who had been evaluated for dizziness and balance complaints and a volunteer family member or spouse serving in a caregiver role for each patient to address the following two aims: (a) to evaluate the impact of fear of falling for the patient and family, and (b) to better understand the support needed to regain balance confidence and reduce falling fears for patients and family members after participating in a vestibular and balance rehabilitation therapy (VBRT) program.	United States; Recruited from a large Midwestern otolaryngology practice; inclusion criteria: 1) known history of balance problems, 2) indications on case history questions of either a history of falls and/or fear of falling. All participants indicated having FOF and experienced at least one falling event in the past year. (n=14)	Mixed-methods design; Phenomenological qualitative research approach in a purposeful sample of participants; All participants completed the Dynamic Gait Index (DGI), the ABC scale and semi-structured interviews for both participants after participation in VBRT and their family members or significant others (caregivers).	**FOF (ABC scale):** -a statistically significant reduction in balance confidence concerns was observed for patients after the VBRT program (z=-2.35, p=0.02; with a medium effect size of r=0.44) -Mean ABC scores improved to 77.93 after program -the sample of younger adults (</= 65 years) with a history of falls and FOF reported lower pre-VBRT ABC scores and there was no significant difference in balance confidence between the two age groups; these younger patients still reported slightly reduced balance confidence concerns after the VBRT program **Gait (DGI):** -Wilcoxon signed rank test revealed a statistically significant reduction in falling risk as measured by DGI after participation in VBRT (z=-3.19, p=0.001; large effect size of r=0.60) -Mean DGI scores improved to 18.07 after the VBRT program **Impact of FOF for patients (n=14):** -themes were applied to the common ICF (International classification of functioning, disability and health) domains (functioning and disability, personal and environmental factors) -separated into two groups: 1) younger patients (</= 65 years) and 2) older patients (>/= 65 years) -both groups experienced impaired gait and a balance system, and limited their participation in activities	MMAT Mixed Methods 4. Yes 5. Yes 6. No MMAT Quantitative Descriptive 5. Yes 6. Yes 7. Yes 8. Yes MMAT Qualitative 1. Yes 2. Yes 3. No 4. Yes Score: 50%

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				Younger patients (n=6) *Personal factors* -attitude of worthlessness (n=4) -depression and anxiety with FOF (n=3) -embarrassment with FOF (n=2) -aggravation toward medical condition (n=4) -sadness with FOF (n=3) -feeling of burden on family (n=3) *Environmental factors* -lack of family support (n=3) -problems with medical care (n=2) ***Older patients (n=8)*** *Personal factors* -attitude of general persistence in overcoming FOF (n=8) -lack of confidence (n=6) -attitude toward assistive devices (n=3) *Environmental factors* -family support (n=5) -overly protective family (n=3) Impact of FOF for family caregivers -separated into two groups: 1) caregivers of younger patients (</= 65 years) and 2) caregivers of older patients (>/= 65 years) -both groups noted that FOF greatly affects the overall family dynamics ***Caregivers of younger patients (n=6)*** *Personal factors* -frustration due to FOF (n=3) -disbelief in medical problem (n=2) -lack of confidence in family member's balance (n=5) *Environmental factors*	

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				-family member's motivation (n=4) -increased dependence (n=4) -problem with medical care (n=2) ***Caregivers of older patients (n=8)*** *Personal factors* -grave concern in loved one having fall with injury (n=4) -sadness due to family member's FOF (n=5) -lack of confidence in family member's balance (n=7) *Environmental factors* -family member's age (n=3) -family member's impaired gait, balance system (n=8) -increased dependence (n=8) -use of assistive devices (n=3) After VBRT program -all participants indicated an improvement in overall mobility and decrease in FOF after they completed the counseling and balance remediation program; began to participate in more activities on their own -majority of caregivers wish someone had engaged in conversations about falls before their loved one even experienced a fall or raised their awareness of fall risks	
Mahler, M., & Sarvimäki, A. (2012). Fear of falling from a daily life perspective; narratives from later life. *Scandinavian journal of caring*	To illuminate the experiences and meaning of fear of falling in a daily-life context for older adults.	Denmark; Participants were chosen from fall-registration sheets of a fall prevent -tion course; Inclusion criteria: >/= 80 years,	Interpretive phenomenology; qualitative narrative study	Five major themes emerged **1. <u>Disciplining daily life</u>** -with a strict daily regime and planned activities **2. <u>Living the vulnerable body</u>** -especially after fall experiences and feeling	MMAT Qualitative 1. Yes 2. Yes 3. Yes 4. No

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
sciences, *26*(1), 38-44.		more than 2 fall incidents in the last year; sought participants with variations in gender, socio-economic background and age over 80; number of participants was decided ad hoc. (n=5)		humiliated about the specific fall situations **3. <u>Dependence and independence at home</u>** -frustration with being dependent on others to complete ADLs **4. <u>The outside jungle</u>** -additional environmental risks **5. <u>The strength and the will of the ego</u>** -all participants lived with FOF but still attempted to participate in activities that added normalcy to their lives	Score: 75%
Chippendale, T., & Lee, C. D. (2018). Characteristics and fall experiences of older adults with and without fear of falling outdoors. *Aging & mental health*, 1-7.	Using a theoretical model that combines an ecological perspective and Bandura's theory of self-efficacy as a guide, we sought to compare experiences and characteristics of community-dwelling older adults with and without concern about falling outdoors.	New York City; Random numbers were generated for a combination of landlines and cell phones, and a web-based application with screening for business and non-working numbers was used to create the sample of random numbers; Inclusion criteria: 55 years and older, community-dwelling, English-speaking, able to ambulate outdoors independently with or without an assistive device and residing in	Mixed methods study; qualitative and quantitative data were analyzed separately and a mixed methods matrix was used to interpret and integrate findings; Outdoor Falls Questionnaire (OFQ) followed with semi-structured interview ("Please describe what happened during your most recent outdoor fall" with probes "Why do you think you fell" and "Did you injure yourself")	**<u>Quantitative results (OFQ):</u>** -non-significant difference in neighbourhood of residence between those with and without concern about falling outdoors -number of perceived risks and strategies used for fall prevention were different between groups (i.e. participants with a FOF would identify more hazards and use more strategies) -significant differences between groups with regards to gender and age (p=0.01) -participants with female gender, use of an assistive device, fall history and depressive symptoms were more common among those with concern about falling outdoors **<u>Qualitative themes and subthemes:</u>** -separated into concern (i.e. with FOF) and no concern *Concern (n=64)* Subthemes:	MMAT Mixed Methods 7. Yes 8. Yes 9. No MMAT Quantitative Descriptive 9. Yes 10. Yes 11. Yes 12. Yes MMAT Qualitative 1. No 2. No 3. Yes 4. No

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
		NYC. “Diverse sample” as compared to NYC population but white participants were slightly over-represented (n=120)		1. Context (with others, temporal, at work), 2. Cause -activity-related (e.g., opening/closing a door (8%), running, climbing stairs or a curb (18%)) -environmental conditions (e.g., wet, slippery or uneven surface) (38%) -behavioural only (e.g., rushing, not paying attention, choice of footwear) (2%) -combination of factors (e.g., environmental and behavioural) (38%) -intrinsic factors (e.g., loss of balance, brain ‘foggy’, knee buckled) (6%) -hit (by care, bike or cart) (3%) 3. Mechanics -fell forward/backward/ sideways (34%/18%/8%) -holding rail (4%) -use of injury prevention strategy during the fall to protect self or others (10%) 4. Sequela (injuries mild (30%)/moderate/severe (40%), medical attention hospital/clinic/primary care doctor (32%) -ambulance called (32%) -help to get up (14%) -behavioural response (e.g., avoid certain areas, use caution) (26%) -emotional response (6%) *No Concern (n=56)* Subthemes: 1. Context (with others	Score: 25%

Reference	Study Purpose	Sample	Methodology and Methods	Key Findings/ Themes	Quality Assessment
				(9%)/alone, temporal, at work (3%)), 2. Cause -activity-related (e.g., opening/closing a door (6%), running, climbing stairs or a curb (8.5%)) -environmental conditions (e.g., wet, slippery or uneven surface) (37%) -behavioural only (e.g., rushing, not paying attention, choice of footwear) (14%) -combination of factors (e.g., environmental and behavioural) (37%) 3. Mechanics (fell forward/backward/sideways) (31%/20%/11.4%) 4. Sequela (injuries mild (40%)/moderate/severe (25.7%), medical attention hospital/clinic/primary care (17%) -help to get up (5.7%) -behavioural response (e.g., avoid certain areas, use caution) (8.6%) -emotional response (3%)	

References

Barroso, J., Gollop, C. J., Sandelowski, M., Meynell, J., Pearce, P. F., & Collins, L. J. (2003). The challenges of searching for and retrieving qualitative studies. *Western journal of nursing research*, *25*(2), 153-178.

Bateni, H., & Maki, B. E. (2005). Assistive devices for balance and mobility: benefits, demands, and adverse consequences. *Archives of physical medicine and rehabilitation*, *86*(1), 134-145.

Buchner, D. M., Hornbrook, M. C., Kutner, N. G., Tinetti, M. E., Dry, M. G., Mulrow, C. D., ... & Rossiter, J. (1993). Development of the common data base for the FICSIT trials. *Journal of the American Geriatrics Society*, *41*(3), 297-308.

Cameron, I. D., Stafford, B., Cumming, R. G., Birks, C. A. R. O. L., Kurrle, S. E., Lockwood, K. E. R. I., ... & Salkeld, G. L. E. N. N. (2000). Hip protectors improve falls self-efficacy. *Age and Ageing*, *29*(1), 57-62.

Chippendale, T., & Lee, C. D. (2018). Characteristics and fall experiences of older adults with and without fear of falling outdoors. *Aging & mental health*, 1-7.

Cumming, R. G., Salkeld, G., Thomas, M., & Szonyi, G. (2000). Prospective study of the impact of fear of falling on activities of daily living, SF-36 scores, and nursing home admission. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *55*(5), M299-M305.

Delbaere, K., Crombez, G., Vanderstraeten, G., Willems, T., & Cambier, D. (2004). Fear-related avoidance of activities, falls and physical frailty. A prospective community-based cohort study. *Age and ageing*, *33*(4), 368-373.

Evans, D. (2002). Database searches for qualitative research. *Journal of the Medical Library Association*, *90*(3), 290.

Greenberg, S. A. (2012). Analysis of measurement tools of fear of falling for high-risk, community-dwelling older adults. Clinical Nursing Research, 21(1), 113-130.

Guba, E., & Lincoln, Y. (1994). Handbook of qualitative research. In N. Denzin & Y. Lincoln (Eds.), (pp. pp. 105–117). Thousand Oaks, CA: Sage Publications.

Hill, K. D., Schwarz, J. A., Kalogeropoulos, A. J., & Gibson, S. J. (1996). Fear of falling revisited. *Archives of physical medicine and rehabilitation*, *77*(10), 1025-1029.

Honaker, J. A., & Kretschmer, L. W. (2014). Impact of fear of falling for patients and caregivers: perceptions before and after participation in vestibular and balance rehabilitation

Huang, T. T. (2006). Geriatric fear of falling measure: Development and psychometric testing. *International Journal of Nursing Studies*, *43*(3), 357-365.

Jellesmark, A., Herling, S. F., Egerod, I., & Beyer, N. (2012). Fear of falling and changed functional ability following hip fracture among community-dwelling elderly people: an explanatory sequential mixed method study. *Disability and rehabilitation*, *34*(25), 2124-2131.

Jørstad, E. C., Hauer, K., Becker, C., Lamb, S. E., & ProFaNE Group. (2005). Measuring the psychological outcomes of falling: a systematic review. *Journal of the American geriatrics society*, *53*(3), 501-510.

Lachman, M. E., Howland, J., Tennstedt, S., Jette, A., Assmann, S., & Peterson, E. W. (1998). Fear of falling and activity restriction: the survey of activities and fear of falling in the elderly (SAFE). *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *53*(1), P43-P50.

Lamb, S. E., Jørstad-Stein, E. C., Hauer, K., Becker, C., & Prevention of Falls Network Europe and Outcomes Consensus Group. (2005). Development of a common outcome data set for fall injury prevention trials: the Prevention of Falls Network Europe consensus. *Journal of the American Geriatrics Society*, *53*(9), 1618-1622.

Lee, F., Mackenzie, L., & James, C. (2008). Perceptions of older people living in the

community about their fear of falling. *Disability and rehabilitation*, *30*(23), 1803-1811.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (Vol. 75). Sage.

Lusardi, M. M., & Smith Jr, E. V. (1997). Development of a scale to assess concern about falling and applications to treatment programs.

Mahler, M., & Sarvimäki, A. (2012). Fear of falling from a daily life perspective; narratives from later life. *Scandinavian journal of caring sciences*, *26*(1), 38-44.

Nunnally, J. C., Bernstein, I. H., & Berge, J. M. T. (1967). *Psychometric theory* (Vol. 226). New York: McGraw-hill.

Pace, R., Pluye, P., Bartlett, G., Macaulay, A.C., Salsberg, J., Jagosh. J., et al. (2012). Testing the reliability and efficiency of the pilot Mixed Methods Appraisal Tool (MMAT) for systematic mixed studies review. *International Journal of Nursing Studies, 49*(1):47-53.

Patrick, D. L., Guyatt, G. H., & Acquadro, C. (2011). Cochrane Patient Reported Outcomes Methods Group. Chapter 17: patient-reported outcomes. *Cochrane handbook for systematic reviews of interventions. Version*, *5*(0).

Payette, M. C., Belanger, C., Léveillé, V., & Grenier, S. (2016). Fall-related psychological concerns and anxiety among community-dwelling older adults: systematic review and meta-analysis. *PLoS one*, *11*(4), e0152848.

Petrella, R. J., Payne, M., Myers, A., Overend, T., & Chesworth, B. (2000). Physical function and fear of falling after hip fracture rehabilitation in the elderly. *American journal of physical medicine & rehabilitation*, *79*(2), 154-160.

Pluye, P., Gagnon, M. P., Griffiths, F., & Johnson-Lafleur, J. (2009). A scoring system for appraising mixed methods research, and concomitantly appraising qualitative, quantitative and mixed methods primary studies in mixed studies reviews. *International journal of nursing studies*, *46*(4), 529-546.

Pluye, P., Robert, E., Cargo, M., Bartlett, G., O'Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). Proposal: A mixed methods appraisal tool for systematic mixed studies reviews. Retrieved on September 11, 2018 from http://mixedmethodsappraisaltoolpublic.pbworks.com. Archived by WebCite® at http://www.webcitation.org/5tTRTc9yJ

Powell, L. E., & Myers, A. M. (1995). The activities-specific balance confidence (ABC) scale. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *50*(1), M28-M34.

Souto, Q.R., Khanassov, V., Pluye, P., Hong, Q.N., Bush, P., & Vedel, I. (June 28, 2014). *Systematic Mixed Studies Reviews: Reliability Testing of the Mixed Methods Appraisal Tool*. Mixed Methods International Research Association Conference (MMIRA), Boston, USA.

Squires, J. E., Estabrooks, C. A., O'Rourke, H. M., Gustavsson, P., Newburn-Cook, C. V., & Wallin, L. (2011). A systematic review of the psychometric properties of self-report research utilization measures used in healthcare. *Implementation Science*, *6*(1), 83.

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC medical research methodology*, *8*(1), 45.

Tinetti, M. E., Richman, D., & Powell, L. (1990). Falls efficacy as a measure of fear of falling. *Journal of gerontology*, *45*(6), P239-P243.

Tinetti, M. E., De Leon, C. F. M., Doucette, J. T., & Baker, D. I. (1994). Fear of falling and fall-related efficacy in relationship to functioning among community-living elders. *Journal of gerontology*, *49*(3), M140-M147.

Tischler, L., & Hobson, S. (2005). Fear of falling: a qualitative study among community-dwelling older adults. *Physical & Occupational Therapy in Geriatrics*, *23*(4), 37-53.

Velozo, C. A., & Peterson, E. W. (2001). Developing meaningful fear of falling measures for

community dwelling elderly. *American journal of physical medicine & rehabilitation*, *80*(9), 662-673.

Ward-Griffin, C., Hobson, S., Melles, P., Kloseck, M., Vandervoort, A., & Crilly, R. (2004). Falls and fear of falling among community-dwelling seniors: The dynamic tension between exercising precaution and striving for independence. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *23*(4), 307-318.

Yardley, L., Beyer, N., Hauer, K., Kempen, G., Piot-Ziegler, C., & Todd, C. (2005). Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and ageing*, *34*(6), 614-619.

Yardley, L., & Smith, H. (2002). A prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older people. *The Gerontologist*, *42*(1), 17-23.

Chapter Three

Methods

Methods

This chapter provides the details and rationales for the study conducted in this thesis, including: the guiding paradigmatic stance, study design, research questions, setting, sample and data measures, data collection and analysis.

Mixed methods research

In mixed methods research, quantitative and qualitative data are collected sequentially or concurrently in a single study (Creswell, Plano Clark, Gutmass & Hanson, 2003; Johnson & Onwuegbuzie, 2004). Conducting mixed methods research allows the researcher to mix or combine aspects of each type of data collection to suit the specific research aims of a study (Johnson & Onwuegbuzie, 2004). This may involve different strategies of inquiry, including deduction (i.e. testing of theories), induction (i.e. exploration of phenomena) and abduction (i.e. understanding results by uncovering and focusing on the most credible outcomes) (Johnson & Onwuegbuzie, 2004). There are five theoretically based purposes for mixed methods research, including: a) triangulation (i.e. seeks to combine and validate results found from the different methods) b) complementarity (i.e. clarifies and enhances the results from one method, with the results from the other method), c) development (i.e. uses the results from one method to develop and/or informs the other method), d) initiation (seeks to discover new perspectives and/or contradictions that may reframe the research question), and e) expansion (to employ different methods for each study component in order to expand the range of inquiry) (Greene, Caracelli & Graham, 1989).

Although there are many debates about the use of quantitative and qualitative together in a single study, the researcher contends with Johnson & Onwuegbuzie (2004) and their belief that “today’s research world is becoming increasingly interdisciplinary, complex, and dynamic” (p. 15).

Paradigmatic Stance

There continues to be a debate surrounding which paradigm or worldview fits best with mixed methods research. Most researchers associate mixed methods with a pragmatic approach, in which the dichotomy of post-positivism and constructivism is abandoned and the primary importance is on the research question and not the worldview that underlies the method (Creswell & Plano Clark, 2011). Although I do believe in the pragmatic approach to research, which adopts a pluralistic stance of gathering different forms of data to best answer the research questions; I also contend with Creswell & Plano Clark (2011) in their stance that more than one worldview may exist in a mixed methods study. Particularly with respect to this study, which used a sequential design, I shifted from a post-positivist worldview in the first phase (i.e. quantitative phase) to a constructivist worldview in the second phase (i.e. qualitative phase). I used a post-positivist stance to guide the development of my research questions in the first phase, by using a validated assessment tool to measure fear of falling levels in older community-dwelling adults after attending a fall prevention clinic. Subsequently, I sought to gain a better understanding of these fear of falling levels through a constructivist approach by using semi-structured interviews. In other words, I used a deductive approach in the first phase and an inductive approach in the second phase to construct broad patterns and meanings of fear of falling.

Overall Study Design

An explanatory sequential design was used in this mixed methods study. A maximum variation sampling approach was utilized, in which the quantitative data was initially collected to identify a sample of participants for the qualitative phase (Creswell & Plano Clark 2011). Emphasis was placed on the qualitative data, which elaborated on the participants' perspectives on the concept of fear of falling. The first phase of this study used the 'Falls-Efficacy Scale-International' tool (Yardley et al., 2005) to gather fear of falling levels in a convenience sample of community-dwelling older adults after

attending a fall prevention clinic. The researcher then conducted semi-structured interviews with a purposive sample of the community-dwelling older adults that attended the fall prevention clinic.

Rationale for Study Design

This study adds to the paucity of qualitative literature on fear of falling in community-dwelling older adults, and elaborates on the inherently subjective perspective of this psychosocial concept. In the first (quantitative) phase, a validated questionnaire ('Falls Efficacy Scale-International' tool) was used to assess fear of falling levels in a convenience sample of community-dwelling older adults after attending a fall prevention clinic. Using this questionnaire not only assessed fear of falling prevalence, but also allowed the researcher to purposefully select participants for the second (qualitative) phase based on a comparison between their fear of falling levels before and after attending the fall prevention clinic. This allowed the researcher to choose participants based on whether their fear of falling levels increased, remained the same or decreased after attending the fall prevention clinic. The second phase, explored the concept of fear of falling in a sample of individuals using a maximum variation sampling technique, to gain a better understanding of each participant's unique experience and perspective. The aim of the qualitative phase was to elaborate on specific reasons around why and how participants' fear of falling levels changed or remained the same. For instance, in participants whose fear of falling levels increased after attending the fall prevention clinic (according to the 'Falls Efficacy Scale-International' tool), semi-structured interviews were conducted to explore if these individuals exhibited maladaptive behaviours due to fear of falling (e.g., social isolation, avoidance of activities, etc.).

Setting

The Champlain-Falls Assessment & Streamlined Treatment (C-FAST) clinic was initiated in October of 2015 within The Geriatric Medicine Ambulatory Services and Day

Hospital of The Ottawa Hospital (Mackenzie, 2016). This large, tertiary care hospital is located within the Champlain Local Health Integrated Network (LHIN), which serves a rural- and urban-based population of approximately 1.3 million (Canadian National Household Survey, 2011). This clinic is offered twice a week at the Geriatric Medicine Ambulatory Services and Day Hospital site, with an intake of four patients per week.

The clinic provides an individualized and comprehensive three-hour falls risk assessment, using a multidisciplinary care team composed of an advanced practice nurse (APN), a physiotherapist (PT), a geriatrician and a pharmacist (Mackenzie, 2016). As part of this clinic, the team assessed postural hypotension, patient medication(s), patient pain levels as well as patient gait, balance, mobility and muscle strength (Mackenzie, 2016). Once the assessment is completed, the most appropriate evidence-based recommendations are provided (e.g., non-pharmacologic management for pain, environmental modifications, prescribing or de-prescribing of medication(s), etc.), alongside referrals to other community falls risk reduction programs if necessary (e.g., Better Strength Better Balance Exercise Program offered through Ottawa Public Health, home occupational therapist assessment through Champlain LHIN Home and Community Care, etc.) (Mackenzie, 2016). The clinical pathway for this fall prevention clinic can be found in Appendix B (p. 152). The overall goal of the fall prevention clinic is to reduce the incidence of falls in this targeted population (Mackenzie, 2016).

Phase One: Quantitative

Research Question

1. Do fear of falling levels in older community-dwelling adults differ after attending a fall prevention clinic?

Sample

Convenience sampling was used to select individuals to participate in this study. Participants were all community-dwelling older adults who met the inclusion criteria

established at the fall prevention clinic, including: 1) aged 65 years and older, 2) first language being either English or French, 3) being cognitively intact, 4) being identified as having balance concerns and/or experienced an actual or near fall (A “near fall” being defined as an event in which an individual feels a fall is imminent but avoids it by taking compensatory action (e.g., grabbing a nearby wall or piece of furniture) (*Medical Dictionary*, 2009), and 5) having received a score greater or equal to 4 on the “Staying Independent Checklist” (Mackenzie, 2016). The “Staying Independent Checklist” is a self-report questionnaire that consists of 12 questions to assess independent predictors of falls in older adults (e.g., fear of falling, gait/balance issues, muscle weakness and depression) (Rubenstein, Vivrette, Harker, Stevens & Kramer, 2011).

There are no previous studies that have examined fear of falling levels before and after attending a fall prevention clinic using the ‘Falls Efficacy Scale-International’ tool. Therefore the effect size required to yield a statistically significant difference in ‘Falls Efficacy Scale-International’ scale scores is unknown. However, in order to conduct paired t-tests, the researchers recruited 32 participants (Hulley, Cummings, Browner, Grady & Newman, 2013).

Recruitment

A member of the fall prevention clinic asked permission for the researcher to make contact with the participant in a scheduled follow-up telephone call, approximately 8-weeks after the participant’s visit to the fall prevention clinic. If permission was granted, the researcher (DCY) was given the individual’s phone number and chart access number through a secure server at the respective hospital. At the beginning of the phone call, participants were informed of the researcher’s background and professional affiliation, and were informed of the overall objectives, risks and benefits of the study. At the end of the phone call, participants were also asked whether they could be contacted again for a follow-up interview during the second phase of the study.

Informed consent was obtained in accordance to the hospital's Research Ethics Board (see Appendix G for informed consent form, p. 158).

Data Measure

After researching assessment tools for assessing fall-related psychological concerns in community-dwelling older adults (see Table 2-2, p. 47), the use of either the 'Activity Balance and Confidence' or 'Falls Efficacy Scale-International' assessment tools was deliberated. The 'Activity Balance and Confidence' scale was developed to measure "balance confidence" which is heavily focused on physiotherapy assessments and exercise interventions used in falls risk reduction interventions. In comparison, the 'Falls Efficacy Scale-International' tool measures "fear of falling" and the social consequences of falling such as fall-related maladaptive behaviours (e.g., activity avoidance). Although the 'Activity Balance and Confidence' scale has good psychometric properties and was developed within a Canadian community, this assessment tool was intended for higher-functioning individuals and includes specific questions about activities that are not typically encountered every day (e.g., "get into or out of a car", "step onto or off an escalator while you are holding onto a railing", "walk outside on icy sidewalks," etc.). Moreover, the 'Activity Balance and Confidence' scale is criticized for its complicated rating scale (Greenberg, 2011).

The 'Falls Efficacy Scale-International' assessment tool was chosen for several reasons. Firstly, and most importantly, it aligned with the theoretical framework and its three components: emotion/cognitive, behavioural and physiological. In addition, it was already implemented in the fall prevention clinic and allowed us to collect retrospective data from the initial clinic visit when the tool was administered. Moreover, this tool was developed and validated in a similar patient population as the participants in this study. During the development and validation phase of this tools design, the psychometric properties of the 'Falls Efficacy Scale-International' assessment tool were initially

evaluated in a sample of 704 individuals aged 60 years and older (Yardley et al., 2005). A variety of methods were used in the recruitment process to ensure that the sample exhibited a wide array of socioeconomic backgrounds, a wide array of physical function, and a wide variety of medical conditions (Yardley et al., 2005). In addition, individuals who were at greater risk of falling and fall-related injuries (i.e. individuals who reported fall risk factors such as taking psychoactive medications, dizziness, chronic illness, etc.) were oversampled (Yardley et al., 2005). In this initial validation study, the 'Falls Efficacy Scale-International' demonstrated excellent internal reliability (0.96), test-retest reliability (0.96) and inter-item correlations ranged from 0.29 to 0.79 (average 0.55) (Yardley et al., 2005).

The 'Falls Efficacy Scale-International' may be self-administered or administered in a structured interview format. Individuals are asked to rate their concerns about the possibility of falling when performing 16 activities on a four-point Likert scale (1=not at all concerned; 2= somewhat concerned; 3=fairly concerned; 4=very concerned), with total scores ranging from 16 to 64. Delbaere et al. (2010) defined a cut-point to differentiate between low and high fear of falling, with scores between 23 and 64 indicating a greater fear or concern of falling. Permission to use this questionnaire was obtained from the Prevention of Falls Network Europe (ProFaNE) committee that developed the questionnaire (C. Todd, telephone communication, January 15, 2017).

Data Collection

The 'Falls Efficacy Scale-International' tool was administered during a telephone call between 7 to 16-weeks after participants attended the fall prevention clinic. According to the developers of the 'Falls Efficacy Scale-International' tool, there are no recommendations for when researchers should administer the 'Falls Efficacy Scale-International' tool again for follow-up (C. Todd, telephone communication, January 15, 2017), and it may be administered as needed or on a yearly basis (Greenberg, 2011).

Demographic characteristics were also collected during this telephone call, including: marital status, living situation and education level.

A retrospective chart audit was completed to determine each participant's fear of falling level from the baseline 'Falls Efficacy Scale-International' tool, which was completed during the initial fall prevention clinic visit (see Appendix L for the before and after FES-I scores, p. 183). Other patient characteristics were collected from the participant's chart, including: age, sex, fall history, living environment, prescribed medications, and use of mobility aids. A random selection of 10 patient charts was audited by a second reviewer (LNP), in order to detect any inaccuracies in the previously collected data. The second reviewer was already familiar with the online charting system at The Ottawa Hospital, therefore the researcher (DCY) simply provided a list of the data to be collected and the coinciding documents to find this information in each chart. Once the second reviewer independently audited these charts, the coded data were compared between both researchers. There were 130 items collected by the second reviewer, and 97% of the items were coded correctly in the initial data set. The incorrectly coded data (3%) were corrected and double checked by the second researcher. The remaining data was reviewed again but no further inaccuracies were found.

Data Analysis

The before and after fear of falling scores (i.e. obtained from the 'Falls Efficacy Scale-International' tool) were compared using paired t-tests. Descriptive statistics were also analyzed for the included participants (n=32). Further details can be found in Chapter 4.

Phase Two: Qualitative

Research Questions

1. What improved or hindered fear of falling levels in older community-dwelling adults after attending a fall prevention clinic?

2. How do older community-dwelling adults manage their fear of falling levels after attending a fall prevention clinic?

Sample

A sample of participants was selected from the initial convenience sample at the fall prevention clinic (Morse, 1991). These participants were selected based on a 'maximum variation sampling' approach, which sought to ensure a large variation between groups in order to better understand a wide array of experiences (Patton, 1990; Creswell & Plano Clark, 2011). After comparing the initial and follow-up fear of falling levels from the FES-I tool in the first phase of the study, individuals were chosen based on whether their fear of falling level increased, remained the same or, decreased.

Recruitment

Only the participants that agreed to be contacted during the initial telephone call (phase one) were included on a potential contact list for this phase of the study. A phase two informed consent form was completed in accordance to the hospital's Research Ethics Board (see Appendix J for informed consent form, p. 169).

Data Measure

A semi-structured interview guide (see Appendix K, p. 179) was developed for the qualitative phase of the study, with the ultimate goal of understanding older adults' perspectives on fear of falling after attending a fall prevention clinic. This interview guide was based on the theoretical framework used in the development of this thesis (The Theory of Emotional Processing), which posits that a fear image is a cognitive structure that contains information about a *stimulus*, *response* and *meaning* (Lang, 1977, 1984). A fear image may act as a program to avoid or escape from danger (Lang, 1977, 1984). In this study, the fear image is considered the overall fear of falling level and the *stimulus* could be various activities of daily living (e.g., taking a shower or going to the store). For

instance, if a participant has a high fear of falling level while taking a shower then their *response* may be to avoid that activity. Their *meaning* of this activity avoidance is their viewpoint of this overall fear image. Based on this theory, the interview questions were designed to potentially determine if participants exhibited successful or unsuccessful emotional processing, and to decipher whether participants exhibited maladaptive, normal, or adaptive behaviours due to their fear image (i.e. high or low fear of falling levels). Questions were also adapted from Huang's (2005) grounded theory study that explored the process of managing fear of falling in community-dwelling Taiwanese older adults. The initial context questions asked about the fall prevention clinic, and the main questions focused on the concept of fear of falling. Specifically, participants were asked about their concern of falling while completing every day activities, and how they managed these concerns.

Data Collection

Participants were selected based on a maximum variation sampling strategy and were asked to participate in a 15 to 20-minute telephone interview. All telephone calls took place in a quiet and private room, and placed on the 'speakerphone' setting in order to be audio-recorded. Each audio recording was transcribed verbatim immediately after the interview was conducted, and all transcripts were de-identified to ensure patient confidentiality. These participants were not provided with the transcripts for comment or asked to provide feedback on the findings.

Rigor

Aspects of Lincoln & Guba's (1985; Guba & Lincoln, 1994) five criteria of rigor (credibility, dependability, confirmability, transferability, and authenticity) were adhered to in order to ensure the trustworthiness of the qualitative phase of the study. *Credibility* was achieved by maintaining privacy and confidentiality with a master coding list, and debriefing regularly about the analysis amongst research team members to address

emergent findings (Lincoln & Guba, 1985; Polit & Beck, 2012). *Dependability* of the data was achieved by documenting findings at critical time points throughout the study, and by maintaining a comprehensive and recording of information by using an audit trail technique (Lincoln & Guba, 1985). The researcher (DCY) kept a journal throughout the entire study in order to write any personal thoughts and information related to the development and analysis. *Confirmability* or objectivity of the data was attained by using a maximum variation sampling approach, remaining close to participant's verbatim transcripts, ensuring data redundancy, and writing reflective notes/field notes. *Transferability* of the data was ensured by providing sufficient descriptive data regarding the sample population and setting, and by reporting in-depth descriptions of findings. Lastly, *authenticity* of the data was achieved by including participant quotes verbatim from the interviews.

Data Analysis

The thematic analysis process developed by Braun & Clark (2006) was used, and included the following six phases: 1) familiarization with the data, 2) generating initial codes (see Appendix M for the code book, p. 184), 3) searching for themes, 4) reviewing themes, 5) defining and naming themes and 6) producing the report. Details of this process can be found in Chapter 4 (manuscript, p. 85) and Appendix N (p. 185).

References

Canadian National Household Survey (NHS): 2011 Census (2011). Retrieved March 12, 2017 from http://www.champlainlhin.on.ca/AboutUs/Intro.aspx

Creswell, J. W., & Clark, V. L. P. (2011). Designing and conducting mixed methods research.

Delbaere, K., Close, J. C., Mikolaizak, A. S., Sachdev, P. S., Brodaty, H., & Lord, S. R. (2010). The falls efficacy scale international (FES-I). A comprehensive longitudinal validation study. *Age and ageing*, *39*(2), 210-216.

Greenberg, S. A. (2011). Assessment of fear of falling in older adults: the falls efficacy scale-international (FES-I). *Disability and Rehabilitation*, *29*(2), 155-162.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, *11*(3), 255-274.

Guba, E., & Lincoln, Y. (1994). Handbook of qualitative research. In N. Denzin & Y. Lincoln (Eds.), (pp. pp. 105–117). Thousand Oaks, CA: Sage Publications.

Houghton, S., Birks, V., Whitehead, C. H., & Crotty, M. (2004). Experience of a falls and injuries risk assessment clinic. *Australian Health Review*, *28*(3), 374.

Huang, T. T. (2005). Managing fear of falling: Taiwanese elders' perspective. *International journal of nursing studies*, *42*(7), 743-750.

Huang, T. T. (2006). Geriatric fear of falling measure: Development and psychometric testing. *International Journal of Nursing Studies*, *43*(3), 357-365.

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2013). *Designing clinical research*. Lippincott Williams & Wilkins.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come.*Educational researcher*, *33*(7), 14-26.

Jørstad, E. C., Hauer, K., Becker, C., & Lamb, S. E. (2005). Measuring the psychological outcomes of falling: a systematic review. *Journal of the American Geriatrics Society*, *53*(3), 501-510.

Kempen, G. I., Todd, C. J., Van Haastregt, J. C., Rixt Zijlstra, G. A., Beyer, N., Freiberger, E., ... & Yardley, L. (2007). Cross-cultural validation of the Falls Efficacy Scale International (FES-I) in older people: results from Germany, the Netherlands and the UK were satisfactory. *Disability and rehabilitation*, *29*(2), 155-162.

Lachman, M. E., Howland, J., Tennstedt, S., Jette, A., Assmann, S., & Peterson, E. W. (1998). Fear of falling and activity restriction: the survey of activities and fear of falling in the elderly (SAFE). *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *53*(1), P43-P50.

Lamb, S. E., Jørstad-Stein, E. C., Hauer, K., Becker, C., & Prevention of Falls Network Europe and Outcomes Consensus Group. (2005). Development of a common outcome data set for fall injury prevention trials: the Prevention of Falls Network Europe consensus. *Journal of the American Geriatrics Society*, *53*(9), 1618-1622.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. *Behavior Therapy*, *8*(5), 862-886.

Lang, P. J. (1984). Cognition in emotion: Concept and action. *Emotions, cognition, and behavior*, 192-226.

Lincoln, Y.S. & Guba, E. G. (1985). Naturalistic inquiry. Beverly Hills, Calif.: Sage Publications.

Lusardi, M. M., & Smith Jr, E. V. (1997). Development of a scale to assess concern about falling and applications to treatment programs.

Mackenzie, T. (2016). *Evaluation and Planning Report: The Falls Assessment and*

Streamlined Treatment (FAST) Clinic. The Regional Geriatric Program of Eastern Ontario, Ottawa.

Morse,J.M. (1991). Strategies for sampling. In *Qualitative nursing research: A contemporary dialogue,* Newbury Park, CA, Sage, 127-145.

Near fall. (n.d.) *Medical Dictionary*. (2009). Retrieved April 5, 2017 from http://medical-dicitonary.thefreedictionary.com/near+fall

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. SAGE Publications, inc.

Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins.

Powell, L. E., & Myers, A. M. (1995). The activities-specific balance confidence (ABC) scale. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *50*(1), M28-M34.

ProFaNE: Prevention of falls network Europe. Retrieved from https://sites.manchester.ac.uk/fes-i/

Ribeiro, O., & Santos, Â. R. (2015). Psychological correlates of fear of falling in the elderly. *Educational gerontology*, *41*(1), 69-78.

Rubenstein, L. Z., Vivrette, R., Harker, J. O., Stevens, J. A., & Kramer, B. J. (2011). Validating an evidence-based, self-rated fall risk questionnaire (FRQ) for older adults. *Journal of safety research*, *42*(6), 493-499.

Scheffer, A. C., Schuurmans, M. J., Van Dijk, N., Van Der Hooft, T., & De Rooij, S. E. (2008). Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age and ageing*, *37*(1), 19-24.

Velozo, C. A., & Peterson, E. W. (2001). Developing meaningful fear of falling measures for community dwelling elderly. *American journal of physical medicine &*

rehabilitation, *80*(9), 662-673.

Yardley, L., & Smith, H. (2002). A prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older people. *The Gerontologist*, *42*(1), 17-23.

Yardley, L., Beyer, N., Hauer, K., Kempen, G., Piot-Ziegler, C., & Todd, C. (2005). Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and ageing*, *34*(6), 614-6

Chapter Four

Understanding fear of falling levels in older adults: A mixed methods study

This chapter is an unpublished manuscript formatted for submission to the Journal of Aging and Health.

Authors

Danielle Cho-Young, RN, BScN
School of Nursing, Faculty of Health Sciences, University of Ottawa

Janet Squires, RN, PhD
Associate Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa
Scientist, Clinical Epidemiology Program, Ottawa Hospital Research Institute

Taryn Mackenzie, RN, MN, ENC(C)
Advanced Practice Nurse, Geriatric Medicine Ambulatory Services & Day Hospital, The Ottawa Hospital

Chantal Backman, RN, MHA, PhD
Assistant Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa
Affiliate Investigator, Clinical Epidemiology Program, Ottawa Hospital Research Institute
Affiliate Investigator, Bruyère Research Institute

Abstract

Objective: To gain a better understanding of fear of falling levels in community-dwelling older adults before and after attending a fall prevention clinic. **Methods:** An explanatory sequential mixed methods design was used. The Falls Efficacy Scale-International (FES-I) tool assessed fear of falling levels in community-dwelling adults before and after attending a fall prevention clinic in Ottawa, Canada (n=32). Semi-structured interviews were then conducted in a sample of the initial group and explored the fear of falling phenomenon (n=12). **Results:** There was no statistically significant results between the before and after FES-I scores (n=32). Three themes emerged from the qualitative phase: 1. Concerns about falling, 2. Decreased concerns about falling and 3. An increased self-awareness of fall risks. **Discussion:** We discuss the use of the FES-I tool before and after the fall prevention clinic, and further qualitative exploration of fear of falling.

Keywords

accidental falls; fear; geriatrics; mixed methods; qualitative analysis

Background

The incidence of falls and fall-related injuries has become a significant issue due to our rapidly aging population and the economic burden on health care systems (WHO, 2007). In Canada, approximately one quarter of the entire population will be over the age of 65 by the year 2031 (Public Health Agency of Canada, 2014). Between 20% and 30% of these community-dwelling older adults will experience a fall each year (Public Health Agency of Canada, 2014), and it is estimated that 8 billion Canadian health care dollars will be spent on fall-related injuries by the year 2031 (*The Economic Burden of Injury in Canada*, 2009). These falls occur due to a complex interaction between intrinsic (e.g., visual deficits, gait and balance issues, etc.) and extrinsic (e.g., environmental hazards such as slippery floors or ice outside) factors (WHO, 2007).

Fear of falling is now recognized as an independent falls risk factor, and integral to the development of falls risk reduction strategies due to its prevalence in older adults (Vieira, Palmer & Chaves, 2016; Scheffer, Schuurmans, Van Dijk, Van Der Hooft & De Rooij, 2008; Denkinger, Lukas, Nikolaus & Hauer, 2015). It is commonly described as the “lasting concern about falling that can lead an individual to avoid activities that he/she remains capable of performing” (Tinetti et al., 1990, p. 239). A systematic review identified 28 studies and synthesized the measurement instruments, prevalence, risk factors and consequences of fear of falling in community-dwelling older adults (Scheffer et al., 2008). This review included cross-sectional and prospective cohort studies, with sample sizes of 18 to 2,497 older adults aged 65 years and older who were cognitively intact and independently living in the community or community-dwelling with home care services (Scheffer et al., 2008). Fear of falling was reported in 21 out of the 28 studies and, depending on the study, 21% to 85% of community-dwelling older adults exhibited this fear including those who had not experienced a fall (Scheffer et al., 2008). The authors of this review note that this large range in fear of falling prevalence was due to

the variation in fear of falling measurement tools and study characteristics (e.g., sample size, study population, study design, etc.) (Scheffer et al., 2008). This review also showed that high levels of fear of falling may increase the rate of falls, increase the risk of falling, increase the degree of activity restriction, increase the degree of social isolation and decrease the quality of life in community-dwelling older adults (Scheffer et al., 2008).

The majority of current research focuses on the measurement (Greenberg, 2012), incidence and prevalence (Scheffer et al., 2008), interventions (Kumar, Carpenter, Morris, Illiffe & Kendrick, 2014) and factors (Payette et al., 2016; Ayoubi, Launay, Annwiler & Beauchet, 2015; Denkinger et al., 2015) associated with fear of falling in older community-dwelling adults. Few authors have used a qualitative approach to explore and better understand this psychosocial concept (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Lee, Mackenzie & James, 2008; Tischler & Hobson, 2005), and even fewer have incorporated both quantitative and qualitative aspects in their research on fear of falling (Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Chippendale & Lee, 2018). Therefore, the purpose of this study was to gain a better understanding of fear of falling levels in community-dwelling older adults after attending a fall prevention clinic. Specific questions included:

1) Do fear of falling levels in older community-dwelling adults differ after attending a fall prevention clinic? (Phase 1)
2) What are the factors that improved or hindered fear of falling levels in older community-dwelling adults after attending a fall prevention clinic? (Phase 2)
3) How do older community-dwelling adults manage their fear of falling levels after attending a fall prevention clinic? (Phase 2)

Theoretical Framework

The Theory of Emotional Processing (Lang, 1977, 1984) was used to guide this research, and chosen based on recent evidence that demonstrates a significant association between anxiety and fear of falling (Payette, Belanger, Léveillé, & Grenier, 2016). The authors of this theory posit that individuals may exhibit normal and/or pathological fear structures based on certain stimuli. Both normal and pathological fear structures may be activated by a dangerous situation, but the responses are different (Foa & Kozak, 1986). An individual with a normal fear structure will appropriately adapt or maneuver their response, whereas an individual with a pathological fear structure will exhibit excessive response elements and distortions of reality (Foa & Kozak, 1986). Pathological fear structures may trigger negative physiological arousal, feelings of fear and anxiety associated with avoidance behaviours (Foa & Kozak, 1986) (e.g., avoidance of certain activities of daily living due to high levels of fear of falling). In alignment with this theory, we hypothesize that older adults with high levels of fear of falling will exhibit avoidance behaviours and self-perpetuate their pathological fear structures until successfully addressed (Jayasinghe et al., 2014).

Methods

Design

An explanatory mixed methods design was used in this study, which included a quantitative and qualitative phase in sequential order.

Setting

Participants were recruited from a fall prevention clinic, which was located in a geriatric medicine ambulatory services and day hospital. The coverage area of this large, tertiary care hospital serves a rural- and urban-based population of approximately 1.3 million (Canadian National Household Survey, 2011). This fall prevention clinic is offered twice a week and has an intake of up to four participants per week. A multidisciplinary care team provides an individualized and comprehensive falls risk assessment and

recommendations within their one visit. The care team includes an advanced practice nurse (APN), a physiotherapist (PT), a geriatrician and, if required, a pharmacist (Mackenzie, 2016). The overall goal of the fall prevention clinic is to reduce the incidence of falls in this targeted population (Mackenzie, 2016).

Sampling

Phase One

Individuals were selected for this study using a convenience sampling technique. All participants met the inclusion criteria for the fall prevention clinic, and were older adults aged 65 years and older, community-dwelling, with English or French as their first language, cognitively intact, identified as having balance concerns and/or experienced an actual or near fall, and received a score greater or equal to 4 on the “Staying Independent Checklist” (Mackenzie, 2016). The “Staying Independent Checklist” is a self-report questionnaire that consists of 12 questions to assess independent predictors of falls in older adults (Rubenstein, Vivrette, Harker, Stevens & Kramer, 2011). The researcher recruited a sample size of n=32 based on the recommendations for conducting paired t-tests (Hulley, Cummings, Browner, Grady & Newman, 2013).

Phase Two

In the second phase of the study, a sample of participants was selected from the initial convenience sample at the fall prevention clinic. Participants were selected using a ‘maximum variation sampling’ approach in order to better understand a wide array of experiences (Patton, 1990; Creswell & Plano Clark, 2011). Based on a comparison of participants’ fear of falling scores (i.e. from the Falls Efficacy Scale-International tool) before and after attending the fall prevention clinic, individuals were chosen based on whether their fear of falling levels increased, remained the same or decreased.

Measurement

Phase One: Instrument

The Falls Efficacy Scale-International (FES-I) tool is the most commonly used measurement scale in clinical practice to assess fear of falling (Kempen et al., 2007), and focuses on the psychosocial aspect of every day functional abilities (Yardley et al., 2005). This tool has excellent internal reliability (0.96), test-retest reliability (0.96), as demonstrated in a validation study of a similar study sample (Yardley et al., 2005). Moreover, an expert panel established the content validity of this tool (Yardley et al., 2005). Convergent construct validity for this tool was confirmed for: low quality of life (Lachman et al., 1998), depressive symptoms (Arfken et al., 1994), previous falls (Arfken, Lach, Birge & Miller, 1994; Friedman, Munoz, West, Rubin & Fried, 2002), overall disability (Lawrence et al., 1998), and physical impairment (Brouwer, Musselman & Culham, 2004). In addition, the predictive validity of the FES-I revealed that this tool accurately predicts future falls, muscle weakness, physiological falls risk, overall disability and depressive symptoms (Delbaere, Crombez, Vanderstraeten, Willems & Cambier, 2004).

The FES-I may be self-administered or administered in a structured interview format (Kempen et al., 2007; Yardley et al., 2005). Individuals are asked to rate their concerns about the possibility of falling when performing 16 activities on a four-point Likert scale (1=not at all concerned; 2= somewhat concerned; 3=fairly concerned; 4=very concerned), with total scores ranging from 16 to 64 (Kempen et al., 2007; Yardley et al., 2005). Delbaere and colleagues (2010) defined a cut-point to differentiate between low and high fear of falling, with scores between 23 and 64 indicating a greater fear or concern of falling. Permission to use this questionnaire was obtained from the Prevention of Falls Network Europe (ProFaNE) committee that developed the questionnaire (C. Todd, telephone communication, January 15, 2017).

Phase Two: Interview Guide

Based on the Theory of Emotional Processing (Lang, 1977, 1984), a semi-structured interview guide was developed to decipher whether participants exhibited maladaptive, normal, or adaptive behaviours due to their fear of falling level (i.e. high or low fear of falling levels). Questions were also based on Huang's (2005) grounded theory study that explored the process of managing fear of falling in community-dwelling Taiwanese older adults. The initial context questions asked about the fall prevention clinic, and the main questions focused on the concept of fear of falling. Specifically, participants were asked about their concern of falling while completing every day activities, and how they managed these concerns.

Procedures

Recruitment

Participants were recruited by a fall prevention clinic member during a scheduled follow-up telephone call approximately 8-weeks after the participant's visit to the clinic. In accordance to the hospital's Research Ethics Board, we telephoned the participants who gave permission and obtained consent before both phases of the study.

Data Collection

Phase One

The data collection for the first phase of this study was completed between October 2017 and January 2018. Data was collected during a telephone call with participants and through a retrospective chart audit. In the telephone call, 7-16 weeks after participants attended the fall prevention clinic, the FES-I tool was administered and demographic characteristics were collected. According to the developers of this tool, there are no defined guidelines for administering the FES-I for follow-up (C. Todd, telephone communication, January 15, 2017).

In addition, a retrospective chart audit was completed to collect each participant's initial fear of falling level (which was self-administered at the fall prevention clinic), age, sex, fall history, living environment, prescribed medications, and use of mobility aids. The data collected from the chart audit was independently checked by a second reviewer (LNP), and found that 97% of the 130 items were coded correctly. The errors were corrected and double checked by the second reviewer. There were no further inaccuracies found in the remaining coded data by the primary researcher (DCY).

Phase Two

A sample of participants from the first phase of the study was selected using a 'maximum variation sampling' technique (Patton, 1990), which sought to ensure a large variation between groups in order to better understand a wide array of experiences (Patton, 1990; Creswell & Plano Clark, 2011). Individuals were chosen based on whether their fear of falling level increased, remained the same or decreased after attending the fall prevention clinic, and asked to participate in an audio-recorded telephone interview. Each audio recording was transcribed verbatim after the interview was conducted, and all transcripts were de-identified.

Aspects of the rigor criteria (credibility, dependability, confirmability and authenticity) were used to ensure the trustworthiness of this qualitative phase of the study (Guba & Lincoln, 1985; 1994). The primary researcher (DCY) kept a journal throughout the entire study to write reflective and field notes and debriefed with the research team regularly in order to achieve credibility. Dependability was achieved by maintaining a thorough audit trail technique. In addition, objectivity or credibility of the data was attained by using a maximum variation sampling approach. We ensured transferability by providing sufficient descriptive data regarding the sample population and setting, and by reporting in-depth descriptions of findings. Lastly, participant quotes were used verbatim from the interviews to ensure credibility and authenticity.

Data Analysis

Phase One

Fear of falling was the primary outcome of this study. Paired t-tests were conducted to compare the initial and follow-up fear of falling levels. Descriptive statistics were also used to describe and synthesize the data collected from the sample population (n=32). Mean and standard deviation were calculated for age, initial (i.e. before) and after FES-I scores and number of falls within the last six months. Statistical analysis for this quantitative data was conducted using version 13 of the Statistical Package for Social Sciences (SPSS) (IBM Corp., 2015).

Phase Two

A thematic analysis of the interview transcripts was completed in accordance with the six steps established by Braun & Clarke (2006): 1) familiarization with the data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes and 6) producing the report. A second researcher independently coded a transcript from each of the three groups (i.e. individuals whose fear of falling level 1) increased, 2) remained the same or 3) decreased), which were then compared with the principal investigator's coding (DCY) and any disparities in the interpretations of the data were identified. Once a consensus on the coding was reached for these three transcripts, the codes were defined and aggregated into themes. Another researcher (CB) was consulted to discuss the construction of the themes, which were then checked in relation to the coded extracts (i.e. specific quotes from participants). Themes were continuously related to the overall story of the analysis, to the research questions and to the literature. Data management software, ATLAS.ti Scientific Software (Muhr, 2012), was used to support this qualitative data analysis.

Results

Phase One

A total of 35 individuals were initially contacted for recruitment, but three refused for unknown reasons. Therefore, 32 participants completed the first phase of the study. The majority of respondents identified as female (73%), experienced an actual fall (84%), were prescribed medications known to increase the risk of falls (88%), and used a mobility aid (63%). The baseline characteristics of the total sample can be found in **Table 4-1**.

Table 4-1: Participant characteristics at baseline

Participant	**n=32 *(n=%)***
Sex	
Female	24 *(75)*
Male	8 *(25)*
Average age, yrs (SD)	80.53 (6.9)
Fear related to falls	
Yes	16 *(50)*
No	12 *(37.5)*
Unknown	4 (*12.5)*
Average initial FES-I score (SD)	30.47 (9.8)
Actual fall	
Yes	27 *(84.4)*
No	5 *(15.6)*
Average number of falls in last 6-months (SD)	1.34 (1.4)
Near fall	
Yes	8 *(25)*
No	7 *(21.9)*
Unknown	17 *(53.1)*
Contributors to near/actual falls	
Trip/Slip	4 *(12.5)*
Dizzy	2 *(6.3)*
Weak	1 *(3.1)*
Balance	8 *(25)*
Cognition	0 *(0)*
Footwear/Foot Problems	0 *(0)*
Pre-syncope	1 *(3.1)*
Pain	0 *(0)*
Vision	0 *(0)*
Other	4 *(12.5)*
Unknown	5 *(15.6)*
N/A (i.e. experienced no falls)	7 *(21.9)*
Living environment	
House	16 (*50)*
Condo	15 *(46.9)*

Retirement home	1 *(3.1)*
Taking medications known to increase the risk for falls	
Yes	28 *(87.5)*
No	4 *(12.5)*
Use of mobility aids	
Yes	20 *(62.5)*
No	12 *(37.5)*

All participants from the first phase agreed to be contacted again for the second phase of the study, which occurred in February and March of 2018. The quantitative data collected in the follow-up telephone call is displayed in **Table 4- 2**. There was an average of 10.6 weeks between the initial administration of the FES-I tool and its follow-up application.

Table 4-2: Participant characteristics at follow-up

Participant	**n=32 *(n=%)***
Average follow-up FES-I score (SD)	31.72 *(8.3)*
Actual fall	
Yes	1 *(3.1)*
No	31 *(96.9)*
Near fall	
Yes	2 *(6.3)*
No	30 *(93.8)*
Marital status	
Single	1 *(3.1)*
Married	12 *(37.5)*
Divorced	3 *(9.4)*
Widowed	16 *(50)*
Living situation	
Alone	18 *(56.3)*
Couple	9 *(28.1)*
Family	4 (*12.5)*
Other	1 *(3.1)*
Education level	
Secondary school	17 *(53.1)*
Post-secondary school	15 *(46.9)*

Paired t-tests were conducted to compare the initial and follow-up fear of falling scores gathered from the FES-I tool, but there was no significant difference between the initial (M=30.47, SD= 9.8) and follow-up (M=31.72, SD=8.3) scores.

Phase Two

A total of 14 individuals were contacted for the second phase, one individual was unable to be reached and another was hospitalized leaving a total of n=12 participants. After aggregating through the responses from the semi-structured interviews, the following main themes emerged: 1) Concerns about falling, 2) Decreased concerns about falling, and 3) Increased self-awareness of fall risks.

Theme 1: Concerns about falling

Participants expressed their concerns about falling most often in their daily activities. Specifically, there were three factors or circumstances that hindered (i.e. increased) fear of falling levels in this group of older adults, including living alone, mobility limitations and environmental factors. Several respondents noted this concern inside their own home environments, and avoided certain activities while alone. Participant #9 explained,

> "I live by myself now, ya see. And I don't want to fall. I don't want to take a chance of falling. So I don't go up on stools or ladders or anything. If I need something up on a high shelf, I just wait until someone's here to get it."

Participant #2 noted,

> "…if no one is home, I don't take a bath in case I fall getting out of the tub. I'll take a shower but that's about the only thing." …"I've got handles that I can handle getting in and out of the tub easily for the shower. It's getting from sitting down to standing up. Because if I fell with a full tub of water, ya know, I could drown or whatever if I bumped my head. But if I tried to get out of the tub after I've let all the water out, it's harder to get out. It's easier when there's a tub full of water."

Whereas, several participants described a fear of falling due to a combination of their mobility limitations and environmental factors, such as Participant #29:

> "It's the stairs. Like I think I told you that my hairdresser has steps there and that's twice now that I use the railing. And I just got my heel [caught] at the back, and I thought oh my gosh, if I tripped there I would've gone all the way down. That scared me, and I did it a second time. So it's just ya know, making sure to catch the back of my heel. I have not fallen there and I make sure to hold onto the railing."

Participant #1 commented on this fear due to crowded environments:

> "I am concerned about some of the people- they don't see me. I feel like they don't see me there with my cane. I just feel- I have to stand still sometimes cause I think they're going to walk right into me. Why don't they see me? I don't think I should have to get out of their way. But I think today, people don't really don't think about another person too much. They're just too busy chit chatting and moving along and doing their own thing."

Many participants noted a concern about falling outside due to poor weather conditions. Participant #9 simply stated,

> "….If it's icy, I won't go out."

Participant #14 not only described a concern of falling in poor weather conditions, but also due to outdoor environmental hazards:

> "I don't walk around in the winter because it's just too icy usually. I don't go out for a walk, I mean I walk if I'm out shopping or something but that's it."…"Well I have to be careful about catching my foot on curbs. I've done that before and really banged up my leg quite badly. So that's something that I have to, ya know, try and think about and not just go ahead without realizing that there's a curb there or something."

Theme 2: Decreased concerns about falling

Several respondents commented on an increased level of confidence, and acknowledged that they were less concerned about falling. There were three factors that improved (i.e. decreased) participants' concerns of falling, including a sense of confidence in completing daily activities, increased strength and balance, and due to a positive experience at the fall prevention clinic. Participant #5 noted,

"No I have to say that I manage my day-to-day life quite well now. And I have a car, do shopping..."

Another participant commented on the positive outcomes from an exercise program recommended by the fall prevention clinic, and subsequently a decreased concern of falling:

"They gave me a program to do on my own, yes. That I can do here at home, which is good. And a good help with strength, I find the leg exercises help me keep better balance as well…Actually, I'm not concerned about falling now because I feel stronger." –Participant #20

In the same way, Participant #29 noted an increased level of confidence after attending the fall prevention clinic:

"The fall had taken away a lot of my confidence. But then when [the physiotherapist] did a test, like having me stand, so like a balance test, she said I did very well, which I [felt] so good about. She said if she didn't know about the fall she would've given me full points. And that gave me confidence."

Theme 3: Increased self-awareness of fall risks

The most substantial finding from the second phase of the study was participants' increased self-awareness of their fall risks, which consequently addressed their concerns about falling. This theme is comprised of subcategories, based on various

aspects of this heightened awareness including: a) environment, b) mindfulness, c) mobility, d) age, and e) relation to others.

Most respondents acknowledged their individual fall risks (i.e. factors known to increase their chance of falling), sometimes based on their previous fall experiences, and consequently their *increased awareness of their surrounding environments*. For instance, Participant #14 said,

"…I'm just careful because most of my falls are more because of tripping over something, or slipping on something."

Participant #1 commented,

"I am more aware of disasters in life than I used to be…that I need to watch, that I haven't got things in the way or whatever- especially in the dark… It's made me more aware of how I should light the way."

Respondents referenced their heightened awareness when walking on stairs. Participant #5 explained,

"I'm more aware and notice things more. I don't take any risks at all when it comes to going down or up the stairs or whatever."

While Participant #14 said:

"Well I try and do things more slowly…Well ya know, to go walking down the stairs slowly rather than rushing down like I used to be in the habit of doing…I'm being more careful about things, and more aware of those things."

Several participants described *being mindful* with regards to preventing falls. Essentially, these participants noted that they have become more conscientious of their daily activities in order to prevent future falls. In particular, they mentioned being more mindful of taking their time while completing their everyday activities.

"I'm doing very well. The exercises have been helping and I'm more conscious

about taking my time, watching where I'm going. So I'm more mindful, so working against having a fall." –Participant #20

"I have to take things very slowly, cause I tend to jump at things ya know, So I have to slow down and taken them slowly and be very careful." –Participant #21

"I find I'm much more attentive. I tend to do things fast and then now I'm telling myself 'hey- just watch where you're going.'" –Participant #29

"Oh ya, I'm more careful with what I do. I take more time to do it. I tend to think about it more, maybe that's what I should say." –Participant #14

Respondents described an *increased awareness of their mobility limitations* in order to prevent falls, such as Participant #21 who said,

"I can do most things but sometimes I just, because I have a hard time with distance sometimes I just sit down and have a little rest and continue…It's making the bed, that's usually tiring but ya know I make it."

Participant #9 noted,

"I wasn't walking straight, I wasn't paying attention to how I was walking and that could've been a reason why I was falling…and just the way I was standing and different things like that. Because I haven't, like I said, it's almost a year since I've fallen…It [the fall prevention clinic] made me think a couple times about different things that I would be doing. It made me more aware of things that could have contributed to my falling, like walking- it helped me that way."

Participants acknowledged an *awareness of their age*, which may lead to more complications after a fall:

> "Well I'm pretty cautious now. Because I know if I fall, I am pretty vulnerable in my age..especially because I have osteopenia, which I think I probably have osteoporosis so, yeah. I'm nervous." –Participant #2

> "Most of it was a turning point for me, that I need to be very cautious and maybe I am getting a little older ya know?" –Participant #20

> "When it's a new place I really look down more than I do. But now I find I look down a lot because I am ya know. I wouldn't want to break anything at my age, ya know. It just wouldn't be too good" –Participant #29

Lastly, participants recalled other individuals' fall experiences, and their heightened awareness to avoid falls based on this experience in *relation to others*. Participant #20 witnessed a fall experience outside due to poor weather conditions:

"In fact, one lady was walking along the pathway right in front of me and she had a terrible fall on the ice. She almost broke her back, but after a while she was able to get up and carry on. So I was extra, extra cautious at that time."

Participant #29 noted,

"My cousin knows a girl who fell at home last week. She could've broken something. So ya that's what happens. Now we [her cousin and the participant] think about it but we're just fortunate that we haven't broken anything. Ya know because it can happen so easily."

Discussion

The purpose of this explanatory mixed methods study was to build a deeper understanding of community-dwelling older adults' perspectives on the concept of fear of falling before and after attending a fall prevention clinic. We focused on the qualitative

phase of this study, which helped us decipher whether the FES-I tool accurately captured participants' fear of falling levels. Moreover, we were able to compare our themes to the few other qualitative studies that have explored fear of falling.

The FES-I tool, the use of an additional assessment tool & the importance of qualitative research on fear of falling

Based on the FES-I tool results, the majority of participants (n=14; 43.75%) exhibited higher fear of falling levels after attending the fall prevention clinic and the same amount of participants' fear of falling levels remained the same (n=9; 28.12%) or decreased (n=9; 28.12%). Therefore, with just the quantitative results, it may be concluded that the fall prevention clinic made no difference on participants' fear of falling levels. However, in the qualitative phase, all of the participants described an increased self-awareness of their individual fall risks. As explained in the findings, participants described this heightened awareness with regards to their environment, mobility, age, a sense of mindfulness and relation to others who had previously fallen. Essentially, participants noted becoming more aware of how to prevent future falls (e.g., installing a railing in the tub due to previous fall experiences while showering), and to an extent, more aware of their personal concerns about falling. Based on this finding, we believe that these participants may exhibit normal and adaptive responses to this concern and/or previous experience with falling. Previous literature notes that fear of falling should only be considered unhealthy when it becomes excessive and debilitating during activities of daily living (Iaboni & Flint, 2013; Huang, 2005). Furthermore, the DSM-5 notes that individuals must meet diagnostic criteria in order to be fully diagnosed with this fear (American Psychiatric Association, 2013). The criterion stipulates that the marked fear is persistent (i.e. typically 6 months or longer), causes significant impairment in important areas of functioning, results in avoidance behaviours based on the specific situation, almost always provokes immediate fear and cannot be considered a symptom of another

mental disorder (e.g., agoraphobia, obsessive-compulsive disorder, posttraumatic stress disorder, etc.) (American Psychiatric Association, 2013). However in this study, we did not fully assess for an unhealthy fear of falling according to the DSM-5 criteria after participants described instances of maladaptive behaviours.

Moreover, the FES-I tool does not identify an individual's maladaptive behaviours (i.e. avoidance behaviours) that have resulted from their fear of falling, nor does it assess the variations in physiological response to this fear (i.e. sympathetic nervous system arousal) (Craske et al., 2009). On this note, we recommend the use of an additional fear of falling assessment tool for older adults such as 'The Modified Survey of Activities and Fear of Falling Scale' (mSAFFE). This tool assesses both fear of falling and activity restriction in community-dwelling older adults (Yardley & Smith, 2002), and uses a 17-item self-administered questionnaire. The use of both the FES-I and mSAFFE assessment tools would provide a much better depiction of fear of falling levels, and whether individuals avoid activities due to their fear of falling. We also highly recommend that future studies assessing fear of falling levels in older adults incorporate a qualitative design in order to understand the contextual and subjective nature of each individual's concerns of falling and to determine if these levels are normal or excessive. Although we believe that the FES-I tool is able to give an overview of a participant's fear of fallinglevel, we believe that it does not entirely encapsulate participants' concerns of falling, nor does it establish a diagnosis of this specific phobia according to the DSM-5 criterion.

Toward a better understanding of fear of falling in community-dwelling older adults

We focused on the second phase of this study due to the paucity of qualitative literature that explores this phenomenon (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Lee et al., 2008; Tischler & Hobson, 2005; Jellesmark et al., 2012; Honaker &

Kretschmer, 2014; Chippendale & Lee, 2018). There were similar qualitative findings between the previously published literature and our study. Both partcipants from our study and previous literature described their concerns or decreased concerns about falling, and a self-awareness of their individual fall risks and ability to avoid future falls. In alignment with the guiding theoretical framework, the Theory of Emotional Processing (Lang, 1977, 1984), some of our participants described 'pathological fear structures' where their responses to dangerous stimuli (e.g., poor weather conditions, such as ice during the winter) led to activity restriction (e.g., avoidance of activities outside during the winter) (Honaker & Kretschmer, 2014; Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Lee et al., 2008; Chippendale & Lee, 2018; Jellesmark et al., 2012). On the contrary, some individuals noted an increased level of confidence (i.e. decreased concern about falling) with respect to completing their activities of daily living and ability to avoid falls (Ward-Griffin et al., 2004; Honaker & Kretschmer, 2014; Mahler & Sarvimäki, 2012). Participants from our study noted specific examples from the fall prevention clinic that helped increase their confidence and avoid future falls, such as an individualized exercise program. Another commonly noted theme from our study and previous literature (Ward-Griffin et al., 2004; Lee et al., 2008) was participants' self-awareness of their fall risks and specific behaviours used to avoid future falls.

In gathering a larger perspective of fear of falling from our findings and previously published studies, we contend with Ward-Griffin and colleagues (2004) and note that there is a dynamic (i.e. fluctuating) "tension" between fear of falling and a confidence to avoid future falls in community-dwelling older adults. Moreover, we believe that continued qualitative research is required to continue toward a better understanding of fear of falling.

Limitations

There were several limitations noted in this study pertaining to the sample and data measurement and analysis. Although we followed the data analysis recommendations for conducting paired t-tests in our quantitative phase, this sample size (n=32) is still considered small. In addition, we did not to recruit our sample based on a sample size calculation since we are unaware of any studies that assessed fear of falling levels before and after a fall prevention clinic. In addition, our data measurement in both phases of the study used self-report predictors (i.e. FES-I tool and semi-structured interviews), which is subject to self-report bias. Moreover, the initial FES-I tool was completed in person at the fall prevention clinic, whereas the follow-up FES-I was completed over the phone with the researcher. Although, the developers of the tool note that it may be administered both in person and via telephone, this discrepancy may have altered our results. Lastly, only a small sample of the transcripts was independently coded by another researcher in the qualitative data analysis.

Strengths

This study also had several strengths, including the sampling technique in our second phase and the overall mixed methods study design. Specifically, the use of a maximum variation sampling technique allowed us to choose a unique group of individuals with different viewpoints and experiences. In addition, to our knowledge, there have been no previous studies that conducted semi-structured interviews following the FES-I tool. Therefore, we believe that our mixed methods design adds a significant contribution to the current literature around fear of falling in older community-dwelling adults.

Conclusion

In this study, we explored the concept of fear of falling in a group of community-dwelling older adults after they attended a fall prevention clinic in an urban city of Canada. Through our semi-structured interviews, we found that fear of falling levels may not be accurately assessed using the FES-I tool before and after an intervention. Rather, participants noted an increased self-awareness with regards to their fall risks, which can be considered an adaptive response to a previous fall experience. Similar qualitative findings were found between our study and previous literature, specifically between a concern of falling, being aware or exercising precaution to avoid falls and maintaining independence in this study population. We highly recommend further qualitative research to continue exploring the subjective nature of this phenomenon.

Declarations

Ethics approval
Ethical approval was obtained from both the Research Ethics Boards at The Ottawa Hospital (File: 20170448 -01H) and the University of Ottawa (File: A09-17-04).

Acknowledgements
We would like to thank Mary Haller (MH) for her assistance in recruiting participants during the fall prevention clinic's follow-up telephone call. In addition to Letitia Nadalin Penno (LNP) for quality assessing a portion of the collected quantitative data, and Michelle Crick (MC) for her assistance and expertise in the thematic analysis.

Consent for publication
Not applicable.

Availability of data and material
Data analysed during this study are included in this published article.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
DCY developed and drafted the manuscript. All authors critically appraised and edited the manuscript. DCY conducted the interviews and completed the data analysis with the guidance and and assistance of CB and JS. All authors read and approved the final manuscript. DCY is the guarantor of this study.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Arfken, C. L., Lach, H. W., Birge, S. J., & Miller, J. P. (1994). The prevalence and correlates of fear of falling in elderly persons living in the community. *American journal of public health*, *84*(4), 565-570.

Ayoubi, F., Launay, C. P., Annweiler, C., & Beauchet, O. (2015). Fear of falling and gait variability in older adults: a systematic review and meta-analysis. *Journal of the American Medical Directors Association*, *16*(1), 14-19.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Brouwer, B., Musselman, K., & Culham, E. (2004). Physical function and health status among seniors with and without a fear of falling. *Gerontology*, *50*(3), 135-141.

Canadian National Household Survey (NHS): 2011 Census (2011). Retrieved March 12, 2017 from http://www.champlainlhin.on.ca/AboutUs/Intro.aspx

Chippendale, T., & Lee, C. D. (2018). Characteristics and fall experiences of older adults with and without fear of falling outdoors. *Aging & mental health*, 1-7.

Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2011). What is an anxiety disorder?. *Focus*, *9*(3), 369-388.

Creswell, J. W., & Clark, V. L. P. (2011). Designing and conducting mixed methods research.

Delbaere, K., Crombez, G., Vanderstraeten, G., Willems, T., & Cambier, D. (2004). Fear-related avoidance of activities, falls and physical frailty. A prospective community-based cohort study. *Age and ageing*, *33*(4), 368-373.

Delbaere, K., Close, J. C., Mikolaizak, A. S., Sachdev, P. S., Brodaty, H., & Lord, S. R.

(2010). The falls efficacy scale international (FES-I). A comprehensive longitudinal validation study. *Age and ageing*, *39*(2), 210-216.

Denkinger, M. D., Lukas, A., Nikolaus, T., & Hauer, K. (2015). Factors associated with fear of falling and associated activity restriction in community-dwelling older adults: a systematic review. *The American Journal of Geriatric Psychiatry*, *23*(1), 72-86.

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: exposure to corrective information. *Psychological bulletin*, *99*(1), 20.

Friedman, S. M., Munoz, B., West, S. K., Rubin, G. S., & Fried, L. P. (2002). Falls and fear of falling: which comes first? A longitudinal prediction model suggests strategies for primary and secondary prevention. *Journal of the American Geriatrics Society*, *50*(8), 1329-1335.

Greenberg, S. A. (2011). Assessment of fear of falling in older adults: the falls efficacy scale-international (FES-I). *Disability and Rehabilitation*, *29*(2), 155-162.

Greenberg, S. A. (2012). Analysis of measurement tools of fear of falling for high-risk, community-dwelling older adults. *Clinical Nursing Research*, *21*(1), 113-130.

Honaker, J. A., & Kretschmer, L. W. (2014). Impact of fear of falling for patients and caregivers: perceptions before and after participation in vestibular and balance rehabilitation therapy. *American journal of audiology*, *23*(1), 20-33.

Huang, T. T. (2005). Managing fear of falling: Taiwanese elders' perspective. *International journal of nursing studies*, *42*(7), 743-750.

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2013). *Designing clinical research*. Lippincott Williams & Wilkins.

Iaboni, A., & Flint, A. J. (2013). The complex interplay of depression and falls in older adults: a clinical review. *The American Journal of Geriatric Psychiatry*, *21*(5), 484-492.

IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.

Jayasinghe, N., Sparks, M. A., Kato, K., Wilbur, K., Ganz, S. B., Chiaramonte, G. R., ... & Evans, A. T. (2014). Exposure-based CBT for older adults after fall injury: description of a manualized, time-limited intervention for anxiety. *Cognitive and behavioral practice*, *21*(4), 432-445.

Jellesmark, A., Herling, S. F., Egerod, I., & Beyer, N. (2012). Fear of falling and changed functional ability following hip fracture among community-dwelling elderly people: an explanatory sequential mixed method study. *Disability and rehabilitation*, *34*(25), 2124-2131.

Kempen, G. I., Todd, C. J., Van Haastregt, J. C., Rixt Zijlstra, G. A., Beyer, N., Freiberger, E., ... & Yardley, L. (2007). Cross-cultural validation of the Falls Efficacy Scale International (FES-I) in older people: results from Germany, the Netherlands and the UK were satisfactory. *Disability and rehabilitation*, *29*(2), 155-162.

Lawrence, R. H., Tennstedt, S. L., Kasten, L. E., Shih, J., Howland, J., & Jette, A. M. (1998). Intensity and correlates of fear of falling and hurting oneself in the next year: baseline findings from a Roybal Center fear of falling intervention. *Journal of aging and health*, *10*(3), 267-286.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. *Behavior Therapy*, *8*(5), 862-886.

Lang, P. J. (1984). Cognition in emotion: Concept and action. *Emotions, cognition, and behavior*, 192-226.

Lawrence, R. H., Tennstedt, S. L., Kasten, L. E., Shih, J., Howland, J., & Jette, A. M.

(1998). Intensity and correlates of fear of falling and hurting oneself in the next year: baseline findings from a Roybal Center fear of falling intervention. *Journal of aging and health*, *10*(3), 267-286.

Lee, F., Mackenzie, L., & James, C. (2008). Perceptions of older people living in the community about their fear of falling. *Disability and rehabilitation*, *30*(23), 1803-1811

Mackenzie, T. (2016). *Evaluation and Planning Report: The Falls Assessment and Streamlined Treatment (FAST) Clinic.* The Regional Geriatric Program of Eastern Ontario, Ottawa.

Mahler, M., & Sarvimäki, A. (2012). Fear of falling from a daily life perspective; narratives from later life. *Scandinavian journal of caring sciences*, *26*(1), 38-44.

Morse,J.M. (1991). Strategies for sampling. In *Qualitative nursing research: A contemporary dialogue,* Newbury Park, CA, Sage, 127-145.

Muhr T. (2012). ATLAS. ti 8.0 [Version 8]. Berlin, Germany: ATLAS. ti Scientific Software Development GmbH.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. SAGE Publications, inc.

Payette, M. C., Belanger, C., Léveillé, V., & Grenier, S. (2016). Fall-related psychological concerns and anxiety among community-dwelling older adults: Systematic review and meta-analysis. *PLoS one*, *11*(4), e0152848.

ProFaNE: Prevention of falls network Europe. Retrieved from https://sites.manchester.ac.uk/fes-i/

Public Health Agency of Canada. (2014). *Seniors' Falls in Canada: Second Report*. Retrieved March 10, 2017 from http://www.phac-aspc.gc.ca/seniorsaines/publications/public/injuryblessure/seniors_falls-chutes_aines/indexeng.php

Rubenstein, L. Z., Vivrette, R., Harker, J. O., Stevens, J. A., & Kramer, B. J. (2011).

Validating an evidence-based, self-rated fall risk questionnaire (FRQ) for older adults. *Journal of safety research*, *42*(6), 493-499.

Scheffer, A. C., Schuurmans, M. J., Van Dijk, N., Van Der Hooft, T., & De Rooij, S. E. (2008). Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age and ageing*, *37*(1), 19-24.

The Economic Burden of Injury in Canada. (2009). Toronto: SMARTRISK.

Tinetti, M. E., Richman, D., & Powell, L. (1990). Falls efficacy as a measure of fear of falling. *Journal of gerontology*, *45*(6), P239-P243. Velozo, C. A., & Peterson, E. W. (2001). Developing meaningful fear of falling measures for community dwelling elderly. *American journal of physical medicine & rehabilitation*, *80*(9), 662-673.

Tischler, L., & Hobson, S. (2005). Fear of falling: a qualitative study among community-dwelling older adults. *Physical & Occupational Therapy in Geriatrics*, *23*(4), 37-53.

Vieira, E. R., Palmer, R. C., & Chaves, P. (2016). Prevention of falls in older people living in the community. *bmj*, *353*(1), 1419.

Ward-Griffin, C., Hobson, S., Melles, P., Kloseck, M., Vandervoort, A., & Crilly, R. (2004). Falls and fear of falling among community-dwelling seniors: The dynamic tension between exercising precaution and striving for independence. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *23*(4), 307-318.

World Health Organization, & Organization, W. H. (2007). *WHO global report on falls prevention in older age*. Retrieved from http://www.who.int/ageing/publications/Falls_prevention7March.pdf

Yardley, L., & Smith, H. (2002). A prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older

people. *The Gerontologist*, *42*(1), 17-23.

Yardley, L., Beyer, N., Hauer, K., Kempen, G., Piot-Ziegler, C., & Todd, C. (2005). Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and ageing*, *34*(6), 614-619.

Chapter Five

Integrated Discussion

Integrated Discussion

Thesis Summary

This thesis project focused on fall-related psychological concerns in community-dwelling older adults. ‘Fall-related psychological concerns’ is an umbrella term which includes two distinct concepts: fear of falling and falls-efficacy or balance confidence. In the first chapter, I elaborated on the umbrella term and its concepts and summarized the known falls risk reduction interventions targeted towards fall-related psychological concerns in older community-dwelling adults. Fear of falling was chosen as the primary concept. Therefore, the ‘Theory of Emotional Processing’ was used to guide this thesis project due to its alignment with the three components of fear of falling: emotion/cognitive, behavioural and physiological.

The literature review included two separate phases based on the different search aims in Chapter 2. The first part of the literature review included a summary of existing tools that assess fall-related psychological concerns, and focused on tools that measure fear of falling. The second part of the literature review gathered qualitative studies that focused on understanding older adults’ experiences with falls and/or fear of falling. I elaborated on the second part of the literature review, which coincides with the study design (i.e. an explanatory mixed methods design) and emphasized the exploratory nature of this overall thesis project. In Chapter 3, I described the methods used in the mixed methods study, and the complete manuscript is found in Chapter 4. This chapter (Chapter 5) includes an integrated discussion between the literature review and manuscript, and I will discuss pertinent implications for nursing practice and research. The strengths and limitations of this thesis project will also be addressed, and lastly, my concluding statements.

Summary of Thesis Findings

Phase One Literature Review

The first part of this literature review included assessment tools for *all* fall-related psychological concerns. This was important for the study because participants were chosen to be interviewed (i.e. for the second phase of the study) based on their fear of falling levels from the assessment tool. Therefore, I needed to ensure that the primary concept (i.e. fear of falling) accurately aligned with the assessment tool that was ultimately chosen in Chapter 3 and used in the study (Chapter 4).

A total of 11 different tools were found (see Table 2-2, p. 47), and five were developed to assess fear of falling. The five assessment tools that assess fear are falling include: the Survey of Activities and Fear of Falling (SAFFE) scale (Lahcman et al., 1998), The University of Illinois at Chicago Fear of Falling Measure (UIC-FFM) (Velozo & Peterson, 2001), The Modified Survey of Activities and Fear of Falling (mSAFFE) Scale (Yardley & Smith, 2002), the Falls Efficacy Scale-International (FES-I) (Yardley et al., 2005) and The Geriatric Fear of Falling Measure (GFFM) (Huang, 2006). It was difficult to compare the fear of falling assessment tools, based on a large variation between the definitions of fear of falling, number of items and the item response scale of each tool, and the context of development (e.g., sample population, geographical location, etc.). As previously stated, there is no consensus on the best fall-related psychological tool to use, it is more important to choose an assessment tool that aligns with the construct being measured (Payette et al., 2016).

Phase Two Literature Review

A literature search was conducted on the topic of older adults' experiences with falls and/or fear of falling, with the ultimate aim of finding studies with qualitative aspects in the study design. A total of seven out of 529 studies were relevant, including three that used a mixed-methods design (Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Chippendale & Lee, 2018). All seven studies were summarized (see Table 2-4, p. 54) and key findings/themes were grouped into four sections: 'quality of life', 'striving for

independence', 'exercising precaution' and 'fear of falling and uncertainty of the future.' Most of these studies (six out of seven) included participants' that limited their physical and/or social activities to avoid future falls (Jellesmark et al., 2012; Ward-Griffin et al., 2004; Lee, Mackenzie & James, 2008; Mahler & Sarvimäki, 2012; Chippendale & Lee, 2018; Honaker & Kretschmer, 2014). In addition, almost all participants associated fear of falling levels with a negative emotion and consequently described an uncertainty of the future due to their risk of experiencing an injurious fall. Overall, after summarizing these seven studies, it was evident that fear of falling has a significant influence on older adults and how they live their everyday lives.

Manuscript: Understanding fear of falling levels in older adults: A mixed methods study

A mixed methods study was conducted using an explanatory sequential mixed methods design. In the first phase of the study, or the quantitative phase, a convenience sampling technique was used to gather participants from a fall prevention clinic in Ottawa, Canada. A total of 32 older adults completed a validated fear of falling assessment tool (FES-I) before and after attending the fall prevention clinic. Paired t-tests were used to compare the initial and follow-up fear of falling scores gathered from the FES-I tool, but there was no statistically significant difference between the scores. Using a maximum variation sampling approach, participants were chosen from the initial convenience sample for the second phase of the study. Semi-structured interviews were conducted with 12 participants based on whether their fear of falling levels (i.e. from the FES-I tool) increased, decreased or remained the same.Three main themes emerged from the interviews, which identified specific factors and circumstances that hindered or improved concerns about falling in this group of older adults. Consistent with previous research, the participants in our study described when they were concerned or less concerned about falling, aware of their falls risks and provided us with specific examples

of strategies used to avoid future falls. Although not noted in the manuscript, participants from our study also noted their adherence levels to falls risk reduction strategies.

Integrated Discussion

Phase One: Quantitative

In the first phase of this study, we assessed fear of falling with the Falls Efficacy Scale-International tool before and after attending a fall prevention clinic. Although the Falls Efficacy Scale-International tool is widely used in the literature, no previous studies have used this tool to assess fear of falling before and after a fall prevention clinic. Therefore, we are unable to compare the fear of falling scores found in our study to previous literature.

However, there are two fall prevention clinics that have been evaluated in the literature (Hart-Hughes, Quigley, Bulat, Palacios & Scott, 2004; Perell et al., 2006). Similar to the results of our quantitative data analysis, one of these fall prevention clinics measured fear of falling levels before and after participants attended the clinic, and found no statistically significant changes in these levels (Perell et al., 2006). However, an older version of a fall-related psychological concern measurement tool was used (Falls Efficacy Scale, developed by Tinetti et al., 1990), and may not have accurately assessed for the psychological impact of falls based on current research of these measurement tools (Jørstad, Hauer, Becker & Lamb, 2005). Moreover, according to the first part of my literature review on assessment tools used to assess fall-related psychological concerns in older adults, there is a discrepancy between the chosen construct and measurement tool. These authors used the Falls Efficacy Scale, which was developed to measure falls-efficacy or balance confidence (Tinetti et al., 1990), but claimed to measure fear of falling.

Phase Two: Qualitative

Ward-Griffin and colleagues (2004) noted the dynamic tension between "striving for independence and exercising precaution" in the older adults they interviewed (p. 311). They continued by saying "the ultimate shared experience of falls and/or fear of falling of seniors was one in which fear and confidence acted dialectically in the simultaneous shrinking and expansion of life spaces of community-dwelling seniors" (Ward-Griffin et al., p. 311). This summary statement accurately depicts the findings not only from the other studies found in the literature review, but also our findings. Participants either chose an active lifestyle due to a desire to stay fit or felt as though they were isolated, dependent on others or incapacitated due to their fear of falling levels (Jellesmark et al., 2012; Mahler & Sarvimäki, 2012; Lee, Mackenzie & James, 2008; Honaker & Kretschmer, 2014).

Concerns about falling

Participants in both our findings and previous literature (Jellesmark et al., 2012; Ward-Griffin et al., 2004; Lee et al., 2008; Mahler & Sarvimäki, 2012; Chippendale & Lee, 2018; Honaker & Kretschmer, 2014) noted when they were most concerned of falling, with specific examples from indoor or outdoor environments. Interestingly, all participants from our study described a fear of falling in environments that they were familiar with. Similar to previous research, they most often described their home environments. Our study participants noted that they were most afraid of falling while completing specific activities of daily living, such as taking a bath and using the stairs or a stool to reach for objects. This fear of falling often led them to avoid these activities at home, especially if they were alone. Previous literature included older adults with higher functioning levels, and they limited activities such as: cleaning, gardening, going out to eat dinner, dancing and attending sporting events (Honaker & Kretschmer, 2014). Also

similar to our study, participants explicitly noted high fear of falling levels during poor weather conditions in the winter months (Tischler & Hobson, 2005). In particular, one of our participants described their fear of falling on ice due to a previous fall experience that resulted in an injury.

Confidence and decreased concerns about falling

There were several participants from our study and previous literature (Ward-Griffin et al., 2004; Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Mahler & Sarvimäki, 2012) that described seeking an active lifestyle due to their high levels of confidence and/or decreased concerns about falling. A sheer desire to stay fit and maintain independence was often described by respondents of previous studies (Ward-Griffin et al., 2004; Jellesmark et al., 2012; Honaker & Kretschmer, 2014; Mahler & Sarvimäki, 2012). In contrast to our study, many of these individuals placed a higher priority on their independence than their risk or falling or any fears they had about falling (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Jellesmark et al., 2012). Specifically after attending the fall prevention clinic, one participant from our study felt more confident due to an individualized exercise program and another respondent gained confidence simply from the physiotherapy assessment at the fall prevention clinic. Although not explicitly stated, one of our participants also described an independent life and being able to easily complete activities of daily living. In both our qualitative findings and previous literature (Ward-Griffin et al., 2004; Mahler & Sarvimäki, 2012; Jellesmark et al., 2012), this confidence or decreased concern of falling stemmed from becoming more active or “stronger” as one of our participants stated.

Self-awareness of fall risks and avoiding future falls

Most of the participants in our study commented on their awareness of their own fall risks (i.e. factors known to increase their risk of falling) and specific behaviours or strategies to avoid future falls. This was also a common theme from the studies

summarized in the second part of the literature review. Our participants described an increased awareness of their mobility limitations in order to prevent falls. They gave specific examples such as sitting down and resting in the middle of a long walk or being aware of their posture. Our respondents acknowledged other individual fall risks such as tripping hazards or poor lighting and, similar to previous literature, described their efforts to avoid or structurally change their environment to reduce their risk of falling. For instance, participants in the study by Lee and colleagues (2008) also stated that they made structural changes to the environment such as removing mats from the floor to avoid the risk of future falls. Interestingly, the participants from this study also described this self-awareness as "being intuitive" or more "careful" in order to avoid future falls. Our respondents used the terms "cautious," "more conscious" and "careful."

On the contrary, participants from a previous study described multiple strategies such as: depending on help, resisting activities, selecting safe spaces and/or assigning blame (Ward-Griffin et al., 2004). According to Ward-Griffin and colleagues (2004), 'assigning blame' was a common theme where participants would blame themselves, their health conditions or external conditions for falling. Likewise, participants from our study assigned blame to their surrounding environments (e.g., stairs, tripping hazards in the outdoor environment, etc.) or mobility limitations (e.g., stamina for long distance walking, poor posture, etc.) for their falls. However, we considered 'assigning blame' as 'self-awareness' of individual fall risks.

Adherence to falls risk reduction strategies

Although not a major theme in alignment with the study objectives, each participant noted their adherence levels to falls risk reduction strategies recommended from the fall prevention clinic. Although these recommendations varied due to the different fall risks of each individual, this theme was mentioned by each older adult in our

study. In other words, each participant noted their ability or inability to adhere to their specific fall risk reduction recommendations from the fall prevention clinic.

In a Cochrane systematic review of fall prevention interventions for community-dwelling older adults (Nyman & Victor, 2011), the investigators assessed recruitment, attrition, adherence and influenced primary outcomes (rate of falls and fallers) in 98 studies published between 1990 and 2009. Of those studies, only 25 reported adherence rates and found that adherence to components from multifactorial interventions ranged from 28 to 95%. In addition, adherence to referrals from multifactorial interventions (e.g., for medical specialists such as ophthalmologists) dropped from 74% after one year to 50% after three years (Nyman & Victor, 2011). Although we did not assess adherence using a validated measurement tool, we would expect similar findings if adherence rates to fall risk reduction strategies were gathered from these participants after attending the fall prevention clinic.

In our findings, it may be posited that some participants' non-adherence to recommendations from the fall prevention clinic may relate to their unwillingness to change their health behaviours. For example, a participant's refusal to use a cane to help with their mobility may be related to the connotation that these devices are only used by the elderly and the infirm. This 'unwillingness' to adhere to falls risk reduction interventions by older adults was acknowledged in a systematic review of qualitative studies (Child et al., 2012). This review identified key factors regarding the barriers and facilitators to effective implementation of falls risk reduction strategies in older adults, and noted that the barriers were predominantly patient-related (Child et al., 2012). Specifically, in addition to patients' 'unwillingness,' this review noted that patient 'pride' and 'comprehension' were also associated with poor adherence to falls risk reduction strategies and interventions (Child et al., 2012). Another systematic review reported older people's perceptions of fall risk reduction intervention, and found that the barriers

to participation included denial and under-estimation of fall risks, poor self-efficacy, no history of exercise, fear of falling, poor health and functional ability and low health expectations (Bunn, Dickinson, Barnett-Page, Mcinnes & Horton, 2008).

Nursing Implications

The findings of this thesis project have implications for nursing practice and research.

Implication for Practice

Implementation of Cognitive-Behavioural Therapy in Falls Risk Reduction Interventions

In our study, several participants described an avoidance of specific activities due to their high levels of fear of falling. This was hypothesized based on the tenets of the Theory of Emotional Processing. In alignment with this theory, it is posited that individuals with high levels of fear of falling will continue to exhibit avoidance behaviours and self-perpetuate their fear structures until successfully addressed (Jayasinghe et al., 2014). According to researchers that use the Theory of Emotional Processing in treating their patients (Foa & Kozak, 1986), individuals with high levels of fear of falling (i.e. a maladaptive or pathological fear structure) may benefit from treatment that successfully addresses their 'fear structure.' In order to address avoidance behaviours, Foa & Kozak (1985, 1986) developed processes for successful emotional processing (i.e. to overcome maladaptive or pathological fear structures) in their treatment. Successful emotional processing includes the activation of the fear structure and incorporation of new information that is incompatible with the pathological elements of the fear structure (Foa & Kozak, 1986). The activation component occurs when an individual associates danger with stimuli or produces responses that are represented in the fear structure (Foa & Kozak, 1986). It is believed that a greater activation happens when there is a stronger relationship between the fear-evoking experience and the individual's pathological fear

structure (Foa & Kozak, 1986). It is also necessary for new information that disconfirms the pathological elements of the fear structure to be present (Foa & Kozak, 1986). However, fear structures remain unchanged when this information is unavailable, which may occur when an individual avoids or escapes a certain situation (e.g., avoiding a particular activity such as walking in a place with crowds due to high fear of falling levels). In addition, these structures may persist if an individual experiences a situation in which their feared consequences (e.g., falling in a place with crowds) are confirmed (Foa & Kozak, 1986). Foa and Kozak (1986) have stressed the importance of therapy that includes *in vivo* exposure (i.e. real-life confrontation) to the fear stimulus (e.g., walking in a place with crowds) in the absence of the anticipated harm in order to correct pathological fear structures. Specifically, in order to promote successful emotional processing, exposure therapy involves repeated exposure and confrontation of feared thoughts, sensations, situation and activities (Foa et al., 2006).

Therefore, we recommend the use of a psychological treatment such as cognitive-behavioural therapy for the treatment of high levels of fear of falling. Cognitive-behavioural therapy (CBT) was introduced to the realm of psychotherapy more than 40 years ago (Johnsen & Friborg, 2015). Although cognitive-behavioural therapy is continuously being developed, all variations of this therapy are based on the premise that mental disorders and psychological distress stem from cognitive factors or processes (Johnsen & Friborg, 2015; Hofmann et al., 2012). Moreover, dysfunctional behaviours originate from maladaptive thoughts and emotional distress (Beck, 1970; Ellis, 1962). Therefore, in order to address dysfunctional behaviours and maladaptive thoughts, cognitive-behavioural therapy introduces new cognitive concepts (Rector & Beck, 2012).

In relation to our study, we recommend falls risk reduction interventions incorporate CBT to address two of the factors that hindered (i.e. increased) fear of falling levels in this particular population: *mobility limitations* and *environmental factors*.

Addressing mobility limitations with CBT and exercise interventions

Several respondents in our study noted that they avoided certain activities due to their mobility limitations. On the contrary, participants also noted that their participation in individualized or group exercise programs led to their increased strength and balance, and ultimately improved their fear of falling levels (i.e. decreased their fears of falling). Therefore, from our study findings, we suggest that falls risk reduction interventions should incorporate both CBT and an exercise component.

A systematic review and meta-analysis evaluated the effect of exercise interventions on fear of falling in community-dwelling older adults aged 65 years and older (Kumar et al., 2016). The authors found 29 randomized controlled trials and one quasi-randomized trial (i.e. total of 30 trials) with a total of 2,878 participants ranging from 68 to 85 years. Less than a quarter of these trials primarily aimed to reduce fear of falling in older adults (23%). The different types of exercise interventions included: tai chi; yoga; gait, balance, coordination and functional tasks; and strength and resistance-based. These interventions ranged from a 12 week or 26 week duration, with most exercises needing to be performed one to three times per week (89%) (Kumar et al., 2016). Overall, the authors of this review concluded that exercise interventions were associated with a small to moderate decrease in fear of falling levels in community-dwelling older adults immediately post-intervention (SMD 0.37, 95% CI 0.18, 0.56) (Kumar et al., 2016). In the subgroup analyses, the effect of exercise interventions on fear of falling did not vary by the duration of interventions (X^2=0.88, df=2, P=0.64), type of exercise (X^2=3.46, df=2, P=0.18) or exercise frequence (X^2=0.20, df=1, P=0.66).

However, the authors found a high risk of bias in most of these trials and therefore caution the interpretation of their findings.

In a more recent systematic review and meta-analysis, the effects of CBT in combination with a variety of falls risk reduction strategies was evaluated on fear of falling and balance in older adults (Liu, Ng, Chung & Ng, 2018). These authors found six randomized-controlled trials published between 1998 and 2016, with two studies that adopted individual cognitive-behavioural therapy interventions and four that used group-based cognitive-behavioural therapy interventions (Liu et al., 2018). Included participants were aged 60 years and older, with the majority being female (74%) and community-dwelling (95%) (Liu et al., 2018). Cognitive-behavioural therapy was defined as "a psychotherapeutic intervention aimed at modifying individuals' thoughts and behaviour" (Liu et al., p. 521). Specifically, all of the included studies used cognitive-behavioural therapy components such as: cognitive restructuring, promotion of physical activities and goal setting (Tennstedt et al., 1998; Liu & Tsui, 2014; Huang, Yang & Liu, 2011; Huang et al., 2016; Dorresteijn et al., 2016; Parry et al., 2016). In synthesizing the literature, five out of the six studies found a significant ($p<0.001$) small effect size of 0.33 (95% CI 0.21-0.46) in favour of cognitive-behavioural therapy in comparison to their controls (e.g., Tai Chi alone, care-as-usual or no treatment) (Liu & Tsui, 2014; Huang, Yang & Liu, 2011; Huang et al., 2016; Dorresteijn et al., 2016; Parry et al., 2016). These five studies were rated at low risk of reporting bias and reported adequate random sequence generation (Liu et al., 2018). In addition, three of these interventions were led by nurses (Huang, Yang & Liu, 2011; Huang et al., 2016; Dorresteijn et al., 2016).

Therefore, due to the alignment with the Theory of Emotional Processing and CBT, we highly recommend further integration of this therapy into falls risk reduction exercise interventions. These falls risk reduction interventions may effectively address

high levels of fear of falling in community-dwelling older adults, and provide further opportunities for nurses working with older adults in the community.

CBT falls risk reduction interventions developed for a Canadian context

Several respondents noted their fear of falling in outside environments specifically during the winter months. In particular, these respondents avoided going outside due to large amounts of snow or ice during the winter months. Similar to the multicomponent intervention in our study (fall prevention clinic), a multicomponent individualized falls risk reduction intervention called 'A Matter on Balance-Home program' was implemented in the Netherlands. The intervention was based on cognitive-behavioural therapy, with the specific goals of instilling adaptive and realistic views on falls, reducing fall risks and increasing activity and safe behaviour (Dorresteijn et al., 2016; Zijlstra et al., 2009). There were three home-visits and four telephone calls with a total of 194 participants in the intervention group and 195 in the control (i.e. no treatment for fear of falling). A personalized action plan was established based on their falls risk reduction needs. After evaluation, this intervention not only increased participation in the balance-training portion of the program, but also significantly decreased the incidence of recurrent falls ($p<0.05$) (Dorresteijn et al., 2016). Participants in the intervention group also had decreased fear of falling and greater confidence in completing their activities of daily living after attending this intervention (Dorresteijn et al., 2016). Similarly to our findings, some participants exhibited a decreased fear of falling after the intervention but there was no statistically significant difference between the before and after FES-I scores (Dorresteijn et al., 2016).

However, it is difficult to compare our study with this randomized controlled trial for several reasons. Our study intervention (the fall prevention clinic) was not explicitly developed to reduce fear of falling levels, whereas 'A Matter on Balance-Home program' was based on cognitive-behavioural therapy to address the underpinnings of fear of

falling. Additionally, there are significant differences in the study designs (mixed methods versus randomized controlled trial), number of participants (n=32 versus n=194) and context (Canada versus The Netherlands). Despite these differences, in alignment with the Theory of Emotional Processing, further integration of cognitive-behavioural therapy into falls risk reduction interventions may effectively *acknowledge* and *address* fear of falling levels specific to environmental factors (e.g., winter weather conditions) in a Canadian context. The CBT portion of the intervention would allow the individual to delve into their fears about falling in poor winter weather conditions and ultimately restructure these fears through 'cognitive restructuring' techniques. For instance, individuals running programs similar to 'A Matter on Balance-Home program' could encourage individuals who feared falling on ice or snow to buy ice picks for their winter boots and accompany them while walking during inclement winter weather. This would also provide the fearful individuals with safe behaviours to remember while walking in winter weather. These programs could also assist individuals with setting up snow shoveling services that will also provide salt for ice hazards.

We acknowledge that the use of CBT in falls risk reduction interventions is new to the realm of falls risk reduction. However, we believe that further integration of CBT with exercise interventions is a promising nursing practice implication. Specifically with regards to the findings of our study, we believe that these interventions could potentially improve fear of falling levels by not only addressing their mobility limitations, but also the environmental factors specific to our Canadian context.

Implications for Research

Assessing patient-related factors and health behaviours

A significant theme that emerged from our qualitative findings was our participants' adherence levels to falls risk reduction strategies. This notion of health

behaviour change was addressed previously in the integrated discussion, and participants' unwillingness to change their health behaviours. Although not a focus in this thesis project, our findings suggest further investigations on the relationship between patient-related factors (e.g., personality traits) and adherence to fall risk reduction strategies should be conducted.

In a study by Mann and colleagues (2005), the personality trait of neuroticism was found to be an important psychological factor in the experience of fear of falling in community-dwelling older women. These authors acknowledge that there is a paucity of research that assesses the underlying individual differences in personality and the correlation to fear of falling (Mann et al., 2005). Perhaps health behaviour models should be used in the development of falls risk reduction strategies, and/or to predict the uptake and adherence to falls risk reduction strategies for each individual. For instance, the Theory of Planned Behaviour is a well-known theory that links health beliefs directly to behaviour (Ajzen & Timko, 1986; Azjen, 1991; Taylor, 2018). Health behaviour is a direct result of a behavioural intention, which has three separate components: attitudes toward the specific action, subjective norms regarding the action and perceived behavioural control (Ajzen & Timko, 1986; Azjen, 1991; Taylor, 2018). Future researchers could develop interview questions that simultaneously target each component of the theory and fear of falling in community-dwelling older adults. Through discovering the norms, attitudes and beliefs of specific groups of community-dwelling older adults, clinicians would be able to develop falls risk reduction interventions to address these components. For instance, in a systematic review and thematic synthesis of qualitative literature that included 132 studies, 32 studies noted older adults that believed exercise was unnecessary and potentially harmful (Franco et al., 2015). However, the World Health Organization suggests that older adults should participate in 150 minutes of moderate-intensity aerobic physical activity, 75 minutes of vigorous-intensity aerobic physical

activity or an equivalent combination of both moderate and vigorous-intensity activity throughout the week (WHO, 2010). Therefore, if these beliefs were found in a qualitative study, clinicians could develop a falls risk reduction intervention that partially targets the misconceptions of physical exercise, while also engaging older adults in physical exercise. Therefore, we believe that the role of personality and willingness to adapt or change health behaviours should be incorporated into fall risk reduction interventions.

Further analysis of quantitative data

Similar to our study, Jellesmark and colleagues (2012) used a sequential explanatory mixed method design. They analyzed older adults' fear of falling levels and functional ability post hospital discharge after suffering a hip fracture. Not only did they use several validated measurement tools for fear of falling (Falls Efficacy Scale-International, FES-I and Modified survey of Activities and Fear of Falling, mSAFFE), but also validated tools to assess functional ability (Functional Recovery Score, FRS and New Mobility Score, NMS). A statistical analysis of their entire quantitative data, including the association between fear of falling, avoidance of activities and functional ability was completed. However, due to the scope of this thesis project, we chose not to conduct an additional analysis of the quantitative data but this could be completed at a later date.

Additional qualitative research on fear of falling

Overall, we highly recommend the continued exploration (i.e. qualitative research) of fear of falling in community-dwelling older adults due to the complexity of this phenomenon and its subjective nature. Based on the second part of the literature review, I found few qualitative studies that explore fear of falling. In our study, we also acknowledged that the sample in our second phase (i.e. qualitative phase) was small. In addition, we recruited our entire study sample (i.e. for both phases of the study) solely from a fall prevention clinic with a similar patient population. It would be interesting to

compare qualitative findings from different groups of community-dwelling older adults, which would also increase the generalizability of the research. Therefore, partly due to the paucity of qualitative literature on fear of falling and the limited scope of our qualitative phase, we encourage further in-depth interviews of older adults on this topic.

Strengths and Limitations

A strength and limitation was the recruitment strategy used in the study of this thesis project. Recruitment was initiated during a scheduled follow-up telephone call from a member of the fall prevention clinic. Although participants were notified that a researcher from the University of Ottawa was conducting the study, several participants assumed that the researcher was employed by the fall prevention clinic. This may have introduced bias in the participants' qualitative interviews, and participants may not have candidly commented on avoidance behaviours or adherence to the falls risk reduction strategies recommended from the clinic. However, recruitment through the fall prevention clinic also allowed the researcher to retrospectively collect data from the patients' charts and their initial FES-I scores completed at the fall prevention clinic.

Initially, the study in this thesis project began as an embedded mixed methods design, where the qualitative data was the secondary and supportive phase to the quantitative data. Instead, we focused on the qualitative phase since there was no statistically significant difference in the initial and follow-up FES-I scores (from the quantitative phase of the study). This allowed us to add to the paucity of qualitative literature on fear of falling in community-dwelling older adults in a Canadian context.

The use of triangulation was an additional strength of the qualitative phase of the study. Both my thesis supervisor and a PhD student, who are proficient in qualitative methods, assisted in the developing the code book and final themes. This ensured that the findings not only remained true to the data, but also the participants' experiences

(Polit & Beck, 2012). In addition, the final themes of the qualitative data were presented and agreed upon by the thesis committee prior to submitting this thesis project.

Concluding statements

Overall, fear of falling was noted as a significant influence in the everyday activities of community-dwelling older adults in this thesis project. There is a lack of focus on the psychosocial aspect of falls risk reduction, and this thesis emphasized the importance of understanding high fear of falling levels through a qualitative approach. Although further qualitative research is necessary on fear of falling in community-dwelling older adults, it is clear that future falls risk reduction strategies and interventions should potentially incorporate behavioural theories and psychotherapy (e.g., cognitive behavioural therapy) due to the theoretical underpinnings of fear of falling. Through disseminating this research and bringing awareness to the prevalence of fear of falling in community-dwelling older adults, I hope to help shift the predominantly biomedical focus towards the psychosocial aspect of falls risk reduction.

References

Ajzen, I., & Timko, C. (1986). Correspondence between health attitudes and behavior. *Basic and Applied Social Psychology*, *7*(4), 259-276.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.

Beck, A. T. (1970). Cognitive therapy: Nature and relation to behavior therapy. Behavior Therapy, 1, 184 –200. http://dx.doi.org/10.1016/ S0005-7894(70)80030-2

Bunn, F., Dickinson, A., Barnett-Page, E., Mcinnes, E., & Horton, K. (2008). A systematic review of older people's perceptions of facilitators and barriers to participation in falls-prevention interventions. *Ageing & Society*, *28*(4), 449-472.

Chippendale, T., & Lee, C. D. (2018). Characteristics and fall experiences of older adults with and without fear of falling outdoors. *Aging & mental health*, 1-7.

Child, S., Goodwin, V., Garside, R., Jones-Hughes, T., Boddy, K., & Stein, K. (2012). Factors influencing the implementation of fall-prevention programmes: a systematic review and synthesis of qualitative studies. *Implementation science*, *7*(1), 91.

Dorresteijn, T. A., Zijlstra, G. R., Ambergen, A. W., Delbaere, K., Vlaeyen, J. W., & Kempen, G. I. (2016). Effectiveness of a home-based cognitive behavioral program to manage concerns about falls in community-dwelling, frail older people: results of a randomized controlled trial. BMC geriatrics, 16(1), 2.

Ellis, A. (1962). Reason and emotion in psychotherapy. New York, NY: Stuart.

Foa, E. B., & Kozak, M. J. (1985). Treatment of anxiety disorders: Implications for psychopathology.

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: exposure to corrective information. *Psychological bulletin*, *99*(1), 20.

Foa, E. B., Huppert, J. D., & Cahill, S. P. (2006). Emotional Processing Theory: An Update.

Franco, M. R., Tong, A., Howard, K., Sherrington, C., Ferreira, P. H., Pinto, R. Z., & Ferreira, M. L. (2015). Older people's perspectives on participation in physical activity: a systematic review and thematic synthesis of qualitative literature. *Br J Sports Med*, *49*(19), 1268-1276.

Hart-Hughes, S., Quigley, P., Bulat, T., Palacios, P., & Scott, S. (2004). An interdisciplinary approach to reducing fall risks and falls. *Journal of Rehabilitation*, *70*(4), 46.

Honaker, J. A., & Kretschmer, L. W. (2014). Impact of fear of falling for patients and caregivers: perceptions before and after participation in vestibular and balance rehabilitation

Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. Cognitive Therapy and Research, 36, 427– 440. http://dx .doi.org/10.1007/s10608-012-9476-1.

Huang, T. T. (2006). Geriatric fear of falling measure: Development and psychometric testing. *International Journal of Nursing Studies*, *43*(3), 357-365.

Huang, T. T., Yang, L. H., & Liu, C. Y. (2011). Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioural strategies and intense Tai Chi exercise: A randomized controlled trial. *Journal of Advanced Nursing*, *67*(5), 961-971.

Huang, T. T., Chung, M. L., Chen, F. R., Chin, Y. F., & Wang, B. H. (2016). Evaluation of a combined cognitive-behavioural and exercise intervention to manage fear of falling among elderly residents in nursing homes. *Aging & mental health*, *20*(1),

2-12.

Jayasinghe, N., Sparks, M. A., Kato, K., Wilbur, K., Ganz, S. B., Chiaramonte, G. R., ... & Evans, A. T. (2014). Exposure-based CBT for older adults after fall injury: description of a manualized, time-limited intervention for anxiety. *Cognitive and behavioral practice*, *21*(4), 432-445.

Jellesmark, A., Herling, S. F., Egerod, I., & Beyer, N. (2012). Fear of falling and changed functional ability following hip fracture among community-dwelling elderly people: an explanatory sequential mixed method study. *Disability and rehabilitation*, *34*(25), 2124-2131.

Johnsen, T. J., & Friborg, O. (2015). The effects of cognitive behavioral therapy as an anti-depressive treatment is falling: A meta-analysis. *Psychological Bulletin*, *141*(4), 747.

Kumar, A., Delbaere, K., Zijlstra, G. A. R., Carpenter, H., Iliffe, S., Masud, T., ... & Kendrick, D. (2016). Exercise for reducing fear of falling in older people living in the community: Cochrane systematic review and meta-analysis. *Age and ageing*, *45*(3), 345-352.

Lachman, M. E., Howland, J., Tennstedt, S., Jette, A., Assmann, S., & Peterson, E. W. (1998). Fear of falling and activity restriction: the survey of activities and fear of falling in the elderly (SAFE). *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *53*(1), P43-P50.

Lee, F., Mackenzie, L., & James, C. (2008). Perceptions of older people living in the community about their fear of falling. *Disability and rehabilitation*, *30*(23), 1803-1811.

Liu, Y. W. J., & Tsui, C. M. (2014). A randomized trial comparing Tai Chi with and without cognitive-behavioral intervention (CBI) to reduce fear of falling in community-dwelling elderly people. *Archives of gerontology and geriatrics*, *59*(2),

317-325.

Liu, T. W., Ng, G. Y., Chung, R. C., & Ng, S. S. (2018). Cognitive behavioural therapy for fear of falling and balance among older people: a systematic review and meta-analysis. *Age and ageing*, *47*(4), 520-527.

Mahler, M., & Sarvimäki, A. (2012). Fear of falling from a daily life perspective; narratives from later life. *Scandinavian journal of caring sciences*, *26*(1), 38-44.

Mann, R., Birks, Y., Hall, J., Torgerson, D., & Watt, I. (2005). Exploring the relationship between fear of falling and neuroticism: a cross-sectional study in community-dwelling women over 70. *Age and Ageing*, *35*(2), 143-147.

Nyman, S. R., & Victor, C. R. (2011). Older people's participation in and engagement with falls prevention interventions in community settings: an augment to the Cochrane systematic review. *Age and ageing*, *41*(1), 16-23.

Parry, S. W., Bamford, C., Deary, V., Finch, T. L., Gray, J., MacDonald, C., ... & McColl, E. M. (2016). Cognitive-behavioural therapy-based intervention to reduce fear of falling in older people: therapy development and randomised controlled trial-the Strategies for Increasing Independence, Confidence and Energy (STRIDE) study. *Health Technology Assessment (Winchester, England)*, *20*(56), 1.

Perell, K. L., Manzano, M. L. P., Weaver, R., Fiuzat, M., Voss-McCarthy, M., Opava-Rutter, D., & Castle, S. C. (2006). Outcomes of a consult fall prevention screening clinic. *American journal of physical medicine & rehabilitation*, *85*(11), 882-888.

Polit, D. F. & Beck, C. T. (2012). Nursing research: Generating and assessing evidence for nursing practice. Philadelphia, PA: Lippincott Williams & Wilkins.

Rector, N. A., & Beck, A. T. (2012). Cognitive behavioral therapy for schizophrenia: An empirical review. Journal of Nervous and Mental Disease, 200, 832– 839.

http://dx.doi.org/10.1097/NMD.0b013e318 26dd9af.

Scheffer, A. C., Schuurmans, M. J., Van Dijk, N., Van Der Hooft, T., & De Rooij, S. E. (2008). Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age and ageing*, *37*(1), 19-24.

Taylor, S. (2018). *Health psychology* (Tenth ed.).

Tennstedt, S., Howland, J., Lachman, M., Peterson, E., Kasten, L., & Jette, A. (1998). A randomized, controlled trial of a group intervention to reduce fear of falling and associated activity restriction in older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *53*(6), P384-P392.

Tinetti, M. E., Richman, D., & Powell, L. (1990). Falls efficacy as a measure of fear of falling. *Journal of gerontology*, *45*(6), P239-P243.

Velozo, C. A., & Peterson, E. W. (2001). Developing meaningful fear of falling measures for community dwelling elderly. *American journal of physical medicine & rehabilitation*, *80*(9), 662-673.

Ward-Griffin, C., Hobson, S., Melles, P., Kloseck, M., Vandervoort, A., & Crilly, R. (2004). Falls and fear of falling among community-dwelling seniors: The dynamic tension between exercising precaution and striving for independence. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *23*(4), 307-318.

World Health Organization (WHO) (2010). Global recommendations on physical activity for health. Retrieved from http://whqlibdoc.who.int/publications /2010/9789241599979_eng.pdf

Yardley, L., & Smith, H. (2002). A prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older people. *The Gerontologist*, *42*(1), 17-23.

Yardley, L., Beyer, N., Hauer, K., Kempen, G., Piot-Ziegler, C., & Todd, C. (2005).

Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and ageing*, *34*(6), 614-619.

Appendix A - Falls risk reduction interventions targeted towards fall-related psychological concerns

Reference	**Study Purpose**	**Intervention**	**Instrument (s)**	**Setting & Sample**	**Sampling**	**Study Date/FrPC Follow-up**	**Outcome(s)**
Cruz-Díaz, D., Martínez-Amat, A., Manuel, J., Casuso, R. A., de Guevara, N. M. L., & Hita-Contreras, F. (2015). Effects of a six-week Pilates intervention on balance and fear of falling in women aged over 65 with chronic low-back pain: A randomized controlled trial. Maturitas, 82(4), 371-376.	To evaluate the effects of six weeks of Pilates regarding functional balance, fear of falling and pain in community living women older than 65 years old with chronic low-back pain.	**Pilates:** physiotherapy intervention 2 times/week for 6 weeks + pilates; the addition of two sessions/week of pilates (one hour sessions) during the 6-week intervention; Control: physiotherapy intervention 2 times/week for 6 weeks; **Physiotherapy**: the application of Transcutaneus Electrical Nerve Stimulation (TENS) with a pulse frequency of 100 Hz for 40 min. and 20 min. of massage and stretching of the low-back zone	Spanish version of FES-I	Community setting in Spain (demographic/ population of area unknown from manuscript); 103 initially included, randomly allocated: N=51 (Pilates) and N=52 (Control/Physio); Final: N=47 (Pilates) and N=50 (Control/Physio)	Inclusion criteria: Community living, women, 65 years and older, chronic lower back pain, seeking physiotherapy treatment for lower back pain, lower back pain for at least 3 months, absence of radiculopathy or other damages to the spine such as fractures, stenosis or tumours, not being a habitual Pilates practitioner and physical autonomy to perform basic daily activities	FES-I: baseline and post-intervention (6-weeks)	-Fear of falling levels significantly decreased after 6 weeks in the Pilates group ($p<0.005$)
Dorresteijn, T. A., Zijlstra, G. R.,	To assess the effectiveness of	**Intervention**: ('A Matter of Balance'-	FES-I	Southern Netherlands	Drawn from the Netherland's mandated	Intervention period=4	-Intervention significantly reduced

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
Ambergen, A. W., Delbaere, K., Vlaeyen, J. W., & Kempen, G. I. (2016). Effectiveness of a home-based cognitive behavioral program to manage concerns about falls in community-dwelling, frail older people: results of a randomized controlled trial. BMC geriatrics, 16(1), 2.	a home-based cognitive behavioral program on concerns about falls, in frail, older people living in the community.	multicomponent, cognitive behavioural, community-based program to reduce concerns about falls); 7 individual sessions; "instilling a realistic view of fall risk, increasing self-efficacy beliefs and feelings of control, and changing behaviour"; while also promoting the uptake of old and new daily life activities that were avoided due to concern about falls; motivational interviewing during home visits by community nurse; participants encouraged to invite a significant other to be present during home visits **Control**: Received care as usual		(drawn from a mandated municipal registry); Total N = 389 Intervention N=194 (final N=141); Control N=195 (final N=171)	citizen registry to select a representative, sample and randomly drawn by 3 offices in Southern Netherlands; Selected in 4 consecutive cycles in 2009- each cycle lasted 15 months, included screening for eligible particpants, baseline measurements, stratified randomization; Inclusion criteria: 70 years and above; reported at least some concerns about falls and associated activity avoidance, perceived their general health as fair or poor and were willing to participate Exclusion criteria: Confined to bed, wheelchair dependent, waiting for nursing home admission, or experienced substantial hearing, vision or cognitive impairments	months; Follow-up measurements= 5 and 12 months	concerns about falls at both 5 and 12-month follow-up; -Showed favourable effects regarding the reduction of avoidance of activity due to concerns about falls, disability and the number of indoor falls in the intervention group compared to the control group
Freiberger, E.,	To determine	4 groups:	-ABC and	Community in	Recruitment: database	Baseline, 6,	-All groups showed

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
Häberle, L., Spirduso, W. W., & Rixt Zijlstra, G. A. (2012). Long-term effects of three multicomponent exercise interventions on physical performance and fall-related psychological outcomes in community-dwelling older adults: a randomized controlled trial. Journal of the American Geriatrics Society, 60(3), 437-446.	the long-term effects of three strength and balance exercise interventions on physical performance, fall-related psychological outcomes, and falls in older people.	**1. Control** (no intervention) **2. Strength and balance group** (weight-bearing exercises) **3. fitness group** (strength, balance and endurance) **4. multifaceted group** (strength and balance training with fall risk education to address fall-related psychological aspects and cognitive training) -Intervention provided by 2 fall prevention instructors for a period of 16 weeks with 2 1-hour group sessions/week	-Two questions from the perceived Consequences of Falling scale (CoF): 1. "loss of functional independence-I will become disabled" 2. "damage to identity-I will feel foolish"	Germany; N = 280 (analyzed), 207 (completed interventions); Control group (analyzed N=80; N=52 completed); Multifaceted (analyzed N=73; N=58 completed); Strength and balance (analyzed N=63; N=49 completed); Fitness (analyzed N=64; N=48 completed)	from a health insurance company, which included approximately 25% of the German city's population Inclusion criteria: Community-dwelling, older adults ages 70-90 years who had fallen in the past 6 months or reported FOF Exclusion criteria: Unable to ambulate independently or with cognitive impairment	12, and 24 months	slight improvements over time regarding the CoF scale, although the fitness group showed a worsened outcome on 'perceived consequence' at 12 months -Mixed-effects analyses comparing the outcomes of the intervention groups with those of the control group revealed no significant differences regarding the fall-related psychological outcomes
Gusi, N., Adsuar, J. C., Corzo, H., del Pozo-Cruz, B., Olivares, P. R., & Parraca, J. A. (2012). Balance training reduces fear of falling and	To test the effectiveness of a balance training program using the Biodex Balance System platform in older	**Intervention** (balance training program using the Biodex Balance System): additional exercise program involving exercises focusing on balance/rebalancing and weight changes training	FES-I-Spanish version	Public nursing home (with low SES resources); N = 40 (20/group)	Inclusion criteria: Residents without severe cognitive or physical impairments, 65 years and older, fear of falling (with a score greater than 23 on the FES-I), legal capacity to give	Follow-up: baseline and post-intervention at 12 weeks	-Regression analysis indicated that the initial FES-I and falls risk test scores predicted improvements after training -Control group-deteriorated by 1

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
improves dynamic balance and isometric strength in institutionalised older people: a randomised trial. Journal of physiotherapy, 58(2), 97-104.	people with fear of falling.	with the Biodex Balance System for 2 sessions per week for 12 weeks **Control:** received standard multidisciplinary care, with PT, OT and nursing care available in public nursing homes;			informed consent, and ability to understand instructions Exclusion criteria: Artificial prosthesis, participation in any physical therapies other than those routinely offered by the nursing home, any symptom that a medical examiner deemed as warranting exclusion, any disease that contraindicated the exercise program or required special care and any disease requiring the daily intake of psychotropic drugs or affecting the vestibular system		point (in fear of falling scores) during the intervention period -The balance training protocol using the Biodex Balance System in institutionalised older people reduced FOF and improved their dynamic balance and knee strength
Halvarsson, A., Franzén, E., & Ståhle, A. (2015). Balance training with multi-task exercises improves fall-related self-efficacy, gait, balance performance and physical function	To evaluate the effects of a balance training program including dual- and multi-task exercises on fall-related self-efficacy, fear of falling, gait and balance performance,	**Balance Training:** performed in groups of 6-10 participants, 45 min/session, 3 times/week for 12 weeks; 2-3 physiotherapists were present at each session; training comprised of exercises targeting various systems for postural control, such as	-FES-I -Fear of falling (one item measurement)	Community in Stockholm; N= 352 participants reported their interest, 96 (94 women and 2 men) met inclusion criteria: Training group: N=34;	Recruitment: by adversitement in local newspapers in Stockholm County, the Swedish Osteoporosis Society and Karolinska University Hospital Inclusion criteria: Community-dwelling older adults with osteoporosis, being	Spring 2010-Fall 2011	-All 3 groups had significantly improved 'fall-related self-efficacy' measured with the FES-I from baseline to follow-up; both training groups had a significantly larger improvement on the FES-I in comparison to the control group;

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
in older adults with osteoporosis: a randomized controlled trial. Clinical rehabilitation, 29(4), 365-375.	and physical function in older adults with osteoporosis.	stability limits, sensory orientation, gait and multi-task like adding cognitive or/and motor tasks to an exercise; exercises performed on 3 different levels: basic, moderate and advanced; participants needs to attend at least 24-36 possible training sessions to be included in follow-up assessments; **Training & Physical Activity:** (same as the balance training group) + walk for at least 30 minutes, 3 times/week; preferably with poles; **Control:** used web-based software; offered the balance training at the end of their session		Training + Physical activity: N=31; Control group: N=31; ACTUALLY ANALYZED: N=69; Training group: N=25; Training + Physical activity: N=18; Control group: N=26	afraid of falling and/or having experienced at least one fall in the last 12 months, and independence in ambulation; Exclusion criteria: Experienced a fracture during the last year, had a MMSE score, severely decreased vision, or other diseases or constraints that might interfere with participation in the exercise program		-No significant change was found for 'fear of falling' between the 3 groups;
Huang, T. T., Yang, L. H., & Liu, C. Y. (2011). Reducing the fear of falling among community-dwelling elderly adults through cognitive-	To examine the effectiveness of cognitive-behavioural strategies with/without intense Tai Chi exercise in reducing fear of falling among	3 groups: **1. Cognitive-behavioural** (n=37) - received an intervention adapted from previous studies and the FOF management model developed by Huang; 8 weekly sessions, lasting 60-90 minutes in groups	-GFFM -FES	Rural area of northeastern Taiwan; Total randomized (N=186) 1. Cognitive-behavioural (N=62) 2. Cognitive-behavioural &	Recruitment: from a randomly selected 660 residents living in registered households of a rural community by mail; Inclusion criteria: 60 years and older, mentally intact (Short	January to December 2007; Data points: baseline at 2 & 5 months	-Mean total FES scores for CB and CB with tai chi increased at each data point (higher the score the more confidence in completed ADLs) -Community-dwelling older adults

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
behavioural strategies and intense Tai Chi exercise: a randomized controlled trial. Journal of Advanced Nursing, 67(5), 961-971.	community-dwelling elderly adults.	of 8-12 participants; main strategy is to restructure misconceptions to promote a view of fall riksk and FOF as controllable **2. Cognitive-behavioural & Tai Chi** (n=37) - same as CB group plus Tai chi; ten tai chi positions derived from the Yang style, in groups of 10-16 participants, 5 times/week for 8 weeks **3. Control** (n=38) - received no extra care; could use or apply for available services in the area as before participation in the study		Tai Chi (N=62) 3. Control (N=62)	Portable Mental Status Questionnaire score >6 for illiterate individuals, >7 for those with 6 years of education and >8 for those with more than 6 years of education), community-dwelling, able to communicate in Mandarin or Taiwanese Exclusion criteria: Artificial leg or leg brace, unstable health problems or terminally ill		that received CB with tai chi exercise, they had less FOF, better falls efficacy, better mobility (gait and balance), better social support and better quality of life than elders in the control group
Kapan, A., Luger, E., Haider, S., Titze, S., Schindler, K., Lackinger, C., & Dorner, T. E. (2017). Fear of falling reduced by a lay led home-based program in frail community-	To assess the effects of a 12-week home-based intervention program carried out by lay volunteers on fear of falling in frail older adults.	**Exercise + nutrition intervention program (PTN):** program carried out by lay volunteers (age >/= 50 years) called "buddies" who were trained by health professionals and supervised over their study period; each buddy visited one frail older	FES-I	Community in Austria (specifics not stated in manuscript); N=80 (initially randomized); PTN (analyzed N=41; completed	Recruitment: via the media and 3 hospitals; Inclusion criteria: 65 years and older, prefrail or frail according to the Frailty Instrument of the Survey of Health, Ageing and Retirement in Europe, malnutrition	Sept. 2013-Sept. 2014	-Between-group comparison revealed significant differences in the FES-I scores, with a decrease in FOF of 10% in the PTN group and no change in the SOSU group; -Significant

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
dwelling older adults: A randomised controlled trial. Archives of gerontology and geriatrics, 68, 25-32.		person at home twice/week and performed structured strength training (25 mins. or two sets of 12-15 reps until muscular exhaustion) and nutrition education **Social support intervention (SOSU):** program carried out by lay volunteers (age >/= 50 years) called "buddies" and trained by health professionals and supervised over their study period; each buddy visited one frail older person at home twice/week without training and socialized with individual; engaged participant in "cognitive practice" e.g. card games or memory exercises		intervention N=32); SOSU (analyzed N=39; completed intervention N=27)	or at risk of malnutrition, living at home, no medical contraindication for the performance of strength training and able to walk (with or without a walking aid); Exclusion criteria: living in a nursing home or planned admission to a nursing home, chemo or radio-therapy; more than 180h/month of nursing care; cannot move without help; insulin-treated diabetes mellitus; COPD stage III or IV; dialysis patient or chronic kidney insufficiency with protein restriction; or impaired cognitive function according to the MMSE		differences in the between-group comparison in the FES-I indoor score, the SPPB score and PASE score, all in favour of the PTN group; -The within-group analysis in the PTN group from baseline to follow-up showed a significant improvement in all parameters -FES-I scores were significantly reduced (by at least 4 points) in 27% (19% PTN & 8% SOSU) of the participants; -Increased mobility and handgrip strength significantly contributes to the changes in FES-I scores at 3-months
Karinkanta, S., Nupponen, R., Heinonen, A., Pasanen, M., Sievänen, H., Uusi-Rasi, K., ... & Kannus, P. (2012). Effects of	To evaluate the effects of exercise on health-related quality of life (HRQoL) and fear of falling	4 groups: **1. Resistance-training** (exercises for large muscle groups) (n=37) **2. Balance-jumping** (modified and step aerobics) (n=37)	Fear of falling visual analogue scale (no fear at all-0 to very great fear-	Community in Tampere, Finland; N = 149 Intervention group (n = 38); Control group, no	Inclusion criteria: Willingness to participate, full understanding of the study procedures, no history of any illness contraindicating exercise or limiting	Baseline, post-intervention and 12-months post-intervention ; 2002-	-Fear of falling during daily activities was expressed in 6% of the participants -Decreased FOF was found at 12 and 24 months

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
exercise on health-related quality of life and fear of falling in home-dwelling older women. Journal of aging and physical activity, 20(2), 198-214.		**3. Combination group** (resistance and balance-jumping) (n=38) **4. Control group** (no intervention) (n=37)	100)	intervention (n=21)	participation in the exercise program or of illness affecting balance or bone, no uncorrected vision problems and taking no medications known to affect balance or bone metabolism	2004	-Linear mixed model revealed no between-groups difference for changes in fear of falling
Kim, B. H., Newton, R. A., Sachs, M. L., Glutting, J. J., & Glanz, K. (2012). Effect of Guided Relaxation and Imagery on Falls Self-Efficacy: A Randomized Controlled Trial. Journal of the American Geriatrics Society, 60(6), 1109-1114.	To examine the effects of guided relaxation and imagery (GRI) on improvement in falls self-efficacy in older adults who report having a fear of falling.	**Guided relaxation & imagery audio compact disc** (GRI) (n=60) - audio disc included an introduction track, 2 guided relaxation tracks and 11 guided imagery tracks; the guided imagery tracks were based on previous literature on FOF that also promoted physical activity; as tracks progressed the activities became more difficult; asked to listen twice/week for 6 weeks in 10-15 minute sessions **Control** : Guided relaxation audio compact disc & music of choice (n=59) - asked to listen twice/week for 6 weeks in 10-15 minute sessions; ***unsure what	Short FES-I	General community; Total N = 119 Intervention N=60 (final N=46); Control N=59 (final N=45)	Recruitment: from numerous churches, senior homes, centers in an urban area; flyers and verbal announcements from first author; Exclusion criteria: reported no FOF, history of Parkinson's disease that restricted them from doing activities, history of stroke or untreated heart disease, severs rheumatoid arthritis or osteoarthritis, history of fracture due to fall, diagnosis of untreated diabetes mellitus, untreated and uncontrolled heart or lung disease, no access to a CD player and not willing to able	Baseline & 6-weeks post-intervention	-Both groups had significant improvements in scores after 6 weeks, but the GRI group had better improvement on their scores than those in the control

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
		'relaxation audio compact disc' entails			to follow procedures specified by the study or instructions of the researcher		
Kwok, B. C., & Pua, Y. H. (2016). Effects of WiiActive exercises on fear of falling and functional outcomes in community-dwelling older adults: a randomised control trial. Age and ageing, 45(5), 621-627.	To determine whether a 12-week WiiActive exercise intervention would be superior to a Gym-based exercise intervention in reducing fear of falling among moderately frail community-dwelling older adults	**Wii Intervention**: 1/week for 1 hour ; 20 minutes of Nintendo WiiActive gaming exercises with the Wii balance board and resistance band; -received home safety advice, and an intervention session supervised by a PT and a PT assistance, who prescribed home exercises to each participant **Gym Intervention:** Cardiovascular training, and balance and strength training over 12 weeks; 1 hour/week; received home safety advice, and an intervention session; prescribed home exercises to each participant	mFES	Community-dwelling in Singapore; N=80 (initially randomized); Wii (analyzed N=40; completed intervention N=35); Gym (analyzed N=40; completed intervention N=29)	Recruitment: from Singapore General Hospital outpatient centres Inclusion criteria: Participants who were not on any routine exercise programme, with MFES scores </=9, could comprehend English, Mandarin or a local dialect Exclusion criteria: Participants with neurological disorders	June 2010 to April 2011	-Fear of falling levels at weeks 13 and 24, within-group improvements were statistically significant; -Improvements in both groups achieved a min detectable change of 1.5 point at week 13, whereas only at week 24 the Wii group maintained the 1.5 change -Wii group showed statistically significant improvement in fear of falling levels over the gym group at week 24
Levy, F., Leboucher, P., Rautureau, G., Komano, O.,	To assess virtual reality therapy associated with	**Virtual reality**: 12 sessions, 40 minutes each, once/week; brief clinical interview and	FFM	Unknown; N=16; VR group (N=9); Control group	Inclusion criteria: Participants who exhibited FOF, defined as a phobic reaction to	Unknown	-Difference between mean FFM scores before and after the intervention was

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
Millet, B., & Jouvent, R. (2016). Fear of falling: efficacy of virtual reality associated with serious games in elderly people. Neuropsychiatric disease and treatment, 12, 877.	serious games in the treatment of fear of falling	virtual reality exposure followed by a serious game; used a V8 head-mounted display to walk in 3D virtual worlds (4 different worlds to choose from); participants played video games by moving their bodies, goal was to give visual feedback on their movements **Control:** On waiting list, no treatment		(N=7)	walking (i.e. disproportioned fear of walking with anxious reaction and behavioural avoidance), with somatic diseases (e.g., Parkinson's) Exclusion criteria: Current severe depressive episode		2.78 (4.82) for the therapy group and 4.14 (4.3) for the control group -Significantly greater decrease in the therapy group (in other words, the FFM scores of participants who completed the 12 sessions were significantly lower ($p<0.05$) than those of participants who were treated as usual
Liu, Y. W. J., & Tsui, C. M. (2014). A randomized trial comparing Tai Chi with and without cognitive-behavioral intervention (CBI) to reduce fear of falling in community-dwelling elderly people. Archives of gerontology and geriatrics, 59(2), 317-325.	To compare the effects of Tai Chi with and without CBI	**Tai Chi:** 8-week coaching session, each 60 mins.; conducted in an elderly district community center to which the participants belonged; simplified ten-step Tai Chi program was introduced step by step throughout the 8-weeks **CBI and Tai Chi Program:** 8 weekly sessions of 60-90 min. CBI were implemented; aim to increase self-confidence, physical wellness with regard to	FES-I Chinese version	Four elderly community centers in Wing Tai Sin district in Hong Kong, Japan; N=122 (initially randomized); 1. Tai Chi (analyzed N=58; completed intervention N=43); CBI (analyzed N=64; completed intervention	Inclusion criteria: Fell at least once within the prevoius 12 months and have experienced at least some fear of falling (assessed by the Chinese version of FES-I, with scores of 23 and above); stable physical condition, able to stand on one leg for at least 5 s to allow them to perform daily Tai Chi; communicates in Cantonese Exclusion criteria: confined to bed or	May 2011-Jan. 2013	-No statistically significant difference in the FES-I scores between both intervention groups at any three time points -The mean FES-I for both groups was reduced from 29.67 and 30.02 at baseline to 23.89 and 25.48 at week 8 respectively (in other words, both groups had a similar effect on reducing community-dwelling elderly people's FOF

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
		falling and a sense of control over falling		N=53)	restricted by permanent use of a wheelchair; prior experience of Tai Chi; suffered from any major physical of health problems (i.e. Parkinson's, motor neuron disease, spinal tumors etc.)		
Nick, N., Petramfar, P., Ghodsbin, F., Keshavarzi, S., & Jahanbin, I. (2016). The effect of yoga on balance and fear of falling in older adults. PM&R, 8(2), 145-151.	To determine the effect of yoga on balance and fear of falling in older adults.	**Yoga**: Hatha style, with an emphasis on Pavanamuktasana and balance movements; certified yoga instructor led 1 hour classes twice/week for 8 weeks **Control**: No intervention	mFES	Community center; N=40 (initially randomized); Yoga (N=20); Control (N=20; N=1 lost to follow-up and not analyzed)	Inclusion criteria: 60-74 years old, MFES score <8 and a BBS score <45, willing to participate in the study Exclusion criteria: Cognitive or neuromuscular diseases, advanced osteoporosis or dizziness, or taking anticonvulsants, narcoleptics, sedatives, used a walking aid, attended yoga classes outside the research study or experienced acute pain that prevented them from doing the exercises	March 2011-June 2011	-No differences in baseline characteristics between the two groups -Significant difference in the change in MFES scores between the 2 groups, and a significant difference in mean BBS scores after the intervention between the 2 groups (in other words, the intervention improves postural balance and reduced FOF in older adults)

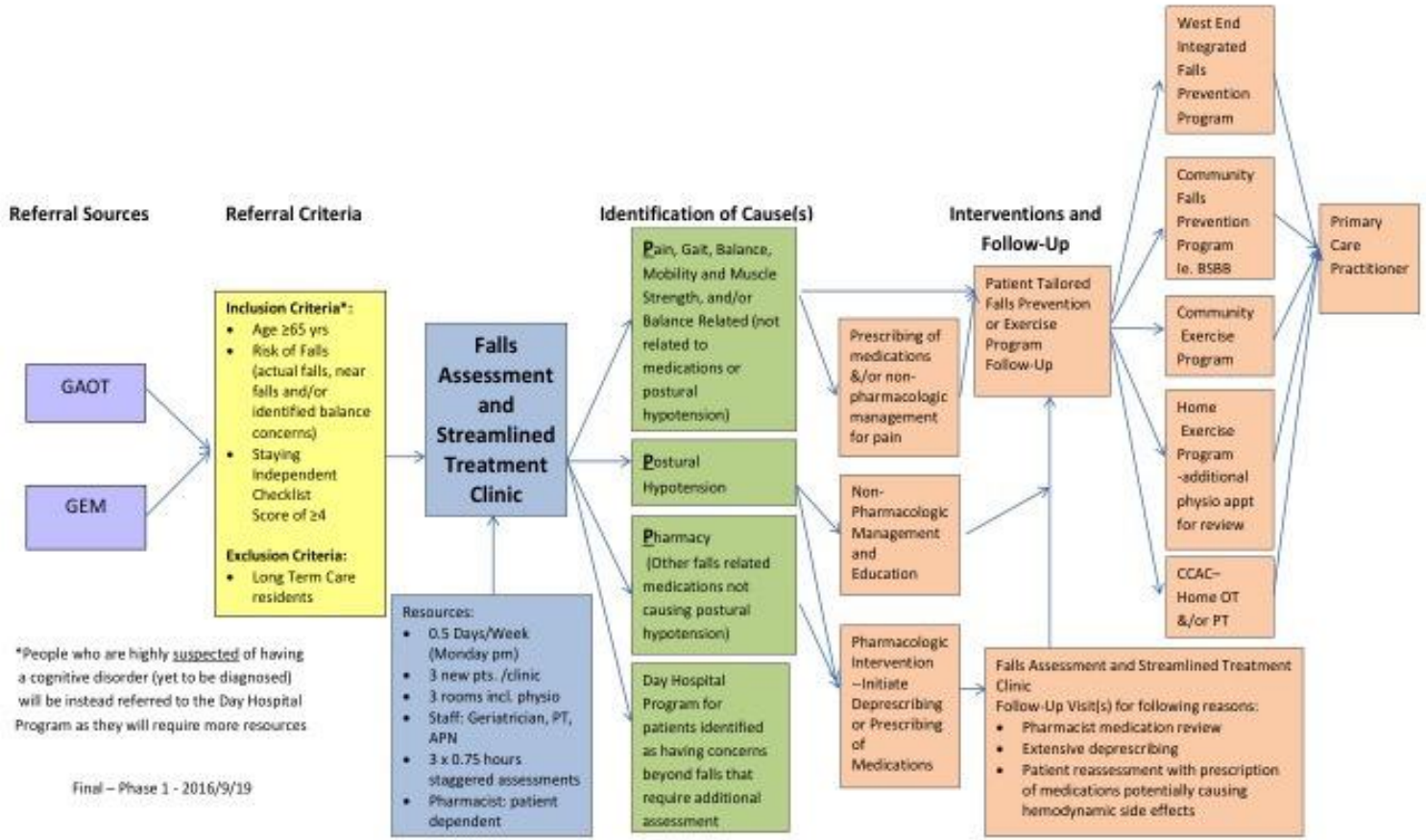
Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
Oh, D. H., Park, J. E., Lee, E. S., Oh, S. W., Cho, S. I., Jang, S. N., & Baik, H. W. (2012). Intensive exercise reduces the fear of additional falls in elderly people: findings from the Korea falls prevention study. The Korean journal of internal medicine, 27(4), 417.	To analyze the effects of an exercise program on the fear of falling among elderly people who have fallen before.	**Exercise program:** conducted in an indoor facility in a Sports Medical Center, supervised by exercise specialists; comprised120-minute group sessions held 3 times/week for 12 weeks and consisted of four phases (flexibility, resistance training, balance, muscular strength and endurance) **Control**: no intervention	-ABC Scale Korean version -FOF direct question ("how afraid are you of falling down?") with 3 response options: 1. Very much afraid 2. A little afraid 3. Not at all afraid	Senior center; N=65 (initially randomized); Exercise program [N=36; Completed N=32] Control (home exercise group) [N=29; Completed N=23]	Inclusion criteria: >60 years of age, had fallen previously in the last year	August 4, 2002-Dec. 12, 2002	-Subjects showed a decreased FOF (as evidence by the direction question); -Frequency of going outdoors decreased in the CG but not in the EG over the 12 week period; -There was a sustained rate of outdoor activities throughout the study period which may indicate that the program was successful in bolstering the confidence of the participants
Vind, A. B., Andersen, H. E., Pedersen, K. D., Joergensen, T., & Schwarz, P. (2010). Effect of a program of multifactorial fall prevention on health-related quality of life, functional ability, fear of falling and psychological well-being. A randomized	To evaluate the effect of multifactorial fall prevention on function, fear of falling, health-related qualify of life and psychological well-being.	**Fall Prevention Clinic (Intervention):** participants were examined by a team consisting of a doctor, nurse and a physiotherapist in the geriatric outpatient department; standardized assessments, with clear definitions or abnormal results were performed; initial assessments lasted 4 hours; individual intervention was planned	ABC	Geriatric outpatient department of a University hospital; Initially included N=392; Intervention (actually received intervention N=191; analyzed N=196); Control	Inclusion criteria: Patients 65 years and older, treated in the ED or admitted to Glostrup University Hospital because of a fall Exclusion criteria: Fall due to external force or alcohol intake, cognitive impairment, institutionalized, geriatric intervention, not living locally, no walking ability	September 2005-March 2007	-ABC scores increased from 71.9% at baseline to 76% after 12 months in the intervention group, and from 72.3% to 77.9% in the control group; there was no effect of the intervention on balance confidence;

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
controlled trial. Aging clinical and experimental research, 22(3), 249-254.		and offered to the patient; most interventions took place at the falls clinic and the outpatient department, and were performed by the research team; participants who were offered intervention by the physiotherapist were prescribed and instructed in progressive, personalized exercises, evaluated and intensified at follow-up visits **Control:** received usual care as planned during admission or in the ED		(analyzed N=196)			
Zhao, Y., Chung, P. K., & Tong, T. K. (2016). Effectiveness of a Community-Based Exercise Program on Balance Performance and Fear of Falling in Older Nonfallers at Risk for Falling: A Randomized, Controlled Study. Journal of aging	To evaluate the effectiveness of the ExBP in improving dynamic balance and static balance with compromised sensation, and reducing fear of falling in older nonfallers at risk for falling.	3 groups: **1. ExBP:** 90 min/session * 3 sessions/week * 16 weeks; follow-up was conducted at 8 weeks; each training session comprised 5 phases (1. 10-15 min. warm-up, 2. 25-min. first training session, 3. 5-10 min. break, 4. 25 min. second training session and 5. 5-10 min. cool down) **2. Active concurrent control group**: received 8-form Yang-style Tai	FES-I	District senior center; N=61; ExBP N=20; Tai Chi N=20; No treatment N=21	Inclusion criteria: Independent and apparently healthy status, with an age from 65-74 years, no falling record in the previous 12 months, the ability to attend exercise and physical training Exclusion criteria: Cognitive impairment (determined by MMSE), apparent disease in vision, the	January 2014-March 2014	-After 12 weeks of intervention a significant reduction was observed in FOF; -The absolute number of participants with a high FOF score decreased from the pretest to posttest in the ExBP group and Tai Chi group, but increased in the control group

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
and physical activity, 24(4), 516-524.		Chi **3. Control**: No treatment (control): received no specific intervention but were asked to keep a daily log of their physical activity, medicine intake, illness status, diet and sleep quality			vestibular system or the joints influencing their abilities to engage in physical activities, taking more than 3 types of medication, or had regular Tai Chi or balance-related physical training in the past 6 months		
Zijlstra, G. A., Van Haastregt, J., Ambergen, T., Van Rossum, E., Van Eijk, J. T. M., Tennstedt, S. L., & Kempen, G. I. (2009). Effects of a Multicomponent Cognitive Behavioral Group Intervention on Fear of Falling and Activity Avoidance in Community-Dwelling Older Adults: Results of a Randomized Controlled Trial. Journal of the American Geriatrics Society, 57(11), 2020-2028.	To evaluate the effects of a multi-component cognitive behavioral intervention on fear of falling and activity avoidance in older adults.	**Multicomponent CBT**: 8 weekly sessions of 2 hours and a booster session 6 months after the 8th session; aimed to increase self-efficacy beliefs regarding falls, the sense of control over falling and risk perception and outcome expectancies regarding falls; participants received assignments after each session **Control**: no intervention	Two questions: 1. "Are you concerned about falling?" 2. "Do you avoid certain activities due to concerns about falling?"	Two communities in the Netherlands; N=540 (initially randomized); CBT [analyzed N=280; completed N=196]; Control [analyzed N=260; completed N=209]	Recruitment: to identify potential participants, questionnaires were sent to random samples of 7 431 community-dwelling older adults in two communities Inclusion criteria: Community-dwelling older adults, 70 years and older, reported at least some FOF and least some activity avoidance due to FOF Exclusion criteria: People confined to bed, restricted to permanent use of wheelchair, waiting for nursing home admission or participating in other intervention studies	November 2002 and July 2003	-Dutch version of this program has been shown to be more robust than U.S. intervention (higher adherence rates) -Increased levels of activity in intervention group but did not report more falls -Mixed effects regression analyses showed several statistically significantly greater improvements in the intervention group that in the control group- the number of fallers was significantly lower in the intervention group 1 year after intervention

Reference	Study Purpose	Intervention	Instrument (s)	Setting & Sample	Sampling	Study Date/FrPC Follow-up	Outcome(s)
							-No significant reductions in FOF levels

Appendix B - Champlain-Falls Assessment Streamlined Clinic (C-FAST) Clinical Pathway



Appendix C - Ethics Approval from The Ottawa Hospital

Ottawa Hospital Research Institute
Institut de recherche de l'Hôpital d'Ottawa

uOttawa

University of Ottawa Heart Institute
Institut de cardiologie de l'Université d'Ottawa

Ottawa Health Science Network Research Ethics Board/ Conseil d'éthique de la recherche du Réseau de science de la santé d'Ottawa
Civic Box 411 725 Parkdale Avenue, Ottawa, Ontario K1Y 4E9 613-798-5555 ext. 14902 Fax : 613-761-4311
http://www.ohri.ca/ohsn-reb

November 21, 2017

[redacted]

Dear Dr. [redacted]

Re: Protocol # 20170448-01H Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis

Thank you for your e-mail of September 26, 2017 enclosing the University of Ottawa REB approval letter dated September 26, 2017; it has been filed accordingly.

Thank you for the Protocol Amendment Report dated September 27, 2017; it is approved.

The following documents are also approved:
- French Phase One Recruitment Script for Circle of Care dated July 27, 2017
- French Phase One Recruitment Script for Researcher dated July 27, 2017
- French Phase Two Recruitment Script for Researcher dated July 27, 2017
- French FES-I Questionnaire dated July 27, 2017
- French Phase Two Interview Guide dated July 27, 2017
- French Participant Informed Consent Form- Phase One dated July 27, 2017
- French Participant Informed Consent Form- Phase Two dated July 27, 2017

Date of approval/acknowledgement: November 21, 2017

Ethical approval has been extended to September 13, 2018 to include the recruitment of French speaking participants. If the study is to continue beyond the expiry date noted above, a Renewal Form should be submitted to the REB, in hardcopy. All Annual Renewal Reports, regardless of review type (i.e., full board or delegated), must now be submitted according to the full board meeting submission deadlines AND at least 30 days prior to the expiry date of the study to prevent a lapse in approval. If the study is completed by this date, a Termination Report should be submitted.

Yours sincerely,

[redacted]

Chairperson
Ottawa Health Science Network Research Ethics Board
/kd

Appendix D - Ethics Approval from The University of Ottawa

Université d'Ottawa University of Ottawa
Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

LETTRE D'APPROBATION ADMINISTRATIVE | LETTER OF ADMINISTRATIVE APPROVAL

Numéro de dossier / Ethics File Number	A09-17-04
Titre du projet / Project Title	Understanding the effect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis
Type de projet / Project Type	Master's thesis
CÉR primaire / Primary REB	OHSN-REB
Statut du projet / Project Status	Administrative Approval
Date d'approbation (jj/mm/aaaa) / **Approval Date** (dd/mm/yyyy)	26/09/2017
Date d'expiration (jj/mm/aaaa) / **Expiry Date** (dd/mm/yyyy)	13/09/2018

Équipe de recherche / Research Team

Chercheur / Researcher	*Affiliation*	*Role*
[redacted]	Faculty of Health Sciences / Nursing	Supervisor
	Faculty of Health Sciences / Nursing	Student-Researcher
	The Ottawa Hospital / Physiotherapy	Co-investigator
	The Ottawa Hospital / Geriatric Medicine	Co-investigator
	The Ottawa Hospital / Emergency	Co-investigator
	The Ottawa Hospital Research Institute	Co-investigator

Conditions spéciales ou commentaires / Special conditions or comments:

L'Université d'Ottawa a signé une Entente, conforme aux exigences de la plus récente version de l'EPTC et tout autre règlement ou législation applicable, permettant au CÉR ci-haut nommé d'être désigné comme CÉR primaire pour les projets de recherche où

1) les activités principales de recherche sont menées sous l'autorité ou sous les auspices de l'établissement lié au CÉR primaire et
2) Une partie du projet est également réalisé sous l'autorité ou sous les auspices de l'Université d'Ottawa.

Cette lettre confirme que l'Université d'Ottawa a autorisé que le CÉR primaire soit le CÉR officiel pour l'évaluation et la supervision de ce projet de recherche. Ceci n'est pas une approbation éthique.

Afin de nous aider à garder votre dossier à jour, veuillez soumettre une copie de toutes demandes de modification, renouvellement d'approbation éthique etc. soumis à et approuvé par le CÉR primaire dès qu'elles sont disponibles.

Cette approbation administrative est valide pour la durée indiquée ci-haut et est sujette aux conditions énumérées dans la section intitulée « Conditions spéciales ou commentaires ».

The University of Ottawa has signed an Agreement, compliant with current TCPS guidelines and any other applicable guidelines or legislation regarding multisite review, allowing the REB named above to serve as Board of Record (BoR) for research projects where

1) the main research activities are conducted within the auspices or jurisdiction of the BoR's institution and
2) parts of the project are also conducted under the jurisdiction or auspices of the University of Ottawa.

This letter confirms that the University of Ottawa has authorized the REB named above to serve as Board of Record for the review and oversight of this research project. This is not an REB approval.

In order to help us keep your file up to date, please submit a copy of all amendment requests, project renewals or any other changes submitted to and approved by the BoR, as they become available.

Administrative approval is valid for the period indicated above and is subject to the conditions listed in the section entitled "Special conditions or comments".

[redacted]
Directrice/Director

550, rue Cumberland, pièce 154 Ottawa (Ontario) K1N 6N5 Canada
550 Cumberland Street, Room 154 Ottawa, Ontario K1N 6N5 Canada
613-562-5387 • 613-562-5338 • ethique@uOttawa.ca / ethics@uOttawa.ca
http://www.recherche.uottawa.ca/deontologie | http://www.research.uottawa.ca/ethics

Appendix E - Recruitment Script for Member of the Fall Prevention Clinic (English & French)

Phase One: Recruitment Script for Circle of Care

<Complete 8-week standard of care C-FAST follow-up survey>

Before we end this phone call, I also wanted to tell you about a research study that's currently going on through the C-FAST clinic, and ask if you'd be willing to participate. Participation is voluntary and your decision to participate, or to not participate, will not affect your care at the C-FAST clinic.

The researcher is from the University of Ottawa and is looking at how this clinic helps or worsens your concern about falling while performing every day activities. Participation involves the completion of a questionnaire about this.

This is the same questionnaire that you were given to complete in between the assessments from the advance practice nurse and physiotherapist during your visit at the clinic.

Would you like to be contacted by the researcher at the University of Ottawa to hear more about the study?
(if yes: Your contact information will be passed along and the researcher at the University of Ottawa will contact you by phone in the next two weeks to fully explain the study in detail).

Thank you.

Première phase: Script de recrutement pour le cercle de soins

Avant de terminer cet appel téléphonique, je voulais aussi vous parler d'une étude de recherche qui se déroule actuellement au sein de la Clinique d'évaluation du risque et de traitement des chutes et vous demander si vous seriez intéressé à participer. La participation est volontaire et votre décision de participer ou non n'affectera pas vos soins à la clinique C-FAST.

La chercheuse de l'Université d'Ottawa examine la façon dont cette clinique aide ou aggrave votre inquiétude face aux chutes pendant que vous faites vos activités quotidiennes. La participation implique que vous complètiez un questionnaire à ce sujet.

Il s'agit du même questionnaire que vous avez reçu entre les évaluations de l'infirmière en pratique avancée et du physiothérapeute lors de votre visite à la clinique.

Aimeriez-vous être contacté par la chercheuse de l'Université d'Ottawa pour en savoir plus au sujet de l'étude?
(Si oui: vos coordonnées seront transmises et la chercheuse de l'Université d'Ottawa communiquera avec vous par téléphone au cours des deux prochaines semaines afin d'expliquer l'étude en détail).

Merci.

Appendix F – Phase One Recruitment Script for Researcher (English & French)

Phase One: Recruitment Script for Researcher

Hello, My name is _____. I am a researcher from the University of Ottawa who is completing a research study with the fall prevention clinic you attended several weeks ago (C-FAST) in which you participated. A member of the C-FAST clinic introduced the study to you during their phone call, and you agreed to be contacted.

Participation is voluntary and your decision to participate, or to not participate, will not affect your care at the C-FAST clinic.

If you agree to move forward, I will go through the informed consent form. This will explain the study in further detail and you may ask me any questions afterwards.

(If yes: <Continue with Participant Informed Consent Form- Phase One>)

(If no: Thank you for your time. Have a great rest of your day/night)

Première Phase: Script de recrutement pour le chercheur

Bonjour, mon nom est _____. Je suis une chercheuse à l'Université d'Ottawa et je fais une étude de recherche avec la clinique d'évaluation du risque et de traitement des chutes à laquelle vous avez participé il y a quelques semaines. Un membre de la clinique la Clinique d'évaluation du risque et de traitement des chutes vous a présenté l'étude au cours de son appel téléphonique et vous avez accepté d'être contacté.

La participation est volontaire et votre décision de participer ou non n'affectera pas vos soins à la clinique.

Si vous acceptez d'aller de l'avant, je vais passer à travers du formulaire de consentement éclairé avec vous. Cela expliquera l'étude plus en détail et vous pourrez me poser des questions par la suite.

(Si oui: <lettre d'information et formulaire de consentement- questionnaire>)

(Si non: Merci pour votre temps, reposez-vous bien et bonne journée / soirée)

Appendix G – Phase One Participant Informed Consent Form (English & French)

PARTICIPANT INFORMED CONSENT FORM- QUESTIONNAIRE

Title of Study: Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Principal Investigator (PI):

Dr. [redacted], Faculty of Health Sciences, University of Ottawa
Telephone Number: [redacted]

Participation in this study is voluntary. Please read this Participant Informed Consent Form carefully before you decide if you would like to participate. Ask the study team as many questions as you like.

Why am I being given this form?

You are being asked to participate in this research study because you are attending the Champlain-Falls Assessment Streamlined Treatment (C-FAST) clinic.

Why is this study being done?

There is little research on the fall prevention clinic you are attending. We would like to know if attending this clinic improves the way you feel about completing everyday activities, and reduces your concern about falling while completing them. We estimate that 48 participants will be enrolled in the study.

How is the study designed?

There are two parts of the study. In the first part of the study information will be collected from your medical record, you will be asked to complete a questionnaire about your concern for falling while completing everyday activities and you will be asked to answer some demographic questions. In the second part, if you agree, we may contact you again for an interview.

What is expected of me?

You will be asked to complete a questionnaire during a follow-up telephone call in 8 to 10-weeks. The questionnaire is the same one that you completed during your visit to the C-FAST clinic. You will also be asked a few questions to better describe yourself (e.g. marital status).

The purpose of the questionnaire is to assess your concern about falling when completing everyday activities. It will take approximately 10 minutes to complete. The additional questions will take about 1-2 minutes. You may skip any questions that make you uncomfortable or that you do not wish to answer.

If you agree, you may also be asked to participate in an interview at a later date. If you choose to participate in the interview you will be asked to sign a separate consent form.

Will my research data be used in future research?

Your coded data may be used in future research projects about fall prevention clinics. Any future research will be subject to Research Ethics Board approval before it begins.

How long will I be involved in the study?

The entire study will last approximately 1 year. Your participation in the study will last approximately 3 months. Over this time, you will be asked to participate in a telephone follow-up call.

What are the potential risks I may experience?

You might find the questionnaire distressing, and you might not like all of the questions that you are asked. You do not have to answer any questions that make you uncomfortable.

Can I expect to benefit from participating in this research study?

You will not receive any direct benefit from your participation in this study. Your participation may allow the researchers to explain how the C-FAST clinic affects your concern about falling when completing everyday activities. This may benefit future fall prevention clinics.

Do I have to participate? What alternatives do I have? If I agree now, can I change my mind and withdraw later?

Your participation in this study is voluntary. The alternative to this study is not to participate.

You may decide not to be in this study, or to be in the study now, and then change your mind later without affecting the medical care or other services to which you are entitled or are presently receiving at this institution.

If you withdraw your consent, the study team will no longer collect your personal health and identifying information for research purposes. Information collected before your withdrawal will continue to be used, unless you request otherwise.

Will I be paid for my participation or will there be any additional costs to me?

You will not be paid for this participation in this study, nor will there be any cost to you.

How is my personal information being protected?

- All information collected during your participation in this study will be identified with a unique study number, and will not contain information that identifies you, such as your name, address, etc.
- The link between your unique study number and your name and contact information will be stored securely and separate from your study records, and will not leave The Ottawa Hospital.
- Any documents leaving The Ottawa Hospital will contain only your unique study number. This includes publications or presentations resulting from this study.
- Information that identifies you will be released only if it is required by law.
- For audit purposes only, your original study records may be reviewed under the supervision of [redacted] staff by representatives from:
    - the Ottawa Health Science Network Research Ethics Board (OHSN-REB),
    - the Ottawa Hospital Research Institute.
- Research records will be kept for 10 years, after this time they will be destroyed.

Will I be informed about any new information that might affect my decision to continue participating?

You will be told in a timely fashion of any new findings during the study that could affect your willingness to continue in the study. You may be asked to sign a new consent form.

Who do I contact if I have any further questions?

If you have any questions about this study, please contact [redacted] at [redacted]

The Ottawa Health Science Network Research Ethics Board (OHSN-REB) has reviewed the plans for this research study. The Board considers the ethical aspects of all research studies involving human participants at The Ottawa Hospital. If you have any questions about your rights as a study participant, you may contact the Chairperson at [redacted]

Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Verbal Consent for Questionnaire

I have carefully explained the study to the study participant. To the best of my knowledge, the participant understands the nature, demands, risks and benefits involved in taking part in this study.

_____

Participant's Printed Name

The participant agrees to be contacted in the future to hear more about participating in an interview.

❑Yes ❑No

_____ _____

Investigator/Delegate's Printed Name Investigator/Delegate's Signature

_____

Date verbal consent was obtained

FORMULAIRE DE CONSENTEMENT ÉCLAIRÉ DU PARTICIPANT-QUESTIONNAIRE

Titre de l'étude: Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur de tomber chez les personnes âgées: une analyse de méthodes mixtes.

Chercheur principal (CP):
Dr [redacted], Faculté des sciences de la santé, Université d'Ottawa
Numéro de téléphone:[redacted]

La participation à cette étude est volontaire. Veuillez lire attentivement ce formulaire de consentement éclairé du participant avant de décider si vous souhaitez participer. Posez à l'équipe d'étude autant de questions que vous le souhaitez.

Pourquoi m'a-t-on donné ce formulaire?

On vous demande de participer à cette étude parce que vous fréquentez la clinique C-FAST.

Pourquoi cette étude est-elle en cours?

Il y a peu de recherches sur la clinique de prévention des chutes à laquelle vous assistez. Nous aimerions savoir si la participation à cette clinique améliore la façon dont vous vous sentez à propos des activités quotidiennes et réduit votre risque de tomber pendant que vous les complétez. Nous estimons que 48 participants seront inscrits à l'étude.

Comment l'étude est-elle conçue?

Il y a deux parties de l'étude. Dans la première partie de l'étude, des informations seront collectées à partir de votre dossier médical, il vous sera demandé de remplir un questionnaire sur votre préoccupation face aux chutes pendant que vous accomplissez des activités quotidiennes et vous serez invité à répondre à certaines questions démographiques. Dans la deuxième partie, si vous êtes d'accord, nous pouvons vous contacter à nouveau pour une entrevue.

Qu'est-ce qu'on attend de moi?

On vous demandera de remplir un questionnaire au cours d'un appel téléphonique de suivi dans 8 à 10 semaines. Le questionnaire est le même que vous avez rempli lors de votre visite à la clinique C-FAST. On vous posera également quelques questions afin de mieux pouvoir vous décrire (par exemple l'état matrimonial).

Le but du questionnaire est d'évaluer votre inquiétude face aux chutes lors de la réalisation des activités quotidiennes. Cela prendra environ 10 minutes à compléter. Les questions supplémentaires prendront environ 1-2 minutes. Vous pouvez sauter toute question qui vous met mal à l'aise ou que vous ne souhaitez pas répondre.

Si vous êtes d'accord, vous pouvez également être invité à participer à une entrevue à une date ultérieure. Si vous choisissez de participer à l'entrevue, il vous sera demandé de signer un formulaire de consentement différent.

Est-ce que mes données de recherche seront utilisées dans de futures recherches?

Vos données codées peuvent être utilisées dans de futurs projets de recherche sur les cliniques de prévention des chutes. Toute recherche future sera soumise à l'approbation du Comité d'éthique de la recherche avant de commencer.

Pour combien de temps vais-je être impliqué dans l'étude?

L'étude entière durera environ 1 an. Votre participation à l'étude durera environ 3 mois. Pendant cette période, vous serez invité à participer à un appel de suivi téléphonique.

Quels sont les risques potentiels que je pourrais rencontrer?

Vous pourriez trouver le questionnaire inconfortable, et vous pourriez ne pas aimer toutes les questions qui vous sont posées. Vous n'avez pas à répondre aux questions qui vous mettent mal à l'aise.

Puis-je espérer bénéficier de ma participation à cette étude de recherche?

Vous ne recevrez aucun avantage direct de votre participation à cette étude. Votre participation peut permettre aux chercheurs d'expliquer comment la clinique C-FAST affecte votre inquiétude face aux chutes lors de la réalisation des activités quotidiennes. Cela pourrait bénéficier aux futures cliniques de prévention de chutes.

Dois-je participer? Quelles sont les alternatives dont je dispose? Si je suis d'accord maintenant, puis-je changer d'avis et me retirer plus tard?

Votre participation à cette étude est volontaire. L'alternative à cette étude est de ne pas y participer.

Vous pouvez décider de ne pas participer à cette étude ou d'être présentement à l'étude et changer d'avis plus tard sans affecter les soins médicaux ou autres services auxquels vous avez droit ou que vous recevez présentement dans cet établissement.

Si vous retirez votre consentement, l'équipe d'étude ne recueillera plus vos renseignements personnels sur la santé et l'identification à des fins de recherche. Les informations collectées avant votre retrait continueront d'être utilisées, sauf s’il y a demande contraire.

Serai-je payé pour ma participation ou y aura-t-il des coûts supplémentaires pour moi?

Vous ne serez pas payé pour cette participation à cette étude, et il n'y aura aucun coût pour vous.

Comment mes informations personnelles sont-elles protégées?

• Toutes les informations recueillies lors de votre participation à cette étude seront identifiées par un numéro d'étude unique et ne contiendront aucune information qui vous identifie, telles que votre nom, votre adresse, etc.
• Le lien entre votre numéro d'étude unique et votre nom et vos coordonnées sera stocké en toute sécurité et séparé de vos dossiers d'étude et ne quittera pas L'Hôpital d'Ottawa.
• Les enregistrements audio seront transportés du lieu de l'entrevue à l'Hôpital d'Ottawa où ils seront stockés sur le serveur sécurisé. Les enregistrements seront transcrits sur place. Toutes les transcriptions seront identifiées et les enregistrements audios seront supprimés après la transcription.
• Tous les documents quittant l'Hôpital d'Ottawa ne contiendront que votre numéro d'étude unique. Cela comprend les publications ou les présentations résultant de cette étude.
• L'information qui vous identifie ne sera que partagée s'il est requis par la loi.
• À des fins de vérification seulement, vos dossiers d'étude originaux peuvent être examinés sous la supervision du personnel de [redacted] par des représentants:
• du Comité d'éthique de la recherche du Réseau des sciences de la santé d'Ottawa (CÉR-OHSN)
• de l'Institut de recherche de l'Hôpital d'Ottawa.
• Les dossiers de recherche seront conservés pendant 10 ans, après cette date ils seront détruits.

Vais-je être informé de toute nouvelle information susceptible d'affecter ma décision de continuer à participer?

Vous serez informé en temps opportun de toute nouvelle découverte au cours de l'étude qui pourrait affecter votre désir de poursuivre l'étude. Vous pouvez être invité à signer un nouveau formulaire de consentement.

Avec qui dois-je communiquer si j'ai d'autres questions?

Si vous avez des questions concernant cette étude, veuillez contacter [redacted] au [redacted]

Le Comité d'éthique de la recherche du Réseau des sciences de la santé d'Ottawa (CSE-RSEO) a examiné les plans de cette étude de recherche. Le conseil examine les aspects éthiques de toutes les études de recherche impliquant des participants humains à l'Hôpital d'Ottawa. Si vous avez des questions sur vos droits en tant que participant à l'étude, vous pouvez communiquer avec le président au [redacted]

Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur de tomber chez les personnes âgées: une analyse de méthodes mixtes.

Consentement verbal pour le questionnaire

J'ai soigneusement expliqué l'étude au participant à l'étude. Au meilleur de ma connaissance, le participant comprend la nature, les exigences, les risques et les avantages associés à la participation à cette étude.

_____
Nom imprimé du participant

Le participant accepte d'être contacté à l'avenir pour en savoir plus sur la participation à une entrevue.

❑Oui ❑Non

_____ _____
Nom de l'investigateur /délégué Signature de l'investigateur / délégué

_____
Date d'obtention du consentement verbal

Appendix H - FES-I Questionnaire (English & French)

English version of the FES-I questionnaire

Introduction

This is the first part of the research study, where I will ask you the same survey questionnaire that you completed at the fall prevention clinic. I will also ask you some questions to describe yourself (i.e. a short demographic questionnaire).

<Obtain verbal consent using the 'Participant informed consent form- Phase One'>

Thank you for agreeing to participate in this study and allowing us to call you to complete this questionnaire again.

The Ottawa Hospital | L'Hôpital d'Ottawa

FES-I: FALLS EFFICACY SCALE INTERNATIONAL QUESTIONNAIRE
Champlain Falls Assessment and Streamlined Treatment (C-FAST) Clinic

Now we would like to ask some questions about how concerned you are about the possibility of falling. Please reply thinking about how you usually do the activity. If you currently don't do the activity (e.g. if someone does your shopping for you), please answer to show whether you think you would be concerned about falling **IF** you did the activity. For each of the following activities, please tick the box which is closest to your own opinion to show how concerned you are that you might fall if you did this activity.

		Not at all concerned 1	Somewhat concerned 2	Fairly concerned 3	Very concerned 4
1.	Cleaning the house (e.g. sweep, vacuum or dust)	❑	❑	❑	❑
2.	Getting dressed or undressed	❑	❑	❑	❑
3.	Preparing simple meals	❑	❑	❑	❑
4.	Taking a bath or shower	❑	❑	❑	❑
5.	Going to the store	❑	❑	❑	❑
6.	Getting in or out of a chair	❑	❑	❑	❑
7.	Going up or down stairs	❑	❑	❑	❑
8.	Walking around in the neighbourhood	❑	❑	❑	❑
9.	Reaching for something above your head or on the ground	❑	❑	❑	❑
10.	Going to answer the telephone before it stops ringing	❑	❑	❑	❑
11.	Walking on a slippery surface (e.g. wet or icy)	❑	❑	❑	❑
12.	Visiting a friend or relative	❑	❑	❑	❑
13.	Walking in a place with crowds	❑	❑	❑	❑
14.	Walking on an uneven surface (e.g. rocky ground, poorly maintained pavement)	❑	❑	❑	❑
15.	Walking up or down a slope	❑	❑	❑	❑
16.	Going out to a social event (e.g. religious service, family gathering or club meeting)	❑	❑	❑	❑
	Score				
	Total Score				

Patient's name (print) | Signature | Date (yyyy/mm/dd)

GER 37 Eng (02/2017)

FES-I: Reprinted and used with permission from Chris Todd of ProFaNE Prevention of Falls Network Europe, November 2016
CHART

Version française du questionnaire FES-I

Introduction

Ceci est la première partie de l'étude, où je vais vous poser les mêmes questions du questionnaire que vous avez rempli à la clinique de prévention des chutes. Je vais également vous poser quelques questions qui permettront vous décrire (c'est-à-dire un court questionnaire démographique).

Merci d'avoir accepté de participer à cette étude et de nous avoir appelés pour compléter ce questionnaire.

The Ottawa Hospital | L'Hôpital d'Ottawa

QUESTIONNAIRE DE FES-I:
FALLS EFFICACY SCALE-INTERNATIONAL
Clinique d'évaluation du risque et de traitement des chutes de Champlain

Nous aimerions vous poser quelques questions qui ont pour but de déterminer si vous ressentez de l'inquiétude face à la possibilité de tomber. Répondez en pensant à la manière dont vous effectuez habituellement cette activité. Si actuellement vous ne faites pas cette activité (par exemple si quelqu'un fait les courses à votre place), répondez à la question en imaginant votre degré d'inquiétude **SI** vous réalisiez en réalité cette activité. Pour chacune des activités suivantes, mettez une croix dans la case qui correspond le plus à votre opinion et qui montre le degré d'inquiétude que vous ressentez face au fait de pouvoir tomber lors de la réalisation de cette activité.

		Pas du tout inquiet 1	Un peu inquiet 2	Assez inquiet 3	Très inquiet 4
1.	Faire votre ménage (par ex : balayer, passer l'aspirateur ou la poussière)	❑	❑	❑	❑
2.	Vous habiller et vous déshabiller	❑	❑	❑	❑
3.	Préparer des repas simples	❑	❑	❑	❑
4.	Prendre une douche ou un bain	❑	❑	❑	❑
5.	Aller faire des courses	❑	❑	❑	❑
6.	Vous lever d'une chaise ou vous asseoir	❑	❑	❑	❑
7.	Monter ou descendre des escaliers	❑	❑	❑	❑
8.	Vous promener dehors dans le quartier	❑	❑	❑	❑
9.	Atteindre quelque chose au-dessus de votre tête ou par terre	❑	❑	❑	❑
10.	Aller répondre au téléphone avant qu'il s'arrête de sonner	❑	❑	❑	❑
11.	Marcher sur une surface glissante (par ex: mouillée ou verglacée)	❑	❑	❑	❑
12.	Rendre visite à un ami, ou à une connaissance	❑	❑	❑	❑
13.	Marcher dans un endroit où il y a beaucoup de monde	❑	❑	❑	❑
14.	Marcher sur un sol inégal (route caillouteuse, un trottoir non entretenu)	❑	❑	❑	❑
15.	Descendre ou monter une pente	❑	❑	❑	❑
16.	Sortir (par ex: service religieux, réunion de famille, rencontre d'une association)	❑	❑	❑	❑
	Marquer				
	Marquer Total				

Nom de patient (en lettres moulées) | Signature | Date (aaaa/mm/jj)

FES-I : Traduit et utilisé avec permission de Chris Todd du ProANE-Prevention of Falls Network Europe, novembre 2016.

GER 37 Fre (02/2017) DOSSIER

Appendix I – Phase Two Recruitment Script for Researcher (English & French)

Phase Two: Recruitment script

Hello, My name is _____. I am a researcher from the University of Ottawa who is completing a research study with the fall prevention clinic you attended several weeks ago (C-FAST) in which you participated. I called you a couple weeks ago, asking you questions about your concern about falling when completing every day activities and a couple more questions to describe yourself. During our conversation, you agreed to be contacted for possible participation in an interview.

I am now looking at what specifically helps or worsens your concern about falling, and was wondering if you'd be willing to participate in a 30 to 45 minute interview, either in-person or over the phone? Participation in the interview is voluntary.

(If yes to in-person: I am willing to meet you either at your house, The General Campus of The Ottawa Hospital or The Roger Guindon Building at The University of Ottawa. We will take care of any parking fees if necessary. Which day and time work best for you?)

(if yes to telephone: Which day and time work best to schedule this interview?)

(If no: Thank you for your time. Have a great rest of your day/night)

Appendix J - Phase Two Participant Informed Consent Form (English & French)

PARTICIPANT INFORMED CONSENT FORM- INTERVIEW

Title of Study: Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Principal Investigator (PI)
Dr. [redacted], Faculty of Health Sciences, University of Ottawa
Telephone Number: [redacted]

Participation in this study is voluntary. Please read this Participant Informed Consent Form carefully before you decide if you would like to participate. Ask the investigator as many questions as you like.

Why am I being given this form?

You are being asked to participate in the second part of this research study since you participated in the first part of this study, and agreed to be contacted for participation in an interview.

Why is this study being done?

We would like to know how you think, feel and act if you are/are not concerned about falling while competing every day activities, and what factors have improved or worsened this concern. We estimate that 10 participants will be enrolled in this part of the study.

How is the study designed?

You already participated in the first part. In this part of the study, we will be interviewing a small group of participants who attended the C-FAST clinic.

What is expected of me?

You are being asked to participate in a one on one interview to discuss what you think helps or worsens your concern about falling while completing your everyday activities. The interview will be approximately 30 to 45 minutes long and can take place over the phone or in person at a location that is convenient for you. You may skip any questions

that make you uncomfortable or that you do not wish to answer. If you agree to participate in this interview, you will be asked to be audio recorded. You can still participate in the interview if you do not agree to be audio- recorded.

Will my research data be used in future research?

Your coded data may be used in future research project about fall prevention clinics. Any future research will be subject to Research Ethics Board approval before it begins.

How long will I be involved in the study?

The entire study will last approximately 1 year. Your participation in the study will end after the 30-45 minute interview.

What are the potential risks I may experience?

You might find the interview distressing, and you might not like all of the questions that you are being asked. You do not have to answer any questions that make you uncomfortable.

Can I expect to benefit from participating in this research study?

You will not receive any direct benefit from the participation in this study. Your participation may allow the researchers to explain how the C-FAST clinic affects your concern about falling when completing everyday activities, and understand the factors that improve or worsen your concern about falling. This may also benefit future fall prevention clinics.

Do I have to participate? What alternatives do I have? If I agree now, can I change my mind and withdraw later?

Your participation in this part of the study is voluntary. The alternative is not to participate.

You may decide not to be in this study, or to be in the study now, and then change your mind later without affecting the medical care or other services to which you are entitled or are presently receiving at this institution.

If you withdraw your consent, the study team will no longer collect your personal health and identifying information for research purposes. Information collected before your withdrawal will continue to be used, unless you request otherwise.

Will I be paid for my participation or will there be any additional costs to me?

If you agree to participate in this interview, the cost of parking will be paid if necessary.

How is my personal information being protected?

- All information collected during your participation in this study will be identified with a unique study number, and will not contain information that identifies you, such as your name, address, etc.
- The link between your unique study number and your name and contact information will be stored securely and separate from your study records, and will not leave The Ottawa Hospital.
- The audio recordings will be securely brought from the location of the interview to The Ottawa Hospital where it will be stored on the secure server. The recordings will be transcribed onsite. All transcriptions will be de-identified and the audio recordings will be deleted after transcription.
- Any documents leaving The Ottawa Hospital will contain only your unique study number. This includes publications or presentations resulting from this study.
- Information that identifies you will be released only if it is required by law.
- For audit purposes only, your original study records may be reviewed under the supervision [redacted] of staff by representatives from:
    - the Ottawa Health Science Network Research Ethics Board (OHSN-REB),
    - the Ottawa Hospital Research Institute.
- Research records will be kept for 10 years, after this time they will be destroyed.

Will I be informed about any new information that might affect my decision to continue participating?

You will be told in a timely fashion of any new findings during the study that could affect your willingness to continue in the study. You may be asked to sign a new consent form.

Who do I contact if I have any further questions?

If you have any questions about this study, please contact [redacted] at [redacted]

The Ottawa Health Science Network Research Ethics Board (OHSN-REB) has reviewed the plans for this research study. The Board considers the ethical aspects of all research studies involving human participants at The Ottawa Hospital. If you have any questions about your rights as a study participant, you may contact the Chairperson at [redacted]

Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Consent to Participate in Research

- I understand that I am being asked to participate in a research study about understanding levels of concern of falling.
- This study was explained to me by [redacted]
- I have read, or have had it read to me, each page of this Participant Informed Consent Form.
- All of my questions have been answered to my satisfaction.
- If I decide later that I would like to withdraw my participation and/or consent from the study, I can do so at any time.
- I voluntarily agree to participate in this study.
- I will be given a copy of this signed Participant Informed Consent Form.

I agree to be audio recorded. Yes ☐ No ☐ Initials ___

_____ _____ _____

Participant's Printed Name Participant's Signature Date

Investigator or Delegate Statement

I have carefully explained the study to the study participant. To the best of my knowledge, the participant understands the nature, demands, risks and benefits involved in taking part in this study.

_____ _____ _____

Investigator/Delegate's Printed Name Investigator/Delegate's Signature Date

☐This page is not applicable, see attached Verbal Consent page

Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Verbal Consent for Interview

I have carefully explained the study to the study participant. To the best of my knowledge, the participant understands the nature, demands, risks and benefits involved in taking part in this study.

_____
Participant's Printed Name

The participant agrees to be audio recorded. Yes ☐ No ☐

_____ _____
Investigator/Delegate's Printed Name Investigator/Delegate's Signature

_____
Date verbal consent was obtained

FORMULAIRE DE CONSENTEMENT ÉCLAIRÉ DU PARTICIPANT-ENTREVUE

Titre de l'étude: Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur de tomber chez les personnes âgées: une analyse de méthodes mixtes.

Chercheur principal (CP)
Dr [redacted], Faculté des sciences de la santé, Université d'Ottawa
Numéro de téléphone: [redacted]

La participation à cette étude est volontaire. Veuillez lire attentivement ce formulaire de consentement éclairé du participant avant de décider si vous souhaitez participer. Posez à l'équipe d'étude autant de questions que vous le souhaitez.

Pourquoi m'a-t-on donné ce formulaire?

On vous demande de participer à la deuxième partie de cette étude de recherche depuis que vous avez participé à la première partie de cette étude et vous êtes d'accord pour être contacté pour participer à une entrevue.

Pourquoi cette étude est-elle en cours?

Nous aimerions savoir comment vous pensez, ressentez et agissez si vous ne craignez pas tomber en accomplissant vos activités quotidiennes et quels facteurs ont amélioré ou aggravé cette inquiétude. Nous estimons que 10 participants seront inscrits à cette partie de l'étude.

Comment l'étude est-elle conçue?

Vous avez déjà participé à la première partie. Dans cette partie de l'étude, nous allons passer en entrevue un petit groupe de participants qui ont assisté à la clinique C-FAST.

Qu'est-ce qui est attendu de moi?

On vous demande de participer à une entrevue individuelle pour discuter de ce que vous pensez sur ce qui aide ou aggrave votre inquiétude par rapport aux chutes pendant que vous accomplissez vos activités quotidiennes. L'entrevue dure environ 30 à 45 minutes et peut se dérouler par téléphone ou en personne à un endroit qui vous est convenable. Vous pouvez sauter toute question qui vous met mal à l'aise ou que vous ne souhaitez pas répondre. Si vous acceptez de participer à cette entrevue, il vous sera demandé de

participer à un enregistrement audio. Vous pouvez toujours participer à l'entrevue si vous ne voulez pas être enregistrés.

Est-ce que mes données de recherche seront utilisées dans de futures recherches?

Vos données codées peuvent être utilisées dans un futur projet de recherche sur les cliniques de prévention des chutes. Toute recherche future sera soumise à l'approbation du Comité d'éthique de la recherche avant de commencer.

Pour combien de temps vais-je être impliqué dans l'étude?

L'étude entière durera environ 1 an. Votre participation à l'étude se terminera après l'entrevue de 30 à 45 minutes.

Quels sont les risques potentiels que je pourrais rencontrer?

Vous pourriez trouver l'entrevue inconfortable, et vous pourriez ne pas aimer toutes les questions qui vous sont posées. Vous n'avez pas à répondre à des questions qui vous mettent mal à l'aise.

Puis-je espérer bénéficier de ma participation à cette étude de recherche?

Vous ne recevrez aucun avantage direct de la participation à cette étude. Votre participation peut permettre aux chercheurs d'expliquer comment la clinique C-FAST affecte votre inquiétude face aux chutes lors de l'accomplissement des activités quotidiennes et de comprendre les facteurs qui améliorent ou aggravent votre inquiétude face aux chutes. Cela pourrait également profiter aux futures cliniques de prévention des chutes.

Est-ce que je dois participer? Quelles sont les alternatives dont je dispose? Si je suis d'accord maintenant, puis-je changer d'avis et me retirer plus tard?

Votre participation à cette partie de l'étude est volontaire. L'alternative est de ne pas participer.

Vous pouvez décider de ne pas participer à cette étude ou d'être présentement à l'étude et de changer d'avis plus tard sans affecter les soins médicaux ou les autres services auxquels vous avez droit ou que vous recevez présentement dans cet établissement.

Si vous retirez votre consentement, l'équipe d'étude ne recueillera plus vos renseignements personnels sur la santé et l'identification à des fins de recherche. Les informations collectées avant votre retrait continueront d'être utilisées, sauf demande contraire.

Serai-je payé pour ma participation ou y aura-t-il des coûts supplémentaires pour moi?

Si vous acceptez de participer à cette entrevue, le coût du stationnement sera payé si nécessaire.

Comment mes informations personnelles sont-elles protégées?

• Toutes les informations recueillies lors de votre participation à cette étude seront identifiées par un numéro d'étude unique et ne contiendront aucune information qui vous identifie, telles que votre nom, votre adresse, etc.
• Le lien entre votre numéro d'étude unique et votre nom et vos coordonnées sera stocké en toute sécurité et séparé de vos dossiers d'étude et ne quittera pas L'Hôpital d'Ottawa.
• Les enregistrements audio seront transportés du lieu de l'entrevue à l'Hôpital d'Ottawa où ils seront stockés sur le serveur sécurisé. Les enregistrements seront transcrits sur place. Toutes les transcriptions seront identifiées et les enregistrements audios seront supprimés après la transcription.
• Tous les documents quittant l'Hôpital d'Ottawa ne contiendront que votre numéro d'étude unique. Cela comprend les publications ou les présentations résultant de cette étude.
• L'information qui vous identifie ne sera que partagée s'il est requis par la loi.
• À des fins de vérification seulement, vos dossiers d'étude originaux peuvent être examinés sous la supervision du personnel de [redacted] par des représentants:
• du Comité d'éthique de la recherche du Réseau des sciences de la santé d'Ottawa (CÉR-OHSN)
• de l'Institut de recherche de l'Hôpital d'Ottawa.
• Les dossiers de recherche seront conservés pendant 10 ans, après cette date ils seront détruits.

Vais-je être informé de toute nouvelle information susceptible d'affecter ma décision de continuer à participer?

Vous serez informé en temps opportun de toute nouvelle découverte au cours de l'étude qui pourrait affecter votre volonté de poursuivre avec l'étude. Vous pouvez être invité à signer un nouveau formulaire de consentement.

Avec qui dois-je communiquer si j'ai d'autres questions?

Si vous avez des questions concernant cette étude, veuillez contacter [redacted] au [redacted]

Le Comité d'éthique de la recherche du Réseau des sciences de la santé d'Ottawa (CSE-RSEO) a examiné les plans de cette étude de recherche. Le conseil examine les aspects éthiques de toutes les études de recherche impliquant des participants humains à l'Hôpital d'Ottawa. Si vous avez des questions sur vos droits en tant que participant à l'étude, vous pouvez communiquer avec le président au [redacted]

Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur des chutes chez les personnes âgées: une analyse de méthodes mixtes

Consentement à participer à la recherche

• Je comprends qu'on me demande de participer à une étude de recherche sur la compréhension des niveaux de préoccupation face aux chutes.
• Cette étude m'a été expliquée par _____
• J'ai lu, ou je me suis fait lire, chacune des pages de ce formulaire de consentement éclairé du participant.
• Toutes mes questions ont été répondues à ma satisfaction.
• Si je décide plus tard que je souhaiterais retirer ma participation et / ou mon consentement à l'étude, je peux le faire à tout moment.
• J'accepte volontairement de participer à cette étude.
• Je recevrai une copie de ce formulaire de consentement éclairé du participant signé.

J'accepte que l'audio de l'entrevue soit enregistré. Oui ☐Non ☐Initiales ___

_____ _____ _____

Nom imprimé du participant Signature du participant Date

Déclaration de l'investigateur ou du délégué

J'ai soigneusement expliqué l'étude au participant à l'étude. Au meilleur de ma connaissance, le participant comprend la nature, les exigences, les risques et les avantages associés à la participation à cette étude.

_____ _____ _____

Nom de l'investigateur Signature de l'investigateur délégué Date

☐Cette page ne s'applique pas, voir page de consentement verbal ci-jointe

Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur des chutes chez les personnes âgées: une analyse de méthodes mixtes

Consentement verbal pour l'entrevue

J'ai soigneusement expliqué l'étude au participant à l'étude. Au meilleur de ma connaissance, le participant comprend la nature, les exigences, les risques et les avantages associés à la participation à cette étude.

_____
Nom imprimé du participant

Le participant accepte que l'audio de l'entrevue soit enregistré. Oui ☐Non ☐

_____ _____
Nom de l'investigateur /délégué Signature de l'investigateur / délégué

_____
Date d'obtention du consentement verbal

Appendix K - Semi-Structured Interview Guide (English & French)

Phase Two: Semi-structured interview guide (English)

Understanding the affect of a fall prevention clinic on fear of falling levels in older adults: A mixed methods analysis.

Introduction

<Obtain consent using the Participant Informed Consent Form- Phase Two>
Thank you for agreeing to participate in the second part of this study and (meeting with me for this/participating in this telephone) interview.

This is the second part of the research study, following up with the survey questionnaire that you completed at the fall prevention clinic and over the phone with me.

We would like to know more about what helps or worsens your concern about falling when completing every day activities.

This interview will take about 30-45 minutes, is that ok? (If telephone call, ask: Is this still a good time to talk? If not, when would be the best time for me to call you back?)

Context Questions:

1. Do you remember attending the fall prevention clinic (The Champlain-Falls Assessment & Streamlined Clinic)?

2. What do you remember about the fall prevention clinic?

MAIN QUESTIONS:

3. In general, would you say that you are concerned about falling?
   a.) If yes, why?
   b.) If no, what makes you less concerned (or more confident) that you will not fall?

4. Do you feel like your concern about falling has changed since attending the fall prevention clinic?

5. During which every day activity or activities do you have the **most** concern with falling?
   a.) And which ones (activities) are you **least** concerned?

6. Do you take the same amount or more time doing certain every day activity/activities if you are concerned about falling?

7. Do you **avoid** certain activities if you are concerned about falling?

8. Do you change the way you complete every day activities if you are concerned about falling? (e.g. showering, going to the grocery store…)

9. Have you experienced a **fall** or **near-fall** since visiting the fall prevention clinic?

(Definition of near-fall: an event in which an individual feels a fall is imminent but avoids it by taking compensatory action (e.g. grabbing a nearby wall or piece of furniture) (*Medical Dictionary*, 2009).

If yes, could you tell me more about this experience?

Were you injured?

How did you feel when this happened?

Do you feel like your concern about falling is **better or worse** since this experience?

10. Since your visit to the falls clinic, have you been to the Emergency Department for a fall-related health issue?

11. Since your visit to the falls clinic, were you hospitalized (i.e. admitted) for a fall-related health issue?

12. Do you think your **risk of falling** is less since you attended the fall prevention clinic?

Conclusion

Is there anything else you would like to add that you feel relates to your concern about falling, or about the fall prevention clinic?

I so appreciate your time and feel free to contact us again if you have any questions regarding this study.

Thank you.

Deuxième phase: Guide d'entrevue semi-structuré (Français)

Comprendre l'impact d'une clinique de prévention des chutes sur les niveaux de peur de tomber chez les personnes âgées: une analyse des méthodes mixtes.

Introduction

Merci d'avoir accepté de participer à la deuxième partie de cette étude et (de me rencontrer pour cette entrevue/participer à cette entrevue téléphonique).

Ceci est la deuxième partie de l'étude de recherche, suivi du questionnaire d'enquête que vous avez rempli à la clinique de prévention des chutes et au téléphone avec moi.

Nous aimerions en savoir plus sur ce qui aide ou aggrave votre inquiétude concernant les chutes lorsque vous complétez les activités quotidiennes.

Cette entrevue prendra environ 30-45 minutes, est-ce que ça ira? (Si vous téléphonez, demandez: est-ce toujours un bon moment pour parler? Sinon, quel serait un meilleur moment pour que je puisse vous rappeler?)

Questions contextuelles:

1. Vous souvenez-vous d'avoir assisté à la clinique de prévention des chutes (la Clinique d'évaluation du risque et de traitement des chutes de Champlain)?

2. Qu'avez-vous retenu à propos de la clinique de prévention des chutes?

QUESTIONS PRINCIPALES:

3. En général, diriez-vous que vous craignez tomber?
    a. Si oui, pourquoi?
    b. Si non, qu'est-ce qui vous rend moins concerné (ou plus confiant) que vous ne tomberez pas?

4. Avez-vous l'impression que votre préoccupation concernant les chutes a changé depuis que vous avez participé à la clinique de prévention des chutes?

5. Au cours de quelles activité ou activités quotidiennes avez-vous le plus peur de tomber? Et lors desquelles (activités) êtes-vous le moins concernés?

6. Prenez-vous le même montant ou plus de temps pour faire certaines activités/ activités chaque jour si vous craignez tomber?

7. Évitez-vous certaines activités si vous craignez tomber?

8. Changez-vous la manière dont vous accomplissez vos activités quotidiennes si vous craignez tomber? (Par exemple, prendre une douche, aller à l'épicerie ...)

9. Avez-vous subi une chute ou une quasi-chute depuis votre visite à la clinique de prévention des chutes?

(Définition de quasi-chute: un évènement lors duquel un individu sent qu'une chute est imminente, mais l'évite en prenant des mesures compensatoires (par exemple en saisissant un mur ou un meuble à proximité) (*Dictionnaire Médical*, 2009).

Si oui, pourriez-vous m'en dire plus sur cette expérience?

Vous êtes-vous blessé?

Comment vous êtes-vous senti quand c'est arrivé?

Avez-vous l'impression que votre préoccupation concernant la chute est **meilleure ou pire** depuis cette expérience?

10. Depuis votre visite à la clinique des chutes, avez-vous été au service des urgences pour un problème de santé lié à une chute?

11. Depuis votre visite à la clinique des chutes, avez-vous été hospitalisé (c.-à-d. admis) pour un problème de santé lié à une chute?

12. Pensez-vous que **votre risque de chute** est moindre depuis que vous avez fréquenté la clinique de prévention des chutes?

Conclusion

Y a-t-il autre chose que vous aimeriez ajouter à votre préoccupation concernant la chute ou à la clinique de prévention des chutes?

J'apprécie tellement votre temps et n'hésitez pas à nous contacter à nouveau si vous avez des questions concernant cette étude.

Je vous remercie.

Appendix L - FES-I Scores Before and After Attending a Fall Prevention Clinic

Participant	Initial FES-I score (n=32)	Follow-up FES-I score (n=32)
1	24	39
2	19	21
3	26	26
4	45	29
5	26	27
6	46	35
7	25	33
8	32	40
9	40	27
10	40	51
11	21	31
12	33	42
13	24	25
14	25	24
15	23	28
16	41	26
17	18	23
18	22	30
19	23	27
20	47	28
21	33	33
22	38	28
23	31	31
24	19	21
25	19	21
26	16	50
27	44	39
28	29	24
29	23	34
30	48	32
31	37	47
32	38	43

Appendix M - Phase Two Code Book

Code	**Meaning**
Adherence to recommendations from fall prevention clinic	Participant successfully follows through with recommendations from the fall prevention clinic/applied knowledge in fall prevention strategies and recommendations from clinic
Non-adherence to recommendations	Participant was not able to follow through with recommendations from the fall prevention clinic
Concern about falling	Participant notes that they are concerned about falling
Concern about falling in bathroom	" " in the bathroom
Concern about falling inside	" " inside, typically on stairs; one mentions in crowds
Concern about falling outside	Participant notes that they are concerned about falling due to the weather, specifically in the Winter
Consistent concern about falling	Participant acknowledges that they are always concerned/cautious/careful to prevent future falls
Decreased avoidance of activities	Participant enjoys activities that they previously avoided ***
Decreased concern about falling	Participant acknowledges that they are less concerned/nervous about falling
Increased awareness of age	Participant acknowledges their age in relation to fall risk reduction; and that their age may lead to more complications after a fall
Increased awareness of mobility limitations	Participant acknowledges their mobility limitations in specific circumstances to prevent falls
Increased awareness of environment	Participant has a heightened awareness of how they should prevent falls in different environments; mostly within home environment
Increased confidence	Participant has an increased level of confidence in managing their ADLs without too much concern of falling **
Positive outcome of recommendations	Participant noted beneficial outcomes from attending the fall prevention clinic and the recommendations given from the clinic
Increased awareness to prevent falls based on someone else's previous fall experience	Participant recalls a fall experience of someone else, in relation to their current concern about falling
Supportive family	Participant notes examples of when family member(s) encourage fall risk reduction techniques

Appendix N - Phase Two Thematic Analysis

Phase (Braun & Clark, 2006)	**Description of the process**
1. Familiarizing yourself with your data	-all audio-recorded interviews were transcribed verbatim by the researcher -transcripts (the data) were read and re-read, and initial ideas were noted
2. Generating initial codes	-transcripts were uploaded into a qualitative analysis software program (Atlas.ti) -interesting features of the data were coded in a systematic fashion across the entire data set, collating data relevant to each code -transcripts (the data) were reviewed several times by the researcher -3 transcripts from each group were also independently reviewed and coded by two researchers (MC & CB); a consensus on codes was reached by all researchers (DC, MC & CB)
3. Searching for themes	-codes were collated into potential themes by all researchers (DC, MC & CB), gathering all data relevant to each potential theme
4. Reviewing themes	-themes were checked in relation to the coded extracts (i.e. specific quotes) and the entire data set -a thematic 'map' of the analysis was generated
5. Defining and naming themes	-an ongoing analysis was completed to refine the specifics of each theme, and the overall story of the analysis -clear definitions and names for each theme were generated
6. Producing the report	-vivid, compelling extract examples were chosen, and a final analysis of selected extracts was completed, relating back of the analysis to the research question and literature -a scholarly report of the analysis was produced