



AMERICAN UNIVERSITY OF BEIRUT

PROTOCOL FOR PREVENTION OF FALLS AMONG  
OLDER ADULTS IN COMMUNITY SETTINGS

by  
SIHAM JOSEPH SLEIMAN

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submitted in partial fulfillment of the requirements  
for the degree of Master of Sciences in Nursing  
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of the Faculty of Medicine  
at the American University of Beirut

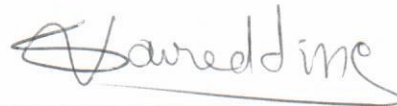
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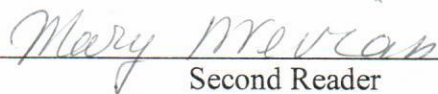
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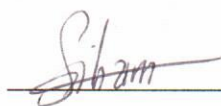
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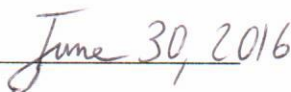
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# AN ABSTRACT OF THE PROJECT OF

Siham Joseph Sleiman for Master of Science in Nursing  
Major: Community Nursing

Title: Protocol for prevention of falls among older adults in community settings

Falls are common in persons over the age of 65 years and a leading cause of morbidity and disability. It is estimated that one-third of older persons fall each year and one out of five falls results in serious injuries like fractures or head trauma. Many conditions, besides age, have been identified as risk factors for fall. Most falls can be prevented. In Lebanon, knowledge about the prevalence of falls and the seriousness of fall-related injuries is limited. There is a persistent need to combine the efforts of the private and public health care sectors, and mass media in raising awareness in the community.

The purpose of this research utilization project was to identify interventions shown to decrease falls and fall injuries in the literature, and develop a protocol to prevent falls in community dwelling adults that is applicable in the Lebanese context. Plenty of studies and organizations have addressed awareness for fall risks, fall outcomes, and particularly fall prevention in the older population. In their homes, older adults and their families are more willing to create an ultimately safe environment and participate in healthy behaviors. The World Health Organization reports that older adults who reside in the community fall less frequently than those who are living in nursing homes, but the larger number of older adults living at home means most falls and injuries occur at home. The proposed protocol, however, could also be applied in any long-term-care facility caring for relatively functional older adults.

The protocol involves a preliminary assessment for risk of falls using a self-report instrument filled by participants recruited from primary health care centers. Based on the results, eligibility of participants for inclusion in the protocol will be determined. High-risk participants will undergo more in depth assessment by health care providers then will be provided with an educational program involving three sessions provided by a multidisciplinary team. Low risk patients will be provided with educational brochures. An implementation and evaluation plan of the protocol is described.

This project will help identify an area that may improve the quality of life of older persons.

# CONTENTS

	<b>Page</b>
ABSTRACT.....	v
LIST OF ILLUSTRATIONS.....	viii
Chapter	
I. INTRODUCTION.....	1
II. BACKGROUND AND SIGNIFICANCE.....	4
A. Significance for the Lebanese Community.....	4
III. LITERATURE REVIEW.....	7
A. Location of Fall.....	7
B. Determinants of Falls.....	8
C. Implication of Falls.....	11
D. Assessing Fall Risk.....	12
E. Fall Prevention Strategies.....	14
F. Protocols.....	17
IV. PROPOSED PROTOCOL.....	20
A. Theoretical Framework.....	20
B. Protocol Description.....	23
V. IMPLEMENTATION AND RECOMMENDATION	
A. Implementation.....	29
B. Budgeting.....	30
C. Limitations.....	31
D. Evaluation.....	31

VI. CONCLUSION.....	33
Appendix.....	35
I. CHECK YOUR RISK FOR FALLING.....	35
II. STAY INDEPENDENT BROCHURES.....	36
III. FALL RISK CHECKLIST.....	37
IV. PRESENTATION 1.....	38
V. PRESENTATION 2.....	40
VI. PRESENTATION 3.....	41
VII. EVALUATION FORM.....	43
VIII. CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) EMAIL.....	44
REFERENCES.....	47

## ILLUSTRATIONS

Figure	Page
1. Diagram of the difference between efficacy expectation and outcome expectations .....	20
2. Protocol for prevention of falls among older adults aged 65 years and older in community settings .....	24
3. Timed Up and Go Test (TUG).....	25



## CHAPTER I

### INTRODUCTION

Falls and fall related injuries are highly prevalent among older adults aged 65 years and older. They are a major cause of mortality and morbidity, and have significant bearing on the quality-of-life of older adults. Reported fall rates can vary significantly among studies, partly due to variables in the health of the population being studied, but also due to the various definitions of falls. To start with, a global definition of “fall” needs to be agreed upon. The ambiguity could be related to several attributes of falls, such as an accidental trips not associated with any medical condition, or where acute medical events such as cardiac syncope, seizures, postural hypotension, or hypoglycemia may precede the fall event (Hauer et al., 2006; Rubenstein, 2006). Furthermore, environmental hazards, collisions, and disease-related symptoms also will contribute to falls. These multiple facets of falls result in difficulty establishing a commonly accepted definition, and some ambiguity in identifying falls, and its application and use in research (World Health Organization [WHO], 2007).

The WHO defined a fall as: “The accidental or unintentional rest on the ground, or lower level, resulting in body contact with the ground, floor, furniture, and wall contact (WHO, 2007)”. In a systematic review of 90 randomized controlled trials on falls prevention, Hauer et al. (2006) concluded that fall definition is still broad and needs to be redefined as it should be simple, comprehensive, non-exclusive, and reliably understood by the lay person, since in most cases older adults are the reporters themselves (Hauer et al., 2006).

It is estimated that one-third of older persons fall each year, and one out of five falls requires medical attention (Centers for Disease Control and Prevention [CDC], 2015; Gillespie et al., 2012; Scheffer et al., 2008; WHO, 2007). Approximately 10 % of falls result in serious injury, of which 5% are fractures (Gillespie *et al.*, 2012), and 10% of hospitalized falls in older adults lead to death within a year of the fall (Roe et al., 2009; WHO, 2007). While the proportion of fall-related fractures is low, the total number is high due to the high fall prevalence, putting a heavy burden on the healthcare system. Falls in older adults, therefore, have a substantial detrimental effect on the patient (Rubenstein, 2006; Wong *et al.*, 2011), family and/or caregiver (Wong *et al.*, 2011), and health services (Rubenstein, 2006).

Nevertheless, research reveals that fall risk and fall injuries can be reduced with the proper interventions. A considerable amount of evidence has shown that systematic fall risk assessment, awareness campaigns, environmental-inspection, and hazard-reduction interventions reduce the rates of falls as well as injuries due to falls (Rubenstein, 2006; Hedman *et al.*, 2013). Well-designed physical activity interventions are recognized as one of the most effective measures that prevent falls or reduce their severity (Gillespie *et al.*, 2012; Liu-Ambrose et al., 2008; McMahon & Fleury, 2012; Rubenstein, 2006).

The population is rapidly aging in Lebanon, as elsewhere. Falls and fall-related injuries are expected to rapidly increase as well. An epidemiological study conducted by Sibai et al. in 2004 estimated that the population above the age of 65 years in Lebanon will increase from approximately 7.2% in 2005, to 8% in 2015. The study further anticipated the increase in this population to reach approximately 10% by 2025. Then in 2015, Sibai et al. reported that the aging population is currently 7.3%, which is almost similar to her previous estimation. Healthcare agencies and

service providers for older adults will therefore be well advised to uphold and support fall prevention services and management interventions. Falls in older adults can have a devastating effect on function, short and long-term outcome, and quality of life. The purpose of this research utilization project is to develop a fall prevention protocol for older adults in the community setting. The project will include a literature review of the determinants of falls amongst older adults, and the latest evidence-based interventions that prevent and treat them. A community fall prevention protocol will be developed and customized to the context in Lebanon, and an implementation and evaluation plan will be proposed. In this project, “community-dwelling” older adults are primarily defined as those living at home. The proposed protocol, however, may also apply to functionally independent older adults living in long term-care facilities. The ultimate aim of this project is to identify an area that helps improve the quality of life of older persons, and intervene in a meaningful way.

## CHAPTER II

### BACKGROUND AND SIGNIFICANCE

Falls and fall-related injuries pertain to patient safety and health care costs, which are public health concerns that necessitate medical attention and intervention at a high priority (Hauer et al., 2006; McMahon & Fleury, 2012; Roe et al., 2009; Rubenstein, 2006; WHO, 2007). The WHO global report on fall prevention in old age states that falls increase with age and frailty level (WHO, 2007). Furthermore, fall prevalence is increasing with the incremental increase in the age of the population. The WHO reports that 28-35% of older adults between the age of 65 and 70 years fall each year (Gillespie et al., 2012; Nachreiner et al., 2007). This number increases to 32-42% in people older than 70 years of age (Roe et al., 2009; Spoelstra et al., 2013; WHO, 2007). Most falls not resulting in injury are not reported to healthcare professionals (75%-80%), which further hinder or underestimate fall rates and undermine the problem (Damian et al., 2013).

#### **A. Significance for the Lebanese Community**

An extensive and systematic literature search for falls in Lebanon revealed that there are no studies related to fall prevalence or fall injuries in the Lebanese population. The only available data include anecdotal reports, estimates based on prevalence studies done outside Lebanon, and institutional records that are difficult to access for concerns of confidentiality. Despite individual and institutional efforts aimed towards decreasing falls in older adults and promoting awareness and knowledge about the seriousness of fall-related injuries and its impact on health, this aspect of aging is still under researched and neglected on a national level. The likely

reason for this could be related to national health priorities and emerging public health needs and health care services in other domains. In addition, ageism in Lebanon, and the dominant misconception towards this population adds to the problem.

During my nursing training and clinical experience in several settings including hospitals, long-term-care (LTC) facilities, assisted living facilities (ALF), outpatient clinics, and in the community, I observed a high prevalence of falls among older adults. As part of my training I assessed the prevalence and nature of falls at two LTC facilities in Lebanon. In both centers, a high prevalence of falls was noted, despite these being well-managed centers. Medical records in one nursing home showed that more than half of the residents had fallen within the last year despite the many precautions and efforts that were taken. Moreover, I interviewed twelve cognitively competent residents at that time, assessing the causes of falls using the “CDC fall risk assessment tool” (Appendix I), and found that the most common causes of falls were gait and balance problems. As per my observations, falls among older adults could lead to minor or major disability, with temporary or permanent functional disability. For patients or family members to accept and adapt to this new condition and sickness, and probably deteriorating body image, the intervention and guidance from a qualified and knowledgeable service provider is a necessity. There are no data about the prevalence of falls among older adults in their homes in Lebanon. At home, support from health care providers is less, so the risk associated with falling could be higher.

Having seen those residents and their caregivers facing an unknown future and uncertainty of care, I have committed myself to conduct my search on falls and associated risk factors. The search will be aimed at identifying indications in the

literature and transforming them into real application for the Lebanese community. Thus, the purpose of this research utilization project is to develop a fall prevention protocol for older adults in the community. Why in the community? This is where most older adults reside and most falls occur. In their homes, older adults and their families are more willing to create an ultimately safe environment and participate in healthy behaviors. The WHO reports that older adults who reside in the community fall less frequently than those who are living in nursing homes (WHO, 2007). This project will help identify an area that may improve the quality of life of older persons.

## CHAPTER III

### LITERATURE REVIEW

Falls are common in persons over the age of 65 years and a leading cause of morbidity and disability. It is estimated that one-third of older persons fall each year (Scheffer et al., 2008), and one out of five falls results in serious injuries like fractures or head trauma (CDC, 2015; Scheffer et al., 2008). Moreover, the fall-related costs that burden health insurance companies are high and steadily increasing. Not surprisingly, therefore, there is plenty of research addressing fall risks, fall outcomes, and particularly fall prevention in the older population. Many conditions, other than age alone, have been clearly identified as fall risk factors and linked to increased fall prevalence. It is the modifiable risk factors that are of clinical relevance for any interventional strategy. Furthermore, in my review of the literature, not all studies showed consistent results regarding fall prevention interventions. Thus, disagreements among some studies regarding the effectiveness of certain interventions in decreasing falls and fall injuries make developing a reliable and comprehensive fall prevention protocol particularly challenging (Scott et al., 2007).

#### **A. Location of Falls**

Falls among older people occur in any setting. They have been reported in the community, such as at home, ALFs, and in public spaces, as well as in supervised structured settings such as hospitals and LTC facilities. Approximately 30-50% of older people living in long-term care institutions fall each year, and 40% of them experience recurrent falls (Spoelstra et al., 2010). In a study of 263 community-dwelling older women, Nachreiner reported that 54% of older women fell over a period of two years, and 28% of those who fell reported two or more falls

(Nachreiner et al., 2007). Out of the 341 falls reported, 62% occurred in or around the house, mostly during the day, and in the kitchens, dining rooms, or living rooms (Nachreiner et al., 2007; Roe et al., 2009). The remaining falls in community dwelling older adults occurred away from home. Falls primarily occur while walking, bending or reaching for objects. Approximately half (53%) of the falls in this community setting did not result in injuries, 31% of people experienced minor injuries, 10% moderate injury, and 6% resulted in serious injuries. The study did not state deaths prevalence. Among the injuries, 5% resulted in fractures, while soft tissue injuries were the most common.

## **B. Determinants of Falls**

The causes and risk factors for falls have been very well studied (CDC, 2011; WHO, 2007). In general, risk factors that provoke falls can be categorized as modifiable and non-modifiable factors (Damian *et al.*, 2013). Several investigators agree that a past history of falls and fear of falling are strong predictors of future and recurrent falls (Nachreiner et al., 2007; Rubenstein et al., 2006; Spoelstra et al., 2010; Wong *et al.*, 2011). Multiple additional factors can contribute to fall occurrence. These include various chronic diseases, multiple comorbid conditions, poor physical health and functional limitations (frailty), decreased vision, cognitive impairment, psychosocial factors, lifestyle factors, educational level, and environmental hazards or hazardous activities (Rubenstein et al., 2006; Woo et al., 2009).

The physical environment accounts for 31% of fall related causes as reported by Rubenstein in a review on falls (Rubenstein, 2006). Environmental hazards entail the absence of protective/assistive devices such as grab bars, nonslip shower mats, and support rails, or the presence of known hazards such as uneven floor surfaces, poor floor and stair conditions, and poor lighting. In addition, improper use of assistive



device such as walkers and improper footwear have also been linked to falls in the community.

Moreover, cross sectional and prospective studies have identified common physical and cognitive risk factors associated with increased risk of falling. These include expected risk factors such as impaired vision/hearing and frailty, level of education and cognitive ability. According to the WHO 2007 report, low education level, low income, social isolation, and inadequate home conditions are examples of socioeconomic risk factors for falls. Memory decline (due to normal aging), and cognitive impairment (due to illness) increase the risk for fall due to the difficulty in following safety instructions and loss of instinctive protective measures (Liu-Ambrose et al., 2008; Rubenstein et al., 2006; Spoelstra et al., 2013; Woo et al., 2009). For example, instructing patients with postural hypotension on the proper way of rising from bed is not likely to be effective in the presence of cognitive impairment.

Functional limitation and poor physical health such as persistent fatigue and difficulty rising from a chair are predisposing factors for falls (Rubenstein et al., 2006; Woo et al., 2009). The level of physical activity, gait and balance problems, impaired muscle range of motion or flexibility, proximal muscle weakness, and foot problems are all likewise examples of factors strongly associated with falls (Nachreiner et al., 2007; Rubenstein et al., 2006; Spoelstra et al., 2013; Woo et al., 2009).

In reality, older adults rarely have a single factor contributing to falls, particularly in the case of recurrent falls. They often have multiple comorbid conditions, which combine and result in increasing frailty and functional deterioration, leading to increased rates of falls (Spoelstra et al., 2013). According to estimates by Tinetti et al.

(1988) risk of falls increase linearly with risk factors, from approximately 8% with no risk factors to 78% with four or more risk factors. Comorbid conditions and chronic disorders occur in 89% of older adults. Those include heart disease, diabetes, postural hypotension, stroke, arthritis, weight loss, and depression (Rubenstein et al., 2006; Spoelstra et al., 2013; Woo et al., 2009). Furthermore, comorbid conditions often result in polypharmacy, and the use of more than three medications increases the risk of falls (Rubenstein et al., 2006; Woo et al., 2009). Drug related falls can be due to drug-drug interactions, or drug side effects.

The correlation between cancer diagnosis and increased fall risk has been well established. In a retrospective study of 6912 subjects aged 65 years and older, Spoelstra (2010) showed that patients with cancer had an increased fall risk compared to those without cancer, but the difference was not statistically significant. However, in a follow up study, older adults with a cancer diagnosis were found to have a 33% fall rate, which was significantly higher than the rate in non-cancer patients (Spoelstra et al., 2013). Interestingly, there was no difference in fall rates by cancer type or stage, and the risk of falling did not increase with the time since cancer diagnosis. The study did show a strong association between falls and daily pain, weight loss, urinary incontinence, and use of antidepressants. The significance of these associations is of particular relevance since an increase in cancer diagnosis is expected to escalate with the increase in the aging population (Rubenstein, 2006; Tinetti, 2003; Tinetti, 2005).

Some studies, but not all, show that women have a higher fall risk compared to men (Hedman *et al.*, 2013; Spoelstra et al., 2010; Woo, 2009). In a recent cross-sectional population-based study, Brito et al. (2014) analyzed the factors associated with falls in older persons in a low socioeconomic community of northeastern Brazil.

The authors hypothesized that social inequalities among men and women, the higher fragility of women compared to men, and the higher exposure of women to falls in executing household activities could be the reason why fall prevalence is higher in women (Brito et al., 2014). In addition, women are more likely to experience falls resulting in fractures due to the onset of osteoporosis at an earlier age. On the other hand, other investigators found no association between gender and fall risk (Woo et al., 2009).

Some risk factors could vary across populations and cultures, as reported by Woo et al. (2009). For instance, alcohol intake and the presence of domestic pets were significant risk factors in a Dutch study (Roe et al., 2009), while in other studies, such as in Hong Kong, no or low alcohol use was reported prior to falls (Nachreiner et al., 2006; Roe et al., 2009).

### **C. Implications of falls**

Falls can have a devastating effect on the health and wellbeing of older persons. Approximately 10% of falls result in serious injuries, and 5% result in fractures. Of those admitted to a hospital as a result of a fall, only about half will survive beyond a year (Roe et al, 2009; Rubenstein, 2006). Even without injury, falls can adversely affect functional abilities, and quality-of-life. Restricted activity, social isolation, depression, confusion, and institutionalization can occur in older persons following a fall (Brito et al., 2014; WHO, 2007). Fear of falling syndrome has been increasingly described in older persons who experience a fall, or following the fall of a loved one. Despite functional independence and the ability to ambulate safely, persons suffering from this syndrome will electively restrict their movement and activities for fear of falls and injury.

#### **D. Assessing Fall Risk**

Fall risk assessment is an essential component of the comprehensive geriatric assessment. In a fall assessment, the older patient is viewed as a whole, and from many perspectives and levels of need. Involving the family or caretaker is essential and may provide further information and add value to the management and follow-up plan. Therefore, it is surprising that there is no single definitive tool for assessing falls in the community-dwelling older adult. Many of the existing tools address mainly physiological and physical performance measures, but few focus on the setting in which falls occur (Scott et al., 2007). In studying aging, however, it is crucial to consider the environment in which older adults live (Brito et al., 2014). Thus, in assessing older adults, a fall risk assessment tool must include physical as well as environmental factors. Several attempts to create such an assessment tool have been done.

In a systematic review by Scott et al. (2007), 38 different screening tools were reviewed for validity and reliability, 23 of which were specifically tested in the community-dwelling older adult, and 11 were multifactorial assessment tools covering a wider range of risk factors. The authors concluded that although some fall-risk assessment tools show moderate to good validity and reliability, few were tested more than once or in more than one setting, and no single tool was recommended for fall screening in the community (Scott et al., 2007). What has been shown to be effective in the community is the self-assessment form, completed by patients in clinics or at home, that gives cues to high-risk patients. One such assessment is the Stop Elderly Accidents, Death and Injuries (STEADI) material developed by the CDC (2014), and the Physical Activity Scale for the Elderly (PASE) (Washburn et al., 1993) aimed at identifying high-risk patients within the community. The STEADI

tool is validated and used by researchers in community settings according to the Center for Disease Control and Prevention (CDC) (see Appendix VIII). The PASE is an activity scale that moderately correlates with strength and balance ( $r = 0.37$  and  $r = 0.33$  respectively) (Washburn et al., 1993). Both tools (STEADI and PASE) address history of falls, fear of falling, use of assistive device, gait and balance problems, use of sleep medications or other medications that may cause light-headedness, history of depression, urinary incontinence, foot problems, and home unsafe behaviors or hazards. High-risk patients are then referred to the appropriate specialists who perform multifactorial fall risk assessment, and where a management and follow-up plan is addressed (American Geriatric Society [AGS], 2016; CDC, 2015).

The fall risk assessment tools filled by trained healthcare professionals for outpatients are approximately similar to those for inpatients, tailoring basic health demographics and physical assessment as explained previously. The main difference is the environmental assessment at the dwelling of the older adults, and the objective assessment of the gait, strength and balance using validated tests such as the Tinetti Get up and Go test, among others. Essential elements of the tool to be completed by the healthcare professional are age, history of falls, vision, urinary urgency and incontinence, level of functional independence, foot problems, gait unsteadiness, dizziness, postural hypotension, memory impairment, number of medications, depression, and the use of psychoactive medications and diuretics (AGS, 2016; CDC, 2015; Hedman et al., 2013).

Another issue that needs to be considered in fall risk assessment in patients is the person's medical history, especially history of cancer. Spoelstra et al. (2010) stated that it is evident that cancer patients are at a higher risk for falls compared to those without a history of cancer, even in early stages of the disease (Spoelstra et al., 2010).

Thus in assessing the risk of falls it is important to include a detailed medical history, and additional precautions should be adapted to those with cancer.

### **E. Fall Prevention Strategies**

Gillespie et al. (2012) stressed the need for primary and secondary prevention measures in the public health domain in relation to falls. There is an abundance of fall prevention programs being used in various settings (CDC, 2015; Huang et al., 2010; Rubenstein et al., 2006; Woo et al., 2009). Two such evidence-based programs each directed at either healthcare providers or older adults are described in the second edition of the CDC guide to preventing falls in the community (CDC, 2015). Despite extensive research, there is an ongoing debate on the causes of falls, the effectiveness of fall prevention interventions, and the most beneficial means of preventing falls. This dilemma is partly related to the varied health status and severity of disease and medication use by the older population being studied (Rubenstein et al., 2006; Woo et al., 2009).

A single intervention approach versus the comprehensive assessment and multifactorial intervention has also been a focus of recent research. The single approach in selected patients can be several times more effective than other approaches (Huang et al., 2010). An example would be physical therapy in a previously healthy patient following an injury. In most cases, however, due to comorbid conditions, the multifactorial intervention is likely to result in better outcomes. Thus, the multifactorial nature of falls necessitates multifaceted approach that encompasses multiple interventions, such as nutritional support, medication management, and activity programs among others (Huang et al., 2010; Rubenstein, 2006; Spoelstra et al., 2010).

The identification of risk factors associated with falls in older adults, such as balance impairment or depression, both amenable to treatment, is the first step towards development of a prevention program (Brito et al., 2014; Spoelstra et al., 2010). In patients with increased number of illnesses, there is insufficient data showing the effectiveness of fall interventions in decreasing falls (Damian et al., 2013). Studies have emphasized the modifiable risk factors, concentrating mainly on conditions that can be improved or otherwise managed such as muscle weakness, limited range of motion, visual impairment, diabetes, depression, impulsivity, low body mass index, and delirium (Roe et al., 2009; Rubenstein, 2006; Spoelstra et al., 2010; Woo et al., 2009). Managing and treating those underlying conditions help reduce their adverse effect on patients' functional status and reduce fall occurrence.

In a prospective study of community-dwelling older women, Nachreiner et al. emphasized the necessity to improve "awareness of behaviors." She reports that education, home hazard environmental changes and adequate exercise, constitute an effective part of modifying fall occurrence and their consequences (Nachreiner et al., 2007). These components require self-awareness and the ability to initiate change in one's own behavior. A randomized controlled trial conducted by Huang et al. in 2010 studied the effect of education and Tai Chi on fall prevention with short and long term follow-up period. The findings showed significant reduction in falls with both interventions (Huang et al., 2010). Tai Chi significantly improved gait and balance, and education helped prevent falls by eliminating risk factors from the environment. These benefits were present at five months and also after one year follow up (Huang et al., 2010). Moreover, in a randomized controlled trial by the same group in 2011 on the effectiveness of cognitive behavioral therapy and Tai Chi exercise in reducing the fear of falling, the investigators found that both interventions had minimal to no

effect on fall prevalence. However, these interventions did have a statistically significant positive effect in decreasing fear of falls, reducing the impact of falls, and improving gait and balance, social support and most importantly quality of life (Huang et al., 2011). These findings are consistent with those of Gillespie et al. (2012), despite the different samples and measures used.

In a Cochrane review of 159 trials with 79,193 older community dwelling participants, Gillespie et al. (2012) report that exercise programs such as multi-component group exercise, Tai Chi, and home-based exercises significantly reduced rate and risk of falls, as well as fall-related fractures (RR 0.34, 95% CI 0.18 to 0.63) (Gillespie et al., 2012). Home safety assessment and modifications of hazards significantly reduced the rate of falls (RR 0.81, 95% CI 0.86 to 0.97), as did multifactorial interventions addressing individual risk factors (RR 0.76, 95% CI 0.67 to 0.86). Other findings that were found to significantly reduce risk or falls in this comprehensive review included gradual withdrawal of psychotropic medications, podiatry care, and cataract surgery (single eye). Education/knowledge training about fall prevention, cognitive interventions, and vitamin D supplementation did not significantly decrease fall risk in this study (Gillespie et al., 2012).

Despite conflicting results concerning the effect of patient education on decreasing fall risks, most professional organizations support patient training and education, including the American Geriatric Society (AGS, 2016), WHO (2007; 2012), and the National Institute of Health [NIH], 2015). The content of education programs varies among organizations, but generally includes the same major domains. The content of education programs, intended for patients as well as healthcare providers includes the following (AGS, 2016; CDC 2015; WHO, 2012):



- 1- Assistive devices and other protective equipment: The proper use of the appropriate assistive device is important for those with frailty or gait and balance problems. A trained professional should guide selection of device, customization, and training in proper use.
- 2- Environmental modifications: Elimination of fall risks such as rugs and obstructing furniture, as well as installment of shower chair, grab bars, and adequate lighting may reduce fall risk by 39% in high-risk individuals.
- 3- Medication review and management: the gradual reduction or discontinuation of high-risk medications such as psychotropic drugs has been shown to reduce falls.
- 4- Nutritional support: good nutrition and supplements, when necessary, is essential for health maintenance and fall reduction. Particularly protein intake, hydration, and micronutrients can be problematic in patients at risk for falls.
- 5- Acute and chronic disease management: These include orthostatic hypotension, visual problems, weight loss, pain, and many other problems associated with falls.
- 6- Education programs: Education for older adults and their caregivers on fall prevention strategies and health monitoring is beneficial in preventing falls and injuries.
- 7- Exercise programs: perhaps the single most effective measure in preventing falls and fall injuries, and improving the quality-of-life of community dwelling older adults. An exercise program must address gait, balance, flexibility, endurance, and strength, and be supervised by a qualified physical therapist.

The various interventional protocols have been based on these and similar criteria.

## **F. Protocols**

The WHO (2012) addressed the severity of the problem of falls in older adults through promoting awareness and knowledge among all individuals in the community in relation to falls, and the devastating consequences on the lives of families and friends of those who fall. The WHO stresses the importance of research efforts worldwide. Several organizations have developed fall risk and environmental hazards assessment tools, and health education and exercise programs (AGS, 2016; CDC 2015). Their aim is to empower older adults and promote functional independence by encouraging them to take control over their health through many aspects including lifestyle modification and behavioral changes. Among these programs:

The AGS (2016) has developed clinical practice guidelines for fall prevention in older persons. These guidelines are directed towards physicians and other health care professionals to use during their practice, and focus on screening and assessing all older individuals. The guideline includes a focused history, physical examination, functional assessment, and environmental assessment. After addressing and reducing the multifactorial risks, the AGS highlights appropriate exercise programs as well as home environment modification or adaptation. The exercise programs could be performed in groups or individually.

The CDC (2016) enclosed an effective online community-based fall prevention guide that is directed towards health care professionals and institutions, as well as older adults living in the community. The program includes online brochures, illustrations, examples, resources and tips and contains risk assessment tools that can be filled by patients and others by health care professionals. The documents for older

adults are simplified and are written in lay language. The CDC also developed the STEADI (Stopping Elderly Accidents, Deaths, and Injuries) campaign to support health care providers in developing fall intervention programs.

The National Council on Aging (NCOA) (2015) developed the falls prevention action plan. The fall prevention plan is directed towards the aging network professionals, older adults and caregivers. Similar to other programs, it also includes addressing initially health risk factors by qualified health care professionals, then encouraging physical mobility and ensuring home safety. Several training programs can be found on the website, but some of the materials must be purchased.

CHAPTER IV  
PROPOSED PROTOCOL

This chapter describes the development of a proposed fall prevention protocol for community-dwelling adults over the age of 65 years in Lebanon. This protocol could also be applied to residents of long-term care facilities who are relatively independent. Participants will be screened from outpatient health care centers. It will entail identification of high-risk older patients, using a fall risk assessment tool, and tailoring appropriate interventions depending on patient’s specific needs and risks. The program is based on “Self-Efficacy” and “Adult Learning Theory” as the theoretical framework.

**A. Theoretical Framework**

The success of the fall prevention protocol is directly related to motivating older adults to participate in and follow up with the program. Bandura (1977) proposed that outcome expectations among older adults are largely dependent on their judgment of what they can achieve and the effort needed to achieve it or what he defines as self-efficacy expectation (see figure 1). Therefore, The conceptual framework for this protocol involves the integration of two concepts; Bandura’s self-efficacy (SE) theory and Knowles’ Adult learning theory (ALT).



Figure 1: Diagram of the difference between efficacy expectation and outcome expectations (Bandura, 1977).

### *Self-efficacy (SE) Theory*

The self-efficacy construct has been used in a number of Middle Range Theories in Nursing. The psychologist Albert Bandura was the first who developed it in 1997. Self-efficacy (SE) is defined as the individual's capabilities to judge, organize, develop, and execute a course of action (Bandura, 1997a; Smith & Liehr, 2014). The concept lies at the social cognitive theory, where behavior, environment, and personal/cognitive factors are conceived to be influenced by each other and inter-related. Bandura (1997a) considers SE as the belief in our ability to succeed. He states that a person's perception to SE has an important impact on how he deals with goals, tasks, and challenges. The absence of self-efficacy is characterized by a loss of confidence in personal capabilities, avoidance of challenging tasks, and a belief that difficult tasks and goals are beyond their competencies (Bandura, 1997a). Such individuals tend to dwell on personal weaknesses and negative outcomes. It is commonly accepted that personal expectations of SE begin with coping mechanisms that determine the extent of perseverance in facing challenges and obstacles related to specific behaviors (Bandura, 1997b).

Barbara Resnick has dedicated her clinical research to fall prevention and motivating older adults (Smith & Liehr, 2014). She uses SE in her research to promote health practices and well-being, particularly with respect to functional performance among older adults, through engaging them in regular exercise activities (Resnick & Jenkins, 2000).

### *Adult Learning Theory*

In addition to motivation, an encouraging learning experience tailored to the needs of the older adult must be achieved. In 1980, Knowles proposed four

characteristics of adult learners (Merriam, 2001):

- 1) Self-concept: A person has moved from a dependent to an independent self-directed person who can choose his/her own learning process.
- 2) Learner experience: A person has accumulated experiences over life that have become a cumulative resource for learning.
- 3) Readiness to learn: A person's readiness to learn has become increasingly related to changing social roles.
- 4) Orientation to learning: A person is receptive to change and is able to utilize knowledge in problem-centered applications.

He later added two more key components to adult learning:

- 5) Internal motivation (1984): which is equivalent to the intrinsic motivation that is more influenced by the internal rather than the external forces in executing an action.
- 6) The need to learn (2014): This component was added as a first step in this series, in which a person needs to know why, what, and how to learn.

Perhaps, the greatest challenge in implementing a fall prevention protocol is the adherence to fall precaution measures by the high and low risk older adult. This requires an effort and commitment by the participant as well as assistance and facilitation by health care providers. Evidence based fall prevention measures are only helpful if they are practiced. Therefore, any health care worker involved in implementing a fall prevention protocol must be familiar with these principles of adult learning.

## **B. Protocol Description**

The fall prevention protocol will be addressed to high-risk as well as low-risk participants, each with tailored interventions (see figure 2 below). The program involves an initial assessment of functional ability of all the encountered participants among older adults. It entails identification of high-risk patients using a fall risk assessment tool, and customizing appropriate interventions depending on the participant's specific needs and risks.

The first step requires the older adult to fill out the fall risk self-assessment tool "Check Your Risk for Falling" (Appendix I) in primary health care (PHC) centers or health clinics. The "Check your risk for falling" tool was validated by Rubenstein et al. (2011) on 40 adults above the age of 65 and it could predict falls as accurately as the "gold standard" of historical data ( $p < 0.0001$ ). The screening tool is consistent with clinical guidelines to assess fall predictors. It is recommended by the CDC (2016) for use by health care professionals and patients in their initial assessment. If the participant is not able to complete the questionnaire (for example if illiterate or has visual impairment), a registered nurse or designated person will assist willing patients to fill it. The participant is subsequently classified as "High-Risk" or "Low-Risk" for falls based on their total score. If the participant scores 4 points or more, he/she is designated at high-risk for falling.

"Low-Risk" participants who score less than 4 and high-risk participants who wish not to enroll in the program will be offered "Stay Independent" brochures, which include fall preventive measures and health tips (Appendix II, images 1 & 2). They will be encouraged to have their medications reviewed by their physician if or when necessary. In addition, referral for strength and balance exercise will be

recommended, as it is beneficial to any older adult above the age of 65. The non-participating “High-Risk” and “Low-Risk” groups will be advised to return to clinic for follow up and reassessment in one year or sooner. They will be offered the opportunity to participate in the monthly educational program designed for high-risk patients at any time if they wish.

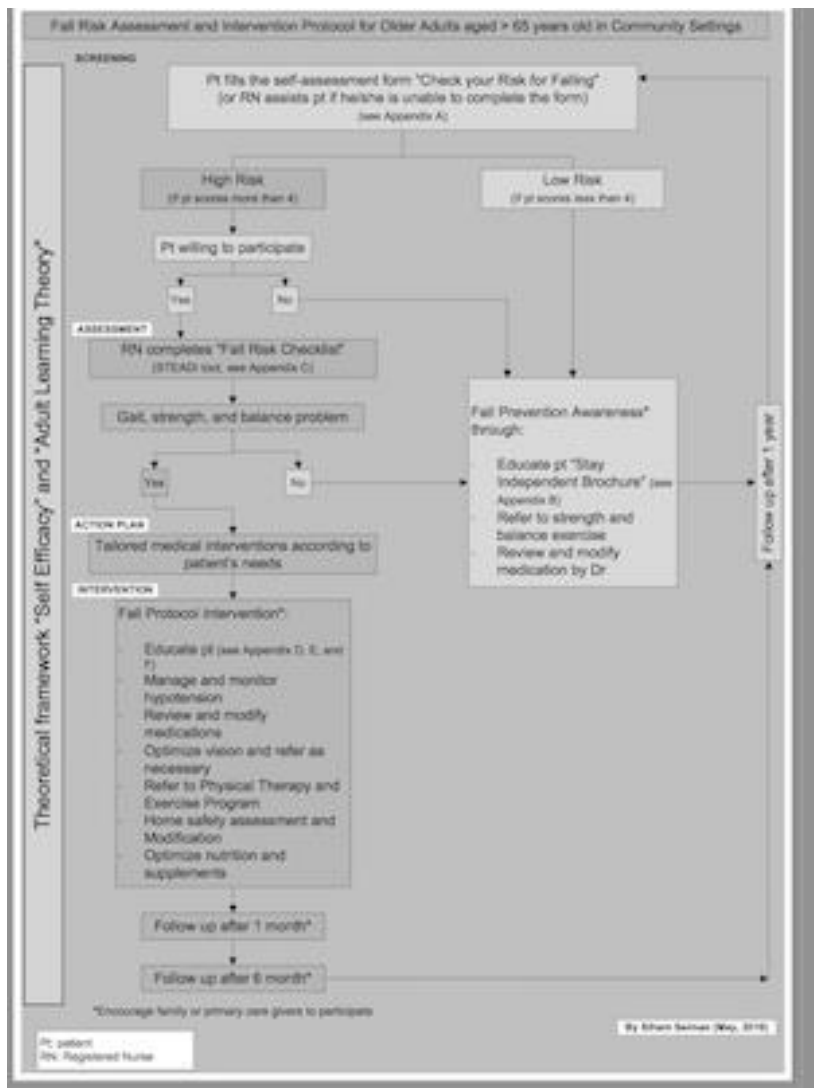


Figure 2: Protocol for prevention of falls among older adults aged 65 years and older in community settings

“High-Risk” patients who wish to enroll in the program will then have the registered nurse complete “Fall Risk Checklist”, also called STEADI (see Appendix III), which is an in-depth assessment tool that investigates the participant’s risk



factors for fall. The STEADI tool includes history of falls; fear of falling; medical conditions such as cardiac problem, incontinence, foot problem, and depression or cognitive impairment; use of sleep medications or other medications that may cause light-headedness or hypotension; visual status; postural hypotension; and gait, strength and balance status. The gait, strength and balance items encompass three validated tests: Timed Up and Go (TUG) Test ( $\geq 12$  seconds); 30-Second Chair Stand Test (average score based on age and gender); and the 4-Stage Balance Test (full tandem stance  $< 10$  seconds). Of these three, the TUG is the most extensively studied test and is commonly used in clinical assessment. It is a simple test that assesses the mobility of the participant (see figure 3). It requires the participant to stand up from a sitting position, walk three meters, turn around, walk back the three-meters, and finally sit down. If the patient performs the TUG in more than 12 seconds, he/she will be considered at high-risk and will be a possible candidate for the program (CDC, 2016). In a recent meta-analysis of 10 studies, the TUG was found to have a specificity of 0.74 (95% CI 0.52-0.88), but a sensitivity of only 0.31 (95% CI 0.13-0.57). In other words, the test is more useful at ruling in rather than ruling out falls in older individuals (Barry et al., 2014). The authors concluded that the TUG test has limited ability to predict falls in community dwelling older adults, but can be combined with the medical history to identify high-risk patients (Barry et al., 2014).

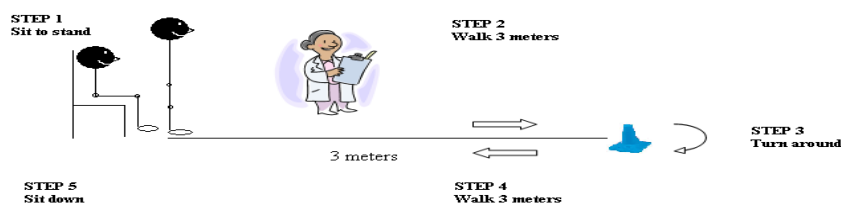


Figure 3: Timed up and Go TEst (CDC, 2016)

If the high-risk participant is found to have no gait, strength or balance problems, he/she will be given the “Stay Independent” educational brochure and treated as the low-risk patient with the same instructions and intervention described above. Their fall risk might arise from environmental hazards, visual impairment, or other causes. Participants who perform poorly on the “Fall Risk Checklist” or who demonstrate significant gait, strength, and balance problems will be eligible for the full program, and will be referred for a multifactorial fall assessment. Medical problems will be addressed by the appropriate healthcare specialist and management will be tailored according to patients’ needs. The educational program will have a multifaceted approach, and will require collaboration among physicians, nurses, physical therapists, nutritionists, and community advanced practice nurses.

The program focuses on healthy behavioral changes by giving three educational sessions in Arabic: “Fall Prevention Strategies in older adults”, “Home Hazards and Home Environmental Modifications”, and “Health education and physical activity promotion” (Appendix IV, V, and VI). Each week one of the three sessions will be offered, and the cycle will be repeated every month (one week of each month will have no education session). A participant may enter the cycle at any point since each session is independent of the others, and may repeat attending cycles as often as they wish. Family members or caregivers will be encouraged to attend these sessions and participate in care planning. Learning needs assessment will be addressed at the start of each session, from which new topics will arise to address participants’ concerns. At the beginning of each session, participants will be asked if they had specific questions or topics they wish to discuss relating to falls. These sessions could have the added benefit of being an ongoing social encounter for older adults throughout the year and will be modified according to the feedback from

previous sessions. Evaluation Sheets (Appendix VII) for feedback will be given to the participants at the end of each session. These sheets will be simple and in plain Arabic, and will be used as a basis to improve the program.

The program is intended to assist older adults reduce their fall risk by being aware of the causes of falls and intervention. In the long run, participants' satisfaction with the program will be evaluated, and feasibility and efficacy of the program will be reviewed. In addition, areas for improvement will be identified. All older adults above the age of 65 years should be followed up at 1 year and later each year. High-risk older adults will additionally be followed up at 1 month and at 6 month, to allow early and adequate assessment of the interventions taken.

For the application of *self-efficacy* and *adult learning theory* in fall prevention, the program will initially require one master prepared nurse and one registered nurse, in addition to a gerontologists/internist/family physician, and physical therapists.

*Roles and Responsibilities of the Clinical Nurse specialist:*

The roles and responsibilities of the clinical nurse specialist include:

1. Planning the flow of the program and organizing corresponding educational sessions
2. Analyzing and organizing fall risk assessment data, and sharing them with the team and other concerned staff
3. Assisting in preparing and presenting the educational sessions in Arabic
4. Coordinating work with the multidisciplinary team

5. Following up with patients on a timely and scheduled manner
6. Evaluating the overall program and suggesting change and updates if necessary

*Roles and Responsibilities of the registered nurse:*

The roles and responsibilities of the registered nurse are to document prevention strategies, collect data and evaluation sheets, prepare and present educational sessions, and arrange for home visits if necessary. In addition, the registered nurse provides individualized supportive care and education to patients and families, and monitor progress or changes in medical files.

CHAPTER V  
IMPLEMENTATION AND EVALUATION

**A. Implementation**

There is a persistent need to translate plans into action and disseminate evidence-based educational programs. Those include exercise, health awareness, and home safety education addressed to the community-dwelling older adults. A proposal about this protocol and its significance will be presented to the Ministry of Health in order to reach the target population at risk who seek services at primary health care (PHC) centers. An administrative approval will be secured prior to recruitment of older adults in piloted centers.

Once approval is secured the following steps will be addressed:

- Designating a multidisciplinary task force to organize the implementation plan
- Educating the staff of PHC centers on fall risk assessment
- Training a core group who will be responsible to give the educational sessions
- Piloting of the program in few centers
- Evaluating of the pilot test and making modifications based on feedback
- Gradually implementing the program in all PHC centers and disseminating fall risk awareness among the public

The program will involve nursing staff and other health care workers at all levels in the piloting centers. They will be encouraged to participate collaboratively and efficiently in the care for older adults. At the beginning of the program, the

nurses in the piloting centers will be informed and trained by a designated registered nurse and a clinical nurse specialist who will be working hand in hand to disseminate knowledge. They will assist the PHC nurses and staff until they feel confident in administering the “Fall Risk Checklist” that includes gait, strength, and balance tests. The screening of the participants will be done in PHC centers.

The educational sessions will be made available to nurses in the piloted centers to provide the sessions on schedule as described above in the description section of the program. When the piloted centers become proficient in running the program, their feedback and remarks will be noted and used to improve the protocol for implementation in other centers according to their needs. Those centers will be the pioneers and will hopefully be capable of putting the program into real application.

### **B. Budgeting:**

Budgeting will address the most essential parts of the project according to the following needs:

- 1) Two nurses (one RN and an APN).
- 2) Printed materials and brochures
- 3) Service providers training for the risk assessment
- 4) Research: data collection and evaluation studies

A general estimate of the expenses for the pilot trial is outlined in the table below. These expenses are naturally expected to increase as the program is implemented on a national level. The pilot study expenses could be secured from several sources including concerned national/international organizations, Ministry of Public Health, and teaching institutions.

	<b>Per unit</b>	<b>Per year</b>
RN	\$ 1,000/month	\$ 12,000
APN	\$ 2,000/month	\$ 24,000
Printed material	\$ 250/month	\$ 3000
Staff Training “Train the Trainee”	\$ 500/year	\$ 500
	Total	\$ 41,500

Budgeting of the project

### **C. Limitations:**

Few limitations of the protocol are expected. Patients who attend the PHC centers could be more health conscious and motivated regarding health issues. A relatively large number of community-dwelling older adults who do not routinely follow up at PHC centers will not be reached, and therefore their needs will not be addressed. The importance of media awareness campaign will be particularly relevant for these individuals. The absence of efficient means of transportation and the lack of time to support older adults are among the other challenges that will be faced. Another limitation is that most PHC centers are still under developed. Most of them have financial and human resources constraints that could be related the overall economical and political situation in the region. The lack of qualified health care providers such as advanced practice nurses and many others is a result of this situation. Those can limit the program’s ability to involve all eligible older adults.

### **D. Evaluation:**

The flexibility of the program and ability to modify content and interventions is one of its strengths. It can be individualized, and tailored to the changing needs of older participants. As for the program evaluation, older adults will be asked to complete the evaluation sheets (see Appendix VII) after attending

each session of the educational program, as discussed in the “Protocol Description” section. Huang et al. (2011) suggested that a long-term follow up period provides a better understanding of the effect of an intervention. This proposed protocol would be an ongoing program. The follow up will be crucial at different time periods (1 month, 6 months, 1 year) depending on health status of the participants and their willingness to participate in follow up (Figure 2). Therefore, an evaluation plan looking at long-term outcomes will be implemented. Specifically, surveys will be done comparing fall rates between older adults from the PHC centers who participate and those who do not in the program.



## CHAPTER VI

### CONCLUSION

Aging is one of the natural courses of life where human changes will definitely occur. All people will encounter aging sooner or later at their early or late retirement. This natural process of aging allows us not only to persevere in the face of difficulties of an older age, but also to be the lead to the coming generation. It is at that moment that one can give what he/she cannot offer when younger. The WHO states that: “The ageing population should not be viewed as a threat or a crisis. On the contrary, the WHO Active Ageing Framework recognizes that older persons are precious and invaluable resources who make an extraordinary important contribution to the fabric of all societies (WHO, 2007, p. 36).”

In Lebanon, as elsewhere, the population is rapidly aging. The challenges of old age are still neglected on a national level. Knowledge deficit about the prevalence of falls and the seriousness of fall-related injuries need to be addressed. There are limited, uncoordinated efforts of individuals and institutions that aim at decreasing falls in older adults and promoting awareness, but there is room for improvement. There is a serious need to combine the efforts of those limited and valuable resources with those of private sectors, government, and mass media in raising awareness for fall prevention and management in the community.

This proposed protocol is hoped to improve the care of older adults in the community by preventing a common problem, namely falls. Implementation of the protocol is expected to have a snowball effect in raising awareness in the community about this issue.

Finally, the need of a well-structured health care services and adequately

prepared health care providers for older adults at increased risk for falling is primarily an essential step towards improving older adults health care system in Lebanon.

## Appendices

### Appendix I

#### Check your Risk for Falling

Check Your Risk for Falling			Why it matters
Please circle "Yes" or "No" for each statement below.			
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.
Total:	_____	Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.	
			CDC 2016

## Appendix II

### Stay Independent



Image 1: Stay Independent Brochures 1



Image 2: Stay Independent Brochures 2

Appendix III

Fall Risk Checklist/ STEADI toolkit

# Fall Risk Checklist

Patient: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM/PM

Fall Risk Factor Identified	Factor Present?	Notes
<b>Falls History</b>		
Any falls in past year?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Worries about falling or feels unsteady when standing or walking?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Medical Conditions</b>		
Problems with heart rate and/or rhythm	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Cognitive impairment	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Incontinence	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Depression	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Foot problems	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Other medical conditions (Specify)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Medications (Prescriptions, OTCs, supplements)</b>		
CNS or psychoactive medications	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Medications that can cause sedation or confusion	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Medications that can cause hypotension	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Gait, Strength &amp; Balance</b>		
Timed Up and Go (TUG) Test ≥ 12 seconds	<input type="checkbox"/> Yes <input type="checkbox"/> No	
30-Second Chair Stand Test Below average score based on age and gender	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4-Stage Balance Test Full tandem stance <10 seconds	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Vision</b>		
Acuity <20/40 OR no eye exam in >1 year	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Postural Hypotension</b>		
A decrease in systolic BP ≥20 mm Hg or a diastolic bp of ≥10 mm Hg or lightheadedness or dizziness from lying to standing?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Other Risk Factors (Specify)</b>		
	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	<input type="checkbox"/> Yes <input type="checkbox"/> No	



Centers for Disease Control and Prevention  
National Center for Injury Prevention and Control

2015

**STEADI** Stopping Elderly Accidents, Deaths & Injuries

CS259944J



# Appendix V

## Presentation 2: Home Hazards and Home Environmental Medications

<h3>آخطار المنزل وتغيير البيئة المنزلية</h3> <p>الخاص: سهام سليمان</p>	<h3>الخطوط الحرجية</h3> <ul style="list-style-type: none"> <li>- مقدمة</li> <li>- عوامل الخطر لمساعدة المسقوط في المنزل</li> <li>- الأهداف</li> <li>- كيف تساهم عوامل الخطر المنزلية للمسقوط</li> <li>- كيف تساهم في الحد من السقوط</li> </ul>
<h3>مقدمة</h3> <ul style="list-style-type: none"> <li>- زيادة الوعي حول حوادث السقوط هي من أهم العوامل الفعالة والمساعدة لتقليل من السقوط</li> <li>- 30% من البالغين و 40% من الأطفال الذين لديهم تراجع</li> <li>- 65 سنة وما فوق في الذين يعانون من السقوط في المجتمع</li> <li>- مسقطون في عام، واستخدام المسقوط يزيد بمرور مع التقدم في السن</li> </ul>	<h3>مقدمة</h3> <ul style="list-style-type: none"> <li>- يقدر أن 62% من السقوط في المجتمع عند البالغين يقعون في المنزل أو حوله</li> <li>- معظمهم أثناء النهار</li> <li>- في المطبخ وغرف الطعام وغرف الخمر</li> </ul>
<h3>عوامل الخطر لمساعدة المسقوط في المنزل</h3> <ul style="list-style-type: none"> <li>- السجادة الفضفاضة والرخم</li> <li>- الإضاءة الضعيفة</li> <li>- الحيوانات الأليفة</li> <li>- الفوضى العارسة في المنزل</li> </ul>	<h3>عوامل الخطر لمساعدة المسقوط في المنزل</h3> <ul style="list-style-type: none"> <li>- الممرات الغير مستقيمة</li> <li>- العتبات</li> <li>- الدرجات الغير مستوية</li> <li>- المداخل الغير موهدة</li> </ul>
<h3>الأهداف</h3> <ul style="list-style-type: none"> <li>- التعرف، مداخل بيئات الخبير، عن مخاطر السقوط</li> <li>- إجراء التقييم الذاتي والتعاقد على النتائج التي تعرف</li> <li>- تعريف عوامل الأخطار أو تعريفهم للمسقوط من قبل</li> </ul>	<h3>كيف تتجنب عوامل الخطر المنزلية للمسقوط</h3> <ul style="list-style-type: none"> <li>- رمي السجاد الفضفاض والرخم</li> <li>- الإضاءة القوية</li> <li>- تحريك الحيوانات الأليفة داخل المنزل</li> <li>- ترتيب المنزل من حيث التسهيل للتردد</li> </ul>
<h3>كيف تتجنب عوامل الخطر المنزلية للمسقوط</h3> <ul style="list-style-type: none"> <li>- تسهيل وتسهيل الممرات الغير مستقيمة</li> <li>- علاج العتبات</li> <li>- تركيب الدرجات الغير مستوية</li> <li>- تجميل المداخل بشكل يسمح باستخدام السهل</li> </ul>	<h3>كيف تساهم في الحد من السقوط</h3> <ul style="list-style-type: none"> <li>- الاستعمال الصحيح للأجهزة المساعدة</li> <li>- ارتداء الملابس المناسبة والأحذية في الوضعية المناسبة</li> <li>- طلب المساعدة في حال الشعور من القيام في بعض المهام</li> <li>- الالتزام في المداومة والملاحظة الطبية</li> </ul>
<h3>Thank You</h3>	<h3>تقييم البرنامج</h3> <p>الهدف من هذا البرنامج هو...</p> <p>البرنامج...</p> <p>النتائج...</p> <p>التقييم...</p>





## Appendix VII

### Evaluation form

**تقييم البرنامج**

- كيف تقيم هذا الحدث؟

ممتاز  جيد جدا  غير مقبول  حسنا  غير جيد

- هل تعلمت أي شيء جديد أو مهم بحيث أنه يشجعك على الرقابة من السقوط؟

نعم  غير مقبول  لا

- وإذا كانت الإجابة "نعم" ما الذي تعلمته

.....

- هل تعتقد أنك ستجري تغييرات معينة على نظ حياتك ووسع السقوط؟

نعم  غير مقبول  لا

- إذا كنت تخطط لتغيير شيء ما في حياتك، ما من شأنه أن يكون؟

.....

- ما هي المواضيع الأخرى ذات علاقة لكم؟

.....

- هل لديك أي تعليق حول هذا الحدث؟ أو هل لديك أي اقتراحات التي تساعدنا على القيام بذلك بشكل أفضل في المرة القادمة؟

.....

## Appendix VIII

### Centers for Disease Control and Prevention [CDC] email for validity and reliability testing of STEADI tool

RE: CDC-INFO: Inquiry [ ref:\_00DU0YCBU\_500U0FbgPh:ref ]

----- Original Message -----  
From: [cdcinfoforms@cdc.gov]  
Sent: 11/10/2014 9:21 PM  
To: cdcinfo@cdc.gov  
Subject: CDC-INFO: Inquiry

Subject: STEADI fall risk checklist

From: General Public

Email Address: sihamsleiman@hotmail.com

Your Question: Dear Sir/Mme,

I am a registered nurse, enrolled in my masters degree, living in Beirut, Lebanon. I would like to ask about the STEADI tool "Fall risk checklist" that was last modified on Feb 19, 2014 on CDC website. Is it a valid and reliable tool? In other terms to which extent I can use it in my assessment and studies in Geriatrics home care?

I would like to take this opportunity to thank you for the work you have acheived and for the website that is very helpful for patients and nurses throughout the world.

Yours sincerely,  
Siham Sleiman

RE: CDC-INFO: Inquiry [ ref:\_00DU0YCBU\_500U0FbgPh:ref ]

We hope that the STEADI Tool Kit will help you incorporate fall risk assessment and fall prevention into your clinical practice, and enhance your efforts to help older adults stay healthy and independent.

Grant Baldwin, PhD, MPH  
Director of the Division of Unintentional Injury Prevention  
CDC National Center for Injury Prevention and Control

For more information about STEADI fall risk checklist, please visit the CDC website:  
<http://www.cdc.gov/HomeandRecreationalSafety/Falls/index.html>


Links to nonfederal organizations are provided as a service. Links are not an endorsement of these organizations or their programs by CDC or the federal government. CDC is not responsible for the content of organization websites found at these links.

Thank you for contacting CDC-INFO. For more information, please call 1-800-CDC-INFO (800-232-4636), visit [www.cdc.gov](http://www.cdc.gov) and click on "Contact CDC-INFO," or go to [www.cdc.gov/info](http://www.cdc.gov/info). If you have questions or comments, please send them via our online form at [www.cdc.gov/info](http://www.cdc.gov/info).

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NT

RE: CDC-INFO: Inquiry [ ref:\_00DU0YCBU\_500U0FbgPh:ref ]

 CDC INFO (cdcinfo@cdc.gov) Add to contacts 11/17/2014  
To: sihamsleiman@hotmail.com

Thank you for your inquiry to CDC-INFO. We are sorry for the delay in responding to your e-mail. A recent high volume of inquiries has slowed our response time. In response to your request for information on STEADI fall risk checklist, we hope you find the following information helpful:

Researchers at CDC's Injury Center have created this tool kit expressly for you—health care providers who treat older adults who are at risk of falling or who may have fallen in the past.

As a health care provider, you are already aware that falls are a serious threat to the health and well being of your older patients. One out of three people 65 and older falls each year, and over two million are treated in emergency departments annually for fall injuries. You play an important role in caring for older adults and you can help reduce these devastating injuries. The STEADI Tool Kit contains resources and tools that will help make fall prevention an integral part of your clinical practice.

The STEADI Tool Kit is based on a simple algorithm [HYPERLINK "/homeandrecreationalafety/pdf/steadi/algorithm\\_fall\\_risk\\_assessment.pdf"](#) (adapted from the American and British Geriatric Societies' Clinical Practice Guideline). It includes basic information about falls, case studies, conversation starters [HYPERLINK "/homeandrecreationalafety/pdf/steadi/talking\\_with\\_patients.pdf"](#), and standardized gait and balance assessment tests (with instructional videos). In addition, there are educational handouts about fall prevention specifically designed for patients and their friends and family.

We hope that the STEADI Tool Kit will help you incorporate fall risk assessment and fall prevention into your clinical practice, and enhance your efforts to help older adults stay healthy and

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