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An Exploration Of The Relationships Among Demographics, Risk Factors, Perceived Self-Efficacy, And Fall Prevention Behaviors In Community-Dwelling Thai Older Adults

Kanyarat Ubolwan
Wayne State University,

AN EXPLORATION OF THE RELATIONSHIPS AMONG DEMOGRAPHICS, RISK FACTORS, PERCEIVED SELF-EFFICACY, AND FALL PREVENTION BEHAVIORS IN COMMUNITY-DWELLING THAI OLDER ADULTS

by

KANYARAT UBOLWAN

DISSERTATION

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DEDICATION

This dissertation is dedicated to the memory of my father, Seian Ubolwan. I also dedicate the completion of this dissertation work to my mother, Tiwa Ubolwan, my three sisters, Katkaew Ubolwan, Wanpen Sorikul, and Wipapon Pengcuab, my brothers in law, my nieces, and my nephew. Their prayer, emotional support, and significant encouragement to and for me have helped me achieve this doctoral degree. I also dedicate the completion of this dissertation work to all of my teachers who have instructed me over the years from my foundational knowledge to my advanced nursing knowledge.

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CHAPTER 1

INTRODUCTION

Background

Globally, people aged 65 years and older were estimated to be 506 million in 2008 and are expected to reach 1.3 billion in 2040 (Kinsella & He, 2009). The growing number of older adults has led to a growing number of falls in older adults. According to data from the Centers for Disease Control and Prevention (CDC), the rate of nonfatal falls between 2001 and 2003 increased 7.6% for both male and female older adults age 65 years and older (Stevens, Ryan, & Kresnow, 2006). The rate of falling in older adults is increasing not only because the number of older adults is increasing throughout the world, but also because older adults are at a higher risk for health problems. Older adults often experience deterioration of physical functioning due to chronic disease and the aging process (Klingman, 2008). Many older adults have at least one chronic illness (Klingman, 2008) and 30% of older adults have three or more chronic illnesses (American Geriatrics Society Foundation, 2005). The decrement due to age and illness not only impacts physical functioning, but also increases the risk of falling. While falls are associated with several risk factors (Brunader & Retke, 2006), the larger concern with falls in older adults are the significant injuries that lead to death, disability, nursing home admission, and higher medical costs (Stevens et al., 2006). Therefore, falls among older adults are a major health issue and a significant concern for healthcare systems in many countries.

Incidence and consequences of falls. Falls are common incidences in adults aged 65 years and older (Powanusorn & Bottomley, 2010) and have been the focus of numerous studies from several countries. Approximately 30% of adults aged 65 years and older fall each year in the United States (Stevens et al., 2006). According to data from the CDC, in 2005, the number of

older adults who fell in a three-month period was approximately 5.8 million persons, or 15.9% of all older adults in the United States. Kojima and colleagues (2008) reported approximately 32.6% (*n* = 277) of community-dwelling older adults aged 65 years and older fell at least once during 2006-2007 in Hokkaido, Japan. In 2000, the prevalence of falls in the previous 12 months among older adults aged 65 years and over in South Australia was approximately 30% (Gill, Taylor, & Pengelly, 2005). In 2007 in Thailand, the data from the national survey of the National Statistics Office found that approximately 10.3% (*n* = 723,912) of Thai older adults fell during a 6-month period. Moreover, over half (*n* = 402,837) of those older adults with a previous fall experience fell more than one time (National Statistical Office of Thailand, 2007).

Falls have significant consequences for older adults; the most important consequence is death from injuries. Moreover, injury results in physical and psychological disability leading to high costs of health care in the older adult populations worldwide. According to 2002 data from the World Health Organization (WHO), mortality rates related to falls were significantly higher among adults over 70 years of age (WHO, 2010). In 2005, the CDC reported that the number of adults 65 years and older who died from injuries relating to unintentional falls was about 15,800 (CDC, 2009). Moreover, death rates from falls increased 42% between 2000 and 2006 in the United States (Hu & Bader, 2010). Of older adults who experience falls, between 20% and 30% undergo major injuries such as head injuries and hip fractures (CDC, 2009). Over 90% of older adults who experienced fall-related fractures had to undergo surgical repair for their injuries (Coutinho, Fletcher, Bloch, & Rodrigues, 2008). Minor injuries found among older adults who fell consisted of contusions or abrasions, lacerations, strain or sprains, and internal injuries (Stevens & Sogolow, 2005; Stevens, Thomas, Teh, & Greenspan, 2009). Moreover, older adults who fall have significantly worse mobility post-fall (Assantachai & Maranetra, 2005), greater

difficulty performing activities of daily living and experience significant activity restrictions (Apikomonkon, 2003; Kitkumhang, 2005), and a great fear of falling in the future (Chang, Chi, Yang, & Chou, 2010) than non-fallers. The fear of falling leads older adults toward lower functional competence (Deshpande, Metter, Lauretani, Bandinelli, & Ferrucci , 2009) and lower fall-related self-efficacy, which is a persons' perception of their confidence to perform daily activities without falls (Hellström, Vahlberg, Urell, & Emtner, 2009). The fear of falling also negatively affected the quality of life of older adults (Chang et al., 2010). Older adults that experienced falls developed low self-confidence, isolated themselves and/or lost social contact, adapted their lifestyle daily routine, and developed increased anxiety/distress (Weaver, 2008). Moreover, the consequences of falls among older adults can affect their family members or caregivers. Older adults who have experienced a fall may restrict their activities requiring more dependent care and increasing the burden and workload on family members or caregivers. Caregivers who provide care for older adults who fell had significantly higher burden scores (measured by the Zarit Burden Interview, ZBI) than caregivers who provide care for older adults who did not fall (Kuzuya et al., 2006).

Falls not only impact physical and psychological health among older adults, but also increased the medical cost of care for those adults who fell (Stevens et al., 2006). Based on data from CDC (2009), approximately 1.8 million of nonfatal injuries from falls were treated in emergency departments and over 433,000 of these older patients were admitted to the hospital. The total medical cost for caring for older adults who fell in 2000 was approximately $0.2 billion for fatal and $19 billion for non-fatal injuries (Stevens, Corso, Finkelstein, & Miller, 2006). The non-fatal injury costs included 63% ($12 billion) for hospitalization, 21% ($4 billion) for

emergency department visits, and 16% ($3 billion) for treatment in outpatient departments (Stevens et al., 2006).

Risk factors for falls. Falls in older adults are associated with several risk factors which can be categorized into two groups: intrinsic and extrinsic (Powanusorn & Bottomley, 2010; Rawsky & Digby, 2000). Intrinsic factors are individual characteristics (e.g., physical and mental health) that may contribute to falls; while extrinsic risk factors are the environmental influences that lead to falls (Rawsky & Digby, 2000). The intrinsic risks found to cause falls consist of numerous demographic, comorbid conditions, and psychological factors. Multiple studies have reported that older women experience falls more than older men (Buatois et al., 2010; Chaiwanichsiri, Janchai, & Tantisiriwat, 2009; Shanthi & Krishnaswamy, 2005; Shumway-Cook et al., 2009). Fall frequency increases proportionally to advanced age (Shumway-Cook et al., 2009; Arnold & Faulkner, 2007; Gill et al., 2005; Ziere et al., 2005), especially among those persons aged over 70 years old who commonly experienced falls due to intrinsic causes (Shanthi & Krishnaswamy, 2005). A high percentage of falls were found in older adults who are unmarried (Gill et al., 2005; Shumway-Cook et al., 2009), under-educated (Coutinho et al., 2008; Gill et al., 2005; Shumway-Cook et al., 2009), and of lower socioeconomic status (Shumway-Cook et al., 2009). Moreover, a history of falls was significantly related to future falls (Buatois et al., 2010; Clough-Gorr et al., 2008). Falls commonly occurred among older adults with other physical health conditions such as vision impairment (Chaiwanichsiri et al., 2009; Gauchard et al., 2006; Lamoreux et al., 2008; Markle-Reid et al., 2010; Shanthi & Krishnaswamy, 2005; Steinman, 2008), limitations of activities of daily living (ADL) or instrumental activities of daily living (IADL; Shumway-Cook et al., 2009), upper and lower limb disability (Steinman, 2008), and urinary incontinence (Coutinho et al., 2008; Friedman, 2006; Morris & Wagg, 2007). Falls

in an older age group were also associated with chronic diseases including Parkinson's disease (Markle-Reid et al., 2010; Weaver, 2008), hypertension (Khuankwai, 2007; Wontaisong, 2008), heart disease and diabetes mellitus (Williams, Watt, & Lee, 2006; Wontaisong, 2008), and musculoskeletal illnesses such as osteoarthritis of knee joints and rheumatoid arthritis (Shanthi & Krishnaswamy, 2005). One study reported that older adults who had recurrent falls had four or more comorbidities (Shumway-Cook et al., 2009). Moreover, the risk of falls was significantly increased with the number of medications/drugs used by the older adult (Buatois et al., 2010; Delbaere et al., 2006; Iinattiniemi, Jokelainen, & Luukinen, 2009; McMichael, Bilt, Lavery, Rodriguez, & Ganguli, 2008). Falls among older adults are also related to psychological problems including cognitive impairment (Coutinho et al., 2008; Gauchard et al., 2006; Markle-Reid et al., 2010; Shanthi & Krishnaswamy, 2005), feelings of anxiety, nervousness (Iinattiniemi et al., 2009), depression (Iinattiniemi et al., 2009; Steinman, 2008; Ziere et al., 2005), and psychiatric impairments (Williams et al., 2006). Moreover, fear of falling was identified as the best psychological predictor for falls (Delbaere et al., 2006) and fear of falling was significantly higher in the older adults who had fallen (70.4%) than those who had not experienced a fall (48.4%), especially in the group who experienced an injury as a result of the fall (75.5%, n = 295; Chang et al., 2010).

Falls in older adults also involve extrinsic factors, especially the environmental conditions in their homes. For example, in Thailand, the risk factors precipitating falls in the home were slippery floors (32.5%) and stumbling (28.2%; Sethasathien & Kommuangpuk, 2009). Other risk factors of falls in the home consisted of loose carpet, wavy or folded-up carpet, and improper sitting levels resulting in difficulty getting up from a chair (Kitkumhang, 2005). The outdoor environments, especially sloped or irregular ground, also led to falls (Sethasathien

& Kommuangpuk, 2009). In addition, outdoor environments contributing to falls in Thailand included damaged footpaths and bushes along the path (Kitkumhang, 2005). Moreover, falls among older adults in the community are most often associated with living alone (Gill et al., 2005; Shumway-Cook et al., 2009). The number and type of environmental hazards were also significantly associated with an increased number of falls (Markle-Reid et al., 2010). Older adults' activities including ambulation, ascending or descending stairs, reaching, and getting up from a chair or bed were associated with falls (Arnold & Faulkner, 2007). Dresses that are too long and uncomfortable shoes increased the risk of falls among Thai older adults (Kitkumhang, 2005; Limsuksan, 2008). The use of walking aids was significantly associated with falls (Khuankwai, 2007), especially walkers and canes. In the United States, over 87% (n = 41,287) of fall-related injuries in older adults was related to walkers while approximately 12% (n = 5,839) involved the use of canes and only 0.4% (n = 186) of falls were from adults who used both walking aids (Stevens et al., 2009).

Fall prevention. Fall prevention behaviors are defined as "personal or family caregiver actions to minimize risk factors that might precipitate falls in the personal environment" (Moorhead, Johnson, Maas, & Swanson, 2008, p. 346). Fall prevention programs have been developed to modify the fall risk factors with the goal of reducing the incidence and impact of falls among older adults in several countries as well as Thailand. Various studies reported on the efficacy of the programs including single and multifaceted interventions to reduce risk factors and fall incidence. Exercise is the most common intervention used to reduce risk factors for falls in community-dwelling older adults. Exercise in the form of balance, gait, and strength training such as Tai Chi was an effective method to reduce falls and was suggested for prevent falls in older adults living in communities (Panel on Prevention of Falls in Older Persons, American

Geriatrics Society and British Geriatrics Society, 2011). Tai Chi exercise is a popular exercise among older adults used to prevent falls and reduce the risk of falls; this exercise improves flexibility, balance, and postural stability (Powanusorn & Bottomley, 2010). Tai Chi also improves muscle strength, mobility, physical fitness, and confidence in avoiding falling (Choi, Moon, & Song, 2005). Moreover, exercise by social-dance demonstrates significant improvements in balance (Pruksasri, 2006), whereas even a simple balancing exercise can reduce falls and fall risk factors (Kuptniratsaikul et al., 2011). Similarly, a review of the literature reported that an exercise program of progressive muscle strengthening can reduce falls, number of falls, and fall-related injuries (Gillespie et al., 2007).

Many of the fall prevention programs use multifaceted interventions due to the multiple fall risk factor etiology of fall incidence. In particular, one multifaceted study of older adults that included fall evaluation, balance training, home hazard management, falls prevention education, exercise, and home visitations resulted in a significant improvement in balance (Sze et al., 2008). The participants also demonstrated a decrease in their fear of falling and the fall rate (Sze et al., 2008). Moreover, several multifaceted interventions include a program of exercise plus dietary supplementations including protein and calcium/vitamin D (Swanenburg, de Bruin, Stauffacher, Mulder, & Uebelhart, 2007) and programs of exercise plus fall prevention education with resultant reductions in fall rates among these older adults (Huang, Liu, Huang, & Kernohan, 2010; Shumway-Cook et al., 2007).

Most fall prevention programs focus on modification of behaviors or actions in one's lifestyle that are known risk factors for falls (Arnold & Faulkner, 2007; Kitkumhang, 2005). A multifaceted community-based program to improve self-efficacy, encourage behavioral change, and reduce falls reported that the intervention group had higher performance in fall prevention

behaviors and less experiences in falls than the control group (Clemson et al., 2004). In addition, the intervention group demonstrated maintenance of confidence in ability to avoid falls but the control group had a decrease in confidence measured by the Modified Fall Self-Efficacy Scale (Clemson et al., 2004). Seven studies investigated the effect of health education and group discussion programs including knowledge of falls, risk factors of falls, fall prevention behaviors, exercise as well as social support to prevent falls among older adults in Thailand. They reported that older adults who participated in the programs had significant improvement in the number of fall prevention behaviors after the interventions (Areerak, 2011; Julabute, 2010; Khanork, 2010; Pallit, 2001; Pimdee, 2010; Poomsree, 2004; Pootong, 2002). In few descriptive studies that explored behaviors used to prevent falls among Thai older adults in community settings, the studies reported that most older adults had a moderate level of fall prevention behaviors (Ounlamai, 2010; Pornputasa, 1999; Siriprapha, 2006). In contrast, most of the participants from hospital settings, the outpatients with hypertension (Kumsri, 2006) and the inpatients with a history of falls (Thiya, 2008), had higher mean scores of fall prevention behaviors. However, most of these studies' utilized the Health Belief Model to investigate fall prevention behaviors which assumes that the more fear or risk one perceives, the more likely they are to engage in a behavior. It may be that inpatient older adults are more unstable and more fearful of falling and are more likely to report using fall prevention behaviors.

Various fall prevention programs that modify both intrinsic and extrinsic fall risk factors provide important evidence to demonstrate that preventive actions or behaviors performed by or for older adults can reduce risk factors for falls and falling incidence among an older population. Multiple preventive actions or behaviors such as exercise to improve muscle strength and balance, environmental modification to improve safety, and behavioral awareness to prevent falls

were revealed as the most effective actions for reduction of falls and risk factors (Huang et al., 2010; Shumway-Cook et al., 2007; Sze et al., 2008). The behaviors or actions not only directly reduce risk factors and incidence of falls (Kuptniratsaikul et al., 2011; Swanenberg et al., 2007) but they also decrease the suffering from fall-related injuries (Sze et al., 2008). Therefore, falls prevention behaviors performed by older adults or caregivers are a significant variable that can reduce the risk factors of falls. If older adults are aware and careful to perform these daily activities, they can protect themselves from falls and decrease fall incidence.

The literature, however, also suggests that older adults' performance of fall prevention behaviors may be influenced by multiple factors. The factors including knowledge of fall prevention and risk factors of falls, perceived severity of falls, perceived difficulty in fall prevention behaviors, perceived value of fall protection, and motivation for fall protection were found to be significantly associated with fall prevention behaviors among Thai older adults ($p < 0.05$; Thiya, 2008). Thai older adults also demonstrated that other factors associated with the fall prevention behaviors were age (Ounlamai, 2010), perceived risk factors for falls (Siriprapha, 2006), and attitude towards falls prevention (Pornputasa, 1999) as well as self-efficacy in fall prevention (Kumsri, 2006; Ounlamai, 2010). Many of these studies were based on the Health Belief Model and most of the samples in these studies were community-dwelling older adults (Ounlamai, 2010; Pallit, 2001; Pimdee, 2010; Siriprapha, 2006), whereas the sample of two studies were older outpatients with hypertension (Kumsri, 2006) and inpatients with falls (Thiya, 2008).

According to self-efficacy theory, self-efficacy beliefs are based on perception and defined as the judgment of persons' ability to perform an action or behavior (Bandura, 1977). While self-efficacy beliefs have been found to be an important factor linked to multiple health

prevention behaviors (Chen, Acton, & Shao, 2010; Chen & Lin, 2010; Hankonen, Vollmann, Renner, & Absetz, 2010; Pertl et al., 2010), studies linking self-efficacy to fall prevention behaviors are limited. In fact, the relationship between self-efficacy in fall prevention and fall prevention behaviors was found in only two studies in Thailand (Kumsri, 2006; Ounlamai, 2010). One investigated perceived self-efficacy in fall prevention and its relationship with fall prevention behaviors among 240 older hospital outpatients with hypertension (Kumsri, 2006), and another one explored the outcomes among 202 community-dwelling older adults (Ounlamai, 2010). Outcomes from both of these studies are insufficient to provide adequate knowledge for understanding the role of self-efficacy in fall prevention and its relationship with fall prevention behaviors among community-dwelling Thai older adults. Therefore, it is necessary to obtain more knowledge of perceived self-efficacy and its impact on fall prevention behaviors.

Self-efficacy. Self-efficacy beliefs are proposed to be a significant factor influencing the choice of behaviors (Bandura, 1977). The majority of self-efficacy measures are associated with differing specificity to the behavior and general sense, such as health-related measures (e.g., cardiac self-efficacy), task-specific measures (e.g., exercise self-efficacy and fall self-efficacy), and general measures (e.g., general self-efficacy; Gecas, 1989; Resnick, 2009). A review of the literature by Moore and Ellis (2008) reported that self-efficacy linking falls has been investigated in the contexts of fall self-efficacy, fear of falling, and balance confidence using different instruments. Fall self-efficacy has been defined as "the degree of confidence a person has in performing common daily activities without falling" (Tinetti, Mendes de Leon, Doucette, & Baker, 1994, p. M141), whereas fear of falling was defined as "low perceived self-efficacy or confidence at avoiding falls" (Tinetti, Richman, & Powell, 1990, p. 239). Balance confidence was defined as having confidence to perform specific activities without loss in balance or

unsteadiness (Powell & Myers, 1995). Moreover, general self-efficacy defined as a wide and stable sense of personal capabilities to cope with a diversity of stressful situations (including fall prevention behaviors; Schwarzer & Luszczynska, n.d.) was used in a few studies linking falls and a fall prevention program (Cavanagh, Hogan, & Templin, n.d.; Kempen, van Haastregt, McKee, Delbaere, & Zijlstra, 2009; Kato et al., 2008).

Self-efficacy including fall self-efficacy and general self-efficacy has been investigated for its impact on several factors (e.g., demographic, physical, and mental factor) and its improvement after participating in interventions in various studies (Bağ & Mollaoğlu, 2010; Belgen, Beninato, Sullivan, & Narielwalla, 2006; Choi et al., 2005; Fillipas, Oldmeadow, Bailey, & Cherry, 2006; Kempen et al., 2009; Li, Fisher, Harmer, & McAuley, 2005). Fall self-efficacy had been investigated to evaluate the effect of fall prevention programs (Chinsongkram, 2006; Kuptniratsaikul et al., 2011) and explored as fear of falling that is a risk factor of falls (Limsuksan, 2008) among Thai older adults. In addition, there are few Thai studies that investigate self-efficacy in fall prevention, the beliefs in persons' abilities to perform fall prevention behaviors (Areerak, 2011; Kumsri, 2006; Ounlamai, 2010). In the two studies, based on the Health Belief Model, one study found a significantly positive relationship between perceived self-efficacy in fall prevention and fall prevention behaviors (Ounlamai, 2010), and another study found that perceived self-efficacy was able to predict fall prevention behaviors (R^2 = 0.28, $p < 0.001$; Kumsri, 2006). Moreover, another study based on the self-efficacy theory reported that a fall prevention program was able to increase self-efficacy in fall prevention and fall prevention behaviors (Areerak, 2011). However, no study has investigated the relationship of fall self-efficacy (confidence to maintain balance during perform activities) and general self-efficacy with fall prevention behaviors among Thai older adults in Thailand. Knowledge

obtained from a few studies in a culture, such as Thai culture, is insufficient to understand the role of fall self-efficacy and general self-efficacy in relation to fall prevention behaviors. Therefore, knowledge of the relationships of fall self-efficacy, general self-efficacy, and fall prevention behaviors is essential to investigate among Thai older adults in Thailand.

Fall self-efficacy and general self-efficacy has not only been found to be related to behaviors, but they have also been associated with other demographic, physical, and psychological factors. General self-efficacy and age were found to be negatively significantly related (Bağ & Mollaoğlu, 2010; Cavanagh et al., n.d.). A significant higher self-efficacy measured by the Activities-specific Balance Confidence was found among male patients compared with female patients (Salbach et al., 2006). Balance and mobility as physical factors have been found to have a significant positive correlation with fall self-efficacy in studies (Pang & Eng, 2008; Strentton et al., 2006). History of fall was also found to have a significantly negative relationship with fall self-efficacy among older adults (Belgen et al., 2006). Increasing the number of chronic health condition was also associated with a greater fear of falling (i.e., lower self-efficacy; Hill, Womer, Russell, Blackberry, & McGann, 2010). Mental factors found as factors negatively associated with fall self-efficacy (confidence for performing activities without falling) were depression (Chou, Yeung, & Wong, 2005) and fear of falling (Hellström et al., 2009; Li et al., 2002). Moreover, general self-efficacy was found in the negative relationship with falls among older adults (Cavanagh et al., n.d.).

Conclusion. Performing fall prevention actions or behaviors leading to the desired outcome (e.g., reduced falls) may be dependent on several factors. Intrinsic factors (e.g., age, gender, and mental and physical health) and extrinsic factors (e.g., outdoor and indoor environments) have been found to significantly contribute to falls and subsequent mental and/or

physical health problems. Consequences of falls not only affect older adults who fell but they also increase cost of healthcare service and workload of caregivers. Fall prevention strategies have important roles to reduce fall risk factors and fall incidences, especially fall prevention behaviors or fall prevention actions (e.g., exercise and modifying hazardous environments). Fall prevention behaviors or fall prevention actions included in fall prevention programs have been found to be an effective method for preventing falls among older adults. However, performing the behaviors or actions may be influenced by various factors (e.g., demographic, psychological, and physical factors), particularly self-efficacy. Self-efficacy, known as one's belief in his or her ability to perform a task to achieve the desired outcome, is a significant factor influencing a person's behaviors (Bandura, 1997). Perceived self-efficacy is indicated as a major predictor of people's actions (e.g., engaging in fall prevention behaviors; Bandura, 1997). To promote fall prevention behaviors leading to a reduction in fall risk factors and fall incidence, it is necessary to understand fall prevention behaviors and its precursors: personal risk factors and self-efficacy.

Statement of Problem

Numerous studies regarding falls have been performed to better understand fall prevalence, risk factors of falls, and the impact of falls. In addition, randomized controlled trials to test fall prevention programs have been conducted in several countries including Thailand. Twelve studies regarding fall prevention behaviors and fall prevention programs among older adults were found in Thailand. Seven of these studies demonstrated the effectiveness of fall prevention programs to improve fall prevention behaviors (Areerak, 2011; Julabute, 2010; Khanork, 2010; Pallit, 2001; Pimdee, 2010; Poomsree, 2004; Pootong, 2002). The remaining five studies reported fall prevention behaviors and factors associated with the behaviors among older adults in hospital settings, while only three studies have been conducted in a community setting

(Kumsri, 2006; Ounlamai, 2010; Pornputasa, 1999; Siriprapha, 2006; Thiya, 2008). Moreover, only two of these studies investigated the relationship between self-efficacy in fall prevention and fall prevention behaviors; one in a community setting and another one in a hospital setting. Therefore, the knowledge from these few studies is insufficient to understand self-efficacy, fall prevention behaviors, and their relationship, as well as, factors associated with self-efficacy among community-dwelling Thai older adults.

Most of these studies developed conceptual frameworks based on the Health Belief Model to guide their investigations. The underlying concept of the model describes health behaviors as persons' beliefs or perception regarding a disease and strategies to reduce occurrence of the disease (Jones and Bartlett Publishers, LLC., n.d.). The model also explains persons' performance in preventive and health promotion based on their perceptions including perceived seriousness, perceived susceptibility, perceived benefits, and perceived barriers as well as perceived self-efficacy (Pender, Murdaugh, & Parsons, 2011). However, the Health Belief Model has limitations in its attempts to explain persons' behaviors performed to meet daily self-care requisites (e.g., engagement in fall prevention) for regulation and maintenance of their functioning and development in everyday life. Furthermore, although the Health Belief Model has been used to support the design of some falls research studies, there have been few, if any, investigations supported by a nursing theoretical framework that provides relevant concepts and proposed relationships that can inform a study of this phenomenon of interest.

To reduce fall incidence and the several risk factors of falls, older adults need to perform specific and multiple prevention behaviors or actions, also known as self-care behaviors. Self-care is known as deliberated actions performed by persons who have power or capabilities known as self-care agency (Orem, 2001). Individuals should also have a belief in their ability to

perform specific activities such as having confidence in their ability to maintain balance and stability, i.e., perceived fall self-efficacy. Moreover, they should also have belief in their ability to cope with or perform several new tasks that may be required in fall prevention activities, i.e., perceived general self-efficacy. Therefore, perceived fall self-efficacy and perceived general self-efficacy may also be important factors contributing to older adults' performance of various actions or behaviors to reduce and manage the multiple factors that enhance safety in the home environment. Although self-efficacy and fall prevention behaviors are significant factors leading to a reduction in falls among older people, few studies have investigated self-efficacy to prevent falls, daily fall prevention behaviors, and their relationships in Thailand. Also, there is no study exploring the relationship between fall self-efficacy (confidence to perform activities without loss in balance) and general self-efficacy and fall prevention behaviors in Thailand. Moreover, nurses, as healthcare providers in the healthcare system in Thailand, need more knowledge about the predictors of fall prevention behaviors to promote safety for older adults living in communities, as the majority of older adults (approximately 80%) in Thailand live in their own homes (National Statistical Office of Thailand, 2007). Therefore, a descriptive correlational study based on a nursing theoretical framework is needed to provide new knowledge that may support future intervention studies. The overall purposes of this study is to investigate predictors of fall prevention behaviors including perceived fall self-efficacy and perceived general self-efficacy and to explore the relationship between demographic factors, risk factors, perceived fall self-efficacy, perceived general self-efficacy, and fall prevention behaviors. The results of the study will add to the knowledge base of fall prevention behaviors and be useful for nurses and other healthcare providers who manage strategies and fall prevention programs that have the potential to enhance the safety of community-dwelling Thai older adults.

Conceptual Framework

The conceptual framework being used for this study was developed from Orem's theory of self-care and from Bandura's self-efficacy theory. Orem proposed three nursing theories in the self-care deficit nursing theory: the theory of self-care, self-care deficit, and nursing system. The theory of self-care describes five major concepts including: self-care, self-care requisite, therapeutic self-care demand, self-care agency, and basic conditioning factors. This section discusses these nursing concepts as well as the borrowed concept of self-efficacy from Bandura's self-efficacy theory in order to construct a conceptual and theoretical substruction of relationships of the constructs of basic conditioning factors, self-care agency, and self-care behaviors. These conceptual and theoretical constructs will be discussed for their relevance in supporting an investigation of the relationship between demographic factors, risk factors, perceived fall self-efficacy, perceived general self-efficacy, and fall prevention behaviors. The basic conditioning factors or risk/demographic factors will be discussed first followed by self-care agency and its theoretical concept of self-efficacy, and concludes with a discussion of fall prevention in relation to self-care behaviors.

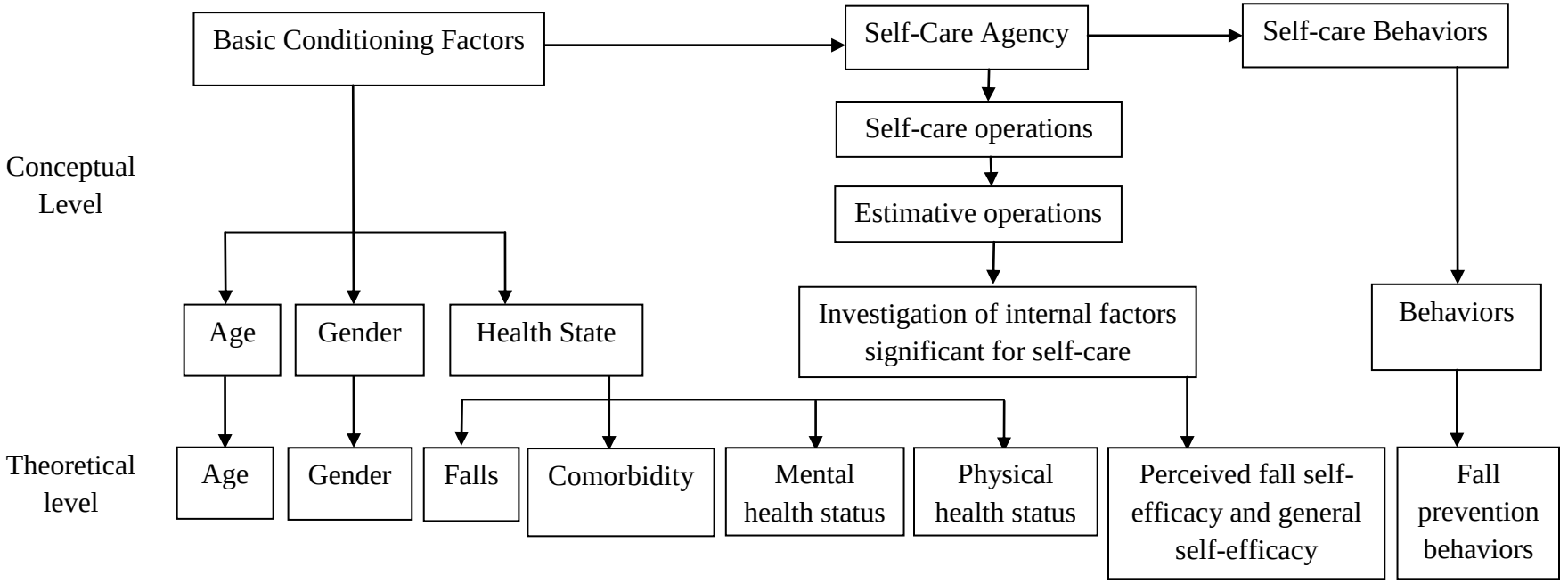


Figure 1. Substruction of conceptual and theoretical relationships.

Basic Conditioning Factors

Basic conditioning factors (BCFs) are defined as "personal conditions or environmental circumstances" that may influence individual competence for engagement in self-care actions (Orem, 2001, p. 514). Basic conditioning factors contain ten factors including age, gender, developmental state, health state, sociocultural orientation, health care system, family system factors, pattern of living, environmental factors, and resource availability and adequacy (Orem, 2001). The BCFs involve cultural, environmental, socioeconomic conditions and other conditions of humans. They also affect the value of self-care agency of persons at a specific time (Orem, 2001). Therefore, the BCFs influence the ability and power of people to perform and produce care for themselves. According to the literature on falls among older adults, several factors are significantly associated with falls, including age (Khuankwai, 2007), gender (Kitkumhang, 2005), history of falls **(**Khuankwai, 2007), comorbidity (Assantachai, Chatthanawaree, Tahmlikitkul, Praditsuwan, & Pisalsarakij, 2003), depression, and fear of falling **(**Limsuksan, 2008) as well as physical health status **(**Kitkumhang, 2005). Therefore, only age, gender, health state including falls, comorbidity, mental health status, and physical health status were selected to investigate for this study because these BCFs have been found to be important predictors of falls among Thai older adults and they are particularly relevant in studying fall risks in the Thai environment and culture.

Self-Care Agency

Self-care agency is defined as "the complex acquired ability of the mature and maturing person to know and meet their continuing requirements for deliberate, purposive action to regulate their own human functioning and development" (Orem, 2001, p. 522). Benefits of self-care agency are for the sake of one's self (Orem, 2001). However, if people have a self-care

deficit (e.g., an inadequate self-care agency to perform actions to meet therapeutic self-care demand [or all of the self-care requisites]), they need other people to perform therapeutic self-care demand for them (e.g., nurses, family or other providers; Orem, 2001). Persons' self-care agency changes over time from childhood through old age, and persons can develop self-care agency or the power to engage in daily self-care through learning processes (Orem, 2001). Self-care agency is comprised of three structures: the foundational capabilities and dispositions, the power components, and the self-care operations (Orem, 2001). Capability and disposition foundations of humans for self-care agency are essential to engage in deliberate actions for self-care. Capabilities and dispositions comprise the following: 1) selected basic capabilities such as sensation and perception (e.g., persons with good condition of sensation and perception have ability for performance in estimative operations to know or seeking their ability to prevent falls), 2) knowing and doing capabilities such as knowing, reasoning, making judgments and decision (e.g., persons perform fall prevention behaviors based on their ability for knowing, reasoning, and decision-making as well as learned skills for communication to obtain fall prevention knowledge), 3) dispositions affecting goals sought such as self-awareness, self-value, and willingness (e.g., persons accept themselves as agents to perform certain behaviors or actions to prevent falls), and 4) significant orientative capabilities and dispositions such as interest and concern, habits, and ability (e.g., persons' ability to regularly engage daily fall prevention behaviors; Orem, 2001).

Power components consist of 10 supportive components that are necessary for human ability to engage in self-care operation (Orem, 2001). According to Orem's self-care theory (2001), these ten power components are essential for older adults' ability to engage in fall prevention behaviors: 1) capability to maintain attention and exercise requisite as self-care agent

(e.g., ability to perform certain behaviors or actions to prevent falls in everyday life), 2) controlling use of physical energy for continuous operation of self-care (e.g., management for performing activities that are appropriate with physical ability to prevent falls), 3) capability to control the position of the body for movements (e.g., ability to maintain balance during operation in activities), 4) capability to reason for self-care (e.g., doing behavior slowly to prevent falls), 5) motivation (e.g., enhancing confidence to prevent falls), 6) capability for making decision for care (e.g., decide to use walking aid to prevent falls), 7) capabilities to obtain knowledge regarding self-care (e.g., talking to someone to know methods to prevent falls), 8) "a repertoire of cognitive, perceptual, manipulative, communication, and interpersonal skills adapted to the performance of self-care operation" (e.g., perception in persons' ability to perform fall prevention behaviors; p. 264), 9) capabilities to arrange self-care actions or action systems (e.g., increasing safety or caution during movement in outdoors), and 10) capabilities to consistently perform self-care operation (e.g., engage in fall prevention behavior in everyday life).

Self-care operations consist of three sub-operations including estimative self-care operations (e.g., seeking empirical and technical knowledge to prevent falls), transitional operations (e.g., judgment and decision to engage in fall prevention behaviors or actions), and productive operations (e.g., doing operations or performance to prevent falls; Orem, 2001). The estimative self-care operations are the abilities to investigate internal and external conditions and factors and to seek the empirical and technical knowledge to know and understand the knowledge (Orem, 2001). People can produce effective self-care to prevent falls if they have knowledge of the environment and knowledge of themselves as well as their internal knowledge of their ability to perform fall prevention behaviors or prevention activities. Therefore, investigation of individuals' internal conditions to perceive their ability known as self-efficacy is

important for the performance of self-care for preventing falls. Once people know or perceive their abilities through their self-inquiry, they will spend their energy and attempt to produce activities to achieve an outcome (engage in fall prevention behaviors).

Self-Efficacy Theory

The self-efficacy theory is composed of two major components, self-efficacy and outcome expectation. Perceived self-efficacy was defined as "a judgment of one's ability to organize and execute given types of performances" (Bandura, 1997, p. 121), whereas outcome expectancy was defined as "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193). Outcome expectation differs from self-efficacy because people can believe that a particular outcome will be produced by a certain behavior, but they may not believe that they are able to perform the behavior required for the outcome to occur (Resnick, 2008). Outcome expectations alone are insufficient for people to perform behaviors if they do not have perceived self-efficacy. Bandura mentioned that "the stronger the perceived self-efficacy, the more active the efforts" (Bandura, 1977, p. 194), and "expected outcomes are highly dependent on self-efficacy judgments" (Bandura, 1986, p. 392). Therefore, perceived efficacy is an important determinant of persons' ability to select behaviors or activities and is highly predictive of performing behaviors. Perceived self-efficacy belief is concerned with the judgment of personal capability and determines how people think, motivate themselves, feel, and behave, but it is not concerned and not measured by the number of skills people have (Bandura, 1997).

Personal efficacy beliefs comprise the main factor of "human agency" referred to as intentionally accomplished performance (Bandura, 1997). Bandura suggested that "human agency operates within an interdependent causal structure involving triadic reciprocal causation"

(Bandura, 1997, p. 6). The determinants in the triadic reciprocal causation include "internal personal factors in the form of cognitive (e.g., cognition), affective (e.g., depression), and biological events (e.g., health status); behavior; and environmental events (e.g., unsafe walking paths)" (Bandura, 1997, p. 6). These determinants perform as interacting determinants that bidirectionally affect one another. Efficacy beliefs can control peoples' desires, selection of behavioral courses, maintenance of attempt, and affective reactions (Bandura, 1997). If people believe that they have no power and ability to do something (e.g., do not believe they can perform fall prevention behaviors), they will not attempt performance to achieve an outcome (e.g., they do not perform fall prevention behaviors; Bandura, 1997). Personal self-efficacy can change over time based on new information acquired (Resnick, 2009). Individuals' self-efficacy varies based on three dimensions: magnitude refers to tasks ordered in level of difficulty or simplicity (e.g., picking up loose rugs versus self monitoring for medication side effects), generality refers to persons' capability to generalize self-efficacy to other situations (e.g., confidence to walk indoors is translated to confidence to walk outdoors), and strength refers to people's confidence to perform the behavior (Bandura, 1977). Moreover, self-efficacy beliefs are created from the following four major sources of information: performance accomplishments (e.g., engage in fall prevention behaviors everyday), vicarious experience (e.g., see peers perform fall prevention behaviors), verbal persuasion (e.g., encouraged by a nurse to engage in fall prevention behaviors), and physiological states (e.g., limited number of comorbidities; Bandura, 1977).

Self-efficacy is an important determinant of health behaviors (Schwarzer, 1992). Efficacy beliefs should be measured in specific judgments of ability that may change across domains of activity under different levels of task demands (e.g., on a flat surface versus an irregular

footpath) and under different situations (e.g., able to engage in fall prevention when one is in one's own home but not at the outdoor market; Bandura, 1997). A multitude of different measures of self-efficacy are identified in the literature (Resnick, 2009), because Bandura originally (1977) suggested that self-efficacy should be measured as a personal judgment of one's competence to perform a specific task. Still, the measurement of general self-efficacy (GSE) is not in disagreement with Bandura's original concept (Schwarzer & Luszczynska, n.d.). General self-efficacy (GSE) is used to assess the general sense of a persons' belief in their ability to handle a diversity of stressful events (e.g., walking on an irregular footpath when one has arthritis of the knees; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). Moreover, it may describe general human behaviors in less specific situations (Luszczynska et al., 2005) and may be helpful when a person requires multiple behaviors to achieve an outcome (e.g., fall prevention behaviors; Luszczynska, Scholz, & Schwarzer, 2005). Falls are associated with several risk factors and require an individual to perform several simultaneous behaviors to prevent falls. Therefore, limiting the measurement of self-efficacy to a measure of balance confidence (ABC scale) or fear of falling alone can only investigate confidence to perform a very specific task to prevent falls. General self-efficacy can also be measured in the context of fall prevention behaviors among older adults to capture the multiple behaviors and stressful situations required to engage in fall prevention.

Self-efficacy is known as persons' belief in their abilities to perform activities to achieve desired outcomes. Similarly, the concept of self-care agency includes the sub-concept of estimative capability for self-care operations which is the investigation by individuals of their internal conditions and factors to know their abilities for performing self-care. The meaning of self-efficacy is similar and relevant to the estimative self-care operation of self-care agency.

Moreover, the world view of reciprocal interaction of both self-efficacy theory and self-care theory is similar. One of the features of the reciprocal interaction world view is "human beings are active, and interactions between human beings and their environments are reciprocal" (Fawcett, 2005, p. 13). Orem's self-care theory expresses that "Human beings are never isolated from their environments" and "They exist in them" (Orem, 2001, p. 79). In the same fashion, Bandura's social cognitive theory explains human agency as operating within a triadic reciprocal causation involving bidirectional interaction of personal factors, behaviors, and environment (Bandura, 1997). These interactions of both self-care theory and self-efficacy theory are congruent in the reciprocal interaction world view. Therefore, perceived self-efficacy can be integrated at the theoretical level in a substruction based on Orem's theory of self-care (2001). According to self-care agency concepts, power components are necessary for persons to engage in self-care operation (Orem, 2001). Estimative self-care operations are supported by a power component of perceptual skill to investigate persons' internal factors to perceive their ability. This perceived ability known as perceived self-efficacy is an important internal factor to engage in fall prevention behaviors.

Self-Care

Self-care is defined as "the practice of activities that maturing and mature persons initiate and perform, within time frames, on their own behalf in the interests of maintaining life, healthful functioning, continuing personal development, and well-being, through meeting known requisites for functional and developmental regulations" (e.g., engaging in fall prevention behaviors; Orem, 2001, p. 521-522). Self-care is accomplished to meet self-care requisites or specific needs or kinds and sequences of actions that are essential to regulate and maintain an individual's functioning, development, and well-being (Orem, 2001).

Self-care requisites are identified in three types including universal, developmental, and health-deviation self-care requisites. The three types of self-care requisites combined are known as the therapeutic self-care demand defined as "the summation of care measures necessary at specific times or over a duration of time for meeting all of an individual's known self-care requisites" (Orem, 2001, p. 523). *Universal self-care requisites* are regular requisites for all people and are also related to the life processes, preservation of their structural integrity, and well being (Orem, 2001). Eight universal self-care requisites are defined by Orem; the most critical universal self-care requisite for this study states "the prevention of hazards to human life, human functioning, and human well-being" (Orem, 2001, p. 225). Based on Orem's self-care theory (2001), preventing falls as one of the hazardous preventions in older adults involve the following older adults' self-care behaviors: being alert to types of hazards contributing to falls (e.g., knowing cause of falls), taking actions to eliminate the hazards or fall risk factor (e.g., engagement in fall prevention behaviors), avoiding hazards contributing to falls (e.g., asking for help and avoiding actions likely to result in falls), and controlling hazardous environments (e.g., modifying hazardous environments). Fall prevention behaviors or fall prevention actions are deliberate self-care or actions performed by or for older adults in everyday life for eliminating fall risk factors and preventing falls to obtain the desired outcomes (reduction of falls or no falls). Fall prevention behaviors and fall prevention actions including exercise, vitamin D supplementation, receiving fall education, and modification of risk behaviors in daily life and hazardous environments, both outdoors and indoors, have been evaluated for their effect to reduce fall risk factors and fall incidence in older adults (Flicker et al., 2005; Shumway-Cook et al., 2007; Sze et al., 2008). Performing daily fall prevention behaviors and actions are also self-care behaviors to support the maintenance of functional health and well being among older

adults. *Developmental self-care requisites* are related to initial formation of persons' structural, functional, and behavioral features and active development increasing to more complicated levels of organization and functioning over time (Orem, 2001). The following three sets of developmental self-care requisites include promoting development, engagement in self-development, and prevention of effects of human condition and problems (e.g., having the functional and behavioral capabilities to carry out fall prevention behaviors; Orem, 2001). *Health-deviation self-care requisites* occur when individuals are ill or injured (Orem, 2001). Six categories of health-deviation self-care requisites are defined and include the requirements for seeking and securing suitable medical assistance, awareness and attention in pathologic condition, carrying out medical plans of care, awareness and attention to side-effects of medicine, modifying self-concept, and learning to live with the effect of health condition (e.g. having to learn to live with the effects of fear of falling; Orem, 2001).

Self-care is a human endeavor; it is the final product of persons engaging in a deliberate action to care for themselves or to have actions performed for them and to regulate health function and development (Orem, 2001). Self-care must be learned and deliberately executed continuously in time and in conformity with the individuals' regulatory requirements (Orem, 2001). Preventing harm (e.g., fall prevention behaviors) is a part of universal self-care requisites that is significant to maintain human functioning and development. The linkage of hazard prevention and fall prevention behaviors or actions is an essential need of people; therefore, they must perform self-care behaviors or actions (e.g., exercise, nutrition, change in behaviors, and modification of hazardous environment) to prevent and avoid dangers from falls. However, people need to have the ability and power known as self-care agency to perform self-care. For this study, that is the ability and power to engage in fall prevention behavior.

Based on Orem's theory of self-care, BCFs, as personal conditions, influence self-care agency and the ability and power to produce activity. Self-care agency in turn affects self-care behaviors. Therefore, the conceptual and theoretical relationship among the selected BCFs (age, gender, falls, comorbidity, mental health status, and physical health status), self-care agency (perceived self-efficacy including perceived fall self-efficacy and perceived general self-efficacy), and self-care (fall prevention behaviors) can be demonstrated in the substruction as shown in Figure 1. As noted, the empirical measures will be discussed in detail in Chapter 3.

Definition of Terms

The theoretical terms of variables for this study were defined as the following:

Age is defined as "a period of human life, measured by years from birth" (Dictionary.com, 2012, para. 2).

Gender is defined as "the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women" (WHO, 2012, para. 3).

Falls is defined as "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level" (WHO, 2012, para. 1).

Comorbidity is defined as "the coexistence of two or more disease processes" (MedicineNet.com, 2012, para. 1).

Mental health status is defined as mood and feeling features including: 1) depression defined as mood disorders that express loss of interest or pleasure, poor appetite or over eating, insomnia or sleepiness, low energy or fatigue, worthlessness or inappropriate guilt, and hopeless (Sarton, 2008). These disorders can impact physical, mental, and social functioning (Sarton, 2008); 2) fear of falling defined as expression in afraid feeling for falling; and 3) global mental

health defined as description in global feeling in capability to engage in creative activities and to deal with change and stress (Sarton, 2008).

Physical health status is defined as ability in basic performance of physical functioning included: 1) functional ambulation defined as "the ability of a person to walk with maximal independence and in the least time under various environmental circumstances" (Wolf et al., 1999, p. 1123) and 2) global physical health defined as persons' description in global physical health in the ease to perform basic tasks in everyday life (Satariano, 2006).

Perceived General self-efficacy is defined as persons' beliefs in their capability to perform multiple or difficult tasks or cope with a diversity of stressful situation in their life and is grounded in their perception (Jerusalem & Schwarzer, n.d.).

Perceived fall self-efficacy is defined as persons' confidence in their capability to perform specific daily activities without loss of balance and steadiness (Powell & Myers, 1995).

Fall prevention behaviors are defined as multiple actions or behaviors performed by older adults to prevent falls as well as older adults' request for help to promote their safety from other adults.

Purposes of the Study

The purpose of the descriptive correlational study is to: 1) examine the relationships among basic conditioning factors (BCFs; e.g., age, gender, falls, comorbidity, mental health status, and physical health status) and self-care agency (e.g., perceived fall self-efficacy and perceived general self-efficacy) among community-dwelling Thai older adults; 2) determine the relationship between self-care agency (perceived fall self-efficacy and perceived general self-efficacy) and self-care behaviors (fall prevention behaviors) among community-dwelling Thai older adults; 3) determine which BCFs (age, gender, falls, comorbidity, mental health status, and

physical health status) best predicts self-care agency; 4) determine which self-care agency is more predictive of self-care behaviors; and 5) determine which BCFs and which self-care agency best predicts self-care behaviors.

Specific Aims and Hypotheses

Specific aims and hypotheses of this study are the following:

Specific Aim 1: Determine how age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) correlate to perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy) and determine the direction of the correlation between these variables.

Hypothesis 1a: Age, number of falls, comorbidity, depression, and fear of falling will be negatively correlated with perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 1b: Gender will be related to perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 1c: Physical health status (functional ambulation and global physical health) and global mental health will be related to perceived fall self-efficacy and perceived general self-efficacy in the predicted direction.

Specific Aim 2: Determine if age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 2a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional

ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

Specific Aim3: Determine how perceived fall self-efficacy and perceived general self-efficacy correlate with fall prevention behaviors and the direction of the correlation between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors.

Hypothesis 3a: Perceived fall self-efficacy and perceived general self-efficacy will be positively related to fall prevention behaviors.

Specific Aim 4: Determine if perceived fall self-efficacy and perceived general self-efficacy can be used to predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Hypothesis 4a: Perceived fall self-efficacy and perceived general self-efficacy can predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Specific Aim 5: Determine if age, gender, number of falls, comorbidity, mental health status (which includes depression, fear of falling, and global mental health), and physical health status (which includes functional ambulation and global physical health), perceived fall self-efficacy, and perceived general self-efficacy can be used to predict fall prevention behaviors.

Hypothesis 5a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived fall self-efficacy will predict fall prevention behaviors.

Hypothesis 5b: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived general self-efficacy will predict fall prevention behaviors.

Significance of the Study

The study will reveal new knowledge regarding basic conditioning factors including age, gender, falls, comorbidity, mental health status, physical health status, self-care agency including perceived fall self-efficacy and perceived general self-efficacy, and the self-care behaviors of fall prevention in Thailand. The new information may indicate the impact of selected BCFs and self-efficacy on fall preventions, and provide insights on which of these factors may function as barriers to Thai older adults performing fall prevention behaviors. Moreover, the information can provide significant background about the personal information and functional status of older adults living in Thailand and can provide knowledge for planning strategies that may be considered when developing fall prevention programs. Therefore, the knowledge gained will be useful for nurses and healthcare providers who must solve problems involving falls among older adults in Thailand communities.

The study will provide significant information that can increase fall prevention knowledge in the nursing discipline. The knowledge gained can lead nurses and healthcare providers to improve their technical ability and quality of service to promote safety among older adults. Moreover, the knowledge benefits nurses by providing information about personal factors that may lead to the development of appropriate strategies or programs to motivate perceived fall self-efficacy and perceived general self-efficacy in order to reduce fall risk factors and the incidence of falls among community-dwelling older adults in Thailand.

The study will provide information for nursing practice. Information regarding perceived fall self-efficacy and perceived general self-efficacy can demonstrate older adults' beliefs in their confidence to execute specific activities. Moreover, it will demonstrate older adults' ability to perform new tasks and can indicate their efforts to achieve the desired outcomes and performance of fall prevention behaviors. Information about fall prevention behaviors may be a vehicle to identify older adults who are at risk of falling. Moreover, basic conditioning factors as personal factors can distinguish differences between individuals that may influence a person's perceived fall self-efficacy, perceived general self-efficacy, and fall prevention behaviors. Therefore, nurses can use the information to empower older adults living in Thailand to enhance perceived fall self-efficacy and perceived general self-efficacy leading to performance in specific and multiple behaviors to prevent falls.

CHAPTER 2

REVIEW OF THE LITERATURE

The reviewed literature to support the investigation of this study is described in this chapter. The reviewed literature is focused on four major areas: 1) relationship between basic conditioning factors (age, gender, and health state including falls, comorbidity, mental health status, and physical health status) and falls among community-dwelling older adults, 2) relationship between the selected basic conditioning factors (age, gender, and health state including falls, comorbidity, mental health status, and physical health status) and self-efficacy, 3) fall prevention behaviors, and 4) relationship between self-efficacy and fall prevention behaviors.

Relationship between Basic Conditioning Factors and Falls among Community-Dwelling Older Adults

Orem's self-care theory describes ten basic conditioning factors (BCFs); internal and external factors associated with a person's capacity to engage in self-care or influence the kinds of self-care required (Orem, 2001). The BCFs include the following factors: "1) age, 2) gender, 3) developmental state, 4) health state, 5) sociocultural orientation, 6) health care system factors, 7) family system factors, 8) pattern of living, including activities regularly engaged in, 9) environmental factors, and 10) resource availability and adequacy" (Orem, 2001, p. 245). Risk factors for falls among older adults are often categorized into intrinsic and extrinsic risk factors. Both factors are congruent with the BCFs of Orem's self-care theory. The three BCFs including age, gender, and health state including falls, comorbidity, mental health status, and physical health status are the intrinsic risk factors within Orem's theory that are most commonly related to falls among community-dwelling older adults as the following discussion will highlight.

Age and Falls

Worldwide, advanced age is one of the key risk factors for falls among older adults (Fleming, Matthews, Brayne, & the Cambridge City over-75s Cohort (CC75C) study collaboration, 2008). The consequences of advancing age include physical changes that can lead to deterioration of function among older adults (Klingman, 2008), in turn, these age-related changes, both physiological and biological can increase the risk of falls (Fabre, Ellis, Kosma, & Wood, 2010). The relationship between falls and advancing age is linear and significant (Shumway-Cook et al., 2009; Arnold & Faulkner, 2007; Gill et al., 2005; Ziere et al., 2005), especially among older adults aged 70 years and older; this is the group that also commonly experiences recurrent falls and falls due to intrinsic factors (Shanthi & Krishnaswamy, 2005). The frequency of falls (1 fall and 2 or more falls) are known to increase with advanced age (*OR* = 1.01, 95% *CI* = 1.00-1.02, $p = 0.02$; Shumway-Cook et al., 2009). Moreover, being aged 85 years old and older alone is a significant risk factor for falls (*IRR* = 1.07; 95% *CI*: 1.04, 1.10; $p < 0.001$; Markle-Reid et al., 2010). In two frequently cited studies conducted in Thailand, adults aged 80 years and older had a two-fold risk of falling over those older adults age 60-69 years old (*OR* = 2.9, 95% *CI* = 1.32-6.36; Khuankwai, 2007); and Thai older adults aged 70-79 years old had the highest number of falls (29.6%) followed by those aged 80 years and older (25.6%) and lastly those aged 60-69 years old (22.3%; Kitkumhang, 2005). However, unexpectedly, these age ranks were not significantly associated with the total number of falls (Kitkumhang, 2005). The results differed from other studies because Thai older adults aged 80 years and older may have reduction of performing activities leading to reduction of possibility in falls compared with older aged 70-79 years old who still perform regular activities.

Gender and Falls

Many studies in several countries, including Thailand, have shown that more women than men experience falls (Chaiwanichsiri et al., 2009; Gill et al., 2005; Kitkumhang, 2005; Shumway-Cook et al., 2009; Shanthi & Krishnaswamy, 2005; Ziere et al., 2005). A study in the United States reported that the percentage of falls in the previous 2 years among women were significantly higher than men (t = 5.39, p < 0.005; Steinman, 2008). Moreover, female gender was found to be a predictor for recurrent falls among community-dwelling older adults in France (Buatois et al., 2010). In Thailand, the incidence of falls among older adults was also found to be higher in women (30%) than in men (17.8%; Kitkumhang, 2005), and gender was significantly related to falls (p < 0.001) among Thai older populations (Kitkumhang, 2005). Female gender was identified as a risk factor for falls among the total subjects (*OR* = 2.3, 95% *CI* = 1.10-5.07; Chaiwanichsiri et al., 2009) and women (16.3%) were also found to have more frequent recurrences of falls than men (8.6%; Kitkumhang, 2005). Moreover, female gender was able to predict occurrence of falls among Thai older adults in the fall group (*OR* = 2.3, 95% *CI* = 1.59-3.35) compared with the non-fall group (Assantachai et al., 2003).

Health State and Falls

Health state involves physiological and psychological features, which are important factors associated with falls among older adults. The physiological problems that contribute to falls in an older aged group are often the result of age related changes and chronic disease comorbidities. Psychological problems that contribute to falls are often cited as cognitive decline and fear of falling in individuals who have previously fallen. The following discussion provides an overview of the most significant physiological and psychological contributors found to be related to falls in the literature.

Physiological problems. Numerous physiological problems contribute to falls among older adults. Visual impairment and hearing loss associated with age-related changes are risk factors found among older adults who fell. Visual impairment has been found as a significant risk factor for falls (*IRR* = 2.21; 95% *CI* = 1.65, 2.95; $p < 0.001$; Markle-Reid et al., 2010). Older adults with severe visual impairment in one eye and mild or moderate visual impairment in another eye had twice the risk of falls (*OR* = 2.1, 95% *CI* = 1.4-3.1; Lamoreux et al., 2008). Glaucoma was found to increase the risk of falls more than fourfold (*OR* = 4.2, 95% *CI* = 1.2-12.3; Lamoreux et al., 2008). Moreover, cataracts were found to be a main cause associated with falls (Shanthi & Krishnaswamy, 2005). Similarly, visual impairment was also found in the significant association with falls among Thai older adults in Thailand (Chaiwanichsiri et al., 2009; Thiamwong, Thamarpirat, Maneesriwongul, & Jitapunkul, 2008). Hearing loss is another common problem among older adults that can contribute to falls among older adults because they may not hear sounds warning of a fall hazard (Rawsky & Digby, 2000). Hearing loss was found to be significantly related to falls among Thai older adults ($p = 0.034$; Kitkumhang, 2005). Moreover, hearing difficulty was found more frequently among Thai older adults in a fall group than in the non-fall group, and deafness was also found as a risk factor that could predict falls in older adults (*OR* = 1.58, 95% *CI* = 1.03-2.43; Assantachai et al., 2003).

Musculoskeletal changes as well as gait and balance deficits are another set of risk factors for falls among older adults. Musculoskeletal problems including osteoarthritis, rheumatoid arthritis, and cervical and lumbar spondylosis were the most common causes of falling (Shanthi & Krishnaswamy, 2005). Moreover, knee osteoarthritis (*OR* = 3.6, 95% *CI* = 1.71-7.59; Chaiwanichsiri et al., 2009) and kyphoscoliosis (*OR* = 2.35, 95% *CI* = 1.27-4.34; Assantachai et al., 2003) were identified as risk factors which were able to predict falls among Thai older adults.

Gait and balance deficits can contribute to the risk of falling. Falls among an older population significantly increased with gait or postural disturbances (Ziere et al., 2005). Over 50% of older adults who fell could not walk at a faster speed and showed less stable gait patterns (Barak, Wagenaar, & Holt, 2006). In addition, falls were significantly associated with body balance and gait impairment among community-dwelling Thai older adults ($p < 0.001$; Kitkumhang, 2005).

Non-musculoskeletal chronic diseases are also associated with falls among older adults. Thai older adults with chronic diseases had a higher possibility of falling than older adults without a chronic disease (Kitkumhang, 2005). Chronic diseases including arrhythmias and Chronic Obstructive Pulmonary Disease (COPD), as well as, vertigo were significantly related to falls ($p = 0.001$; Kitkumhang, 2005). Hypertension is another chronic disease related to falls among Thai older adults (Assantachai et al., 2003; Khuankwai, 2007; Wontaisong, 2008). The older adults with hypertension had double the possible risk of falls over older adults without hypertension (*OR* = 2.14, 95% *CI* = 1.18-3.88; Khuankwai, 2007). In North America, neurological disorders including Parkinson's disease were also significantly associated with falls (Markle-Reid et al., 2010). Moreover, the possibility of recurrent falls was increased with chronic disease comorbidities (Shumway-Cook et al., 2009).

Many other health conditions are related to falls. Urinary incontinence is one of the most common problems among older adults that is related to falls; however, it is unclear if incontinence and some of the other health conditions discussed below cause falls or if they are associated with a complex of other conditions (e.g., cognitive decline or deconditioning or age). Older adults with urinary incontinence have a higher risk for falls (Friedman, 2006). Lacking urinary control was significantly associated with an increase in falls among older adults ($p < 0.01$; Coutinho et al., 2008). Low body mass index (BMI) was also significantly associated with

falls in older adults (Assantachai et al., 2003; Coutinho et al., 2008; Iinattiniemi et al., 2009). On the contrary, a study by Shumway-Cook and colleagues (2009) reported that BMI categories were not significantly associated with falls. Low levels of vitamin D in serum have also been associated with falls. A literature review reported that most of older adults who fell had hypovitaminosis D, and those people with 25-hydroxylvitamin D serum less than 12μ/L had a high degree of postural sway and weakness in quadricep strength (Lin & Lane, 2005); thus, the vitamin D deficits may cause gait and balance problems leading to falls. Moreover, foot disorders such as foot pain, plantar fasciitis, pes planus, and protective sensation impairment were associated with falls among Thai older adults ($p < 0.05$), and impaired protective sensation was also found as a risk factor for falls in older men ($OR = 5.1$; Chaiwanichsiri et al., 2009).

Functional ability refers to the capacity of persons to perform the basic self-care activities measured by activities of daily living (ADL) and instrumental activities of daily living (IADLs) and requires all of the above mentioned physiological functioning (Meiner & Lueckenotte, 2006). The impairment of the ADL and limitation of IADLs were significantly associated with falls among older adults (Shumway-Cook et al., 2009). Similarly, community-dwelling Thai older adults demonstrated that the impairment of the ADL was significantly associated with falls ($p < 0.001$; Kitkumhang, 2005). Instrumental activities of daily living among Thai older adults were significantly inferior in the fall group compared with the non-fall group ($p < 0.001$; Assantachai et al., 2003). Moreover, upper limb disabilities and lower limb disabilities as a cause of functional impairment were significant in predicting falls ($OR = 1.095$ and 1.069, respectively; Steinman, 2008).

The number and type of medications used among older adults are related to an increased risk of falls (Akyol, 2007). Medications most likely to cause falls include antidepressants

(Iinattiniemi et al., 2009; Kitkumhang, 2005; Kumar, 2006), anticonvulsants (Kumar, 2006), sedatives, antihypertensives, diuretics, antiparkinson (Shanthi & Krishnaswamy, 2005), and benzodiazepine derivatives (Ziere et al., 2005). The number of drugs used per day was found as a significant risk factor for falls (Delbaere et al., 2006; Iinattiniemi et al., 2009; Ziere et al., 2005). Moreover, using more than four kinds of medication was significantly associated with falls among Thai older adults (p = 0.047; Kitkumhang, 2005) and also increased the risk for recurrent falls among French older adults (Buatois et al., 2010).

Another risk factor associated with falls among older adults is a history of falls. History of falls was found to be a strong predictor of falls (*OR* = 4.7, 95% *CI* = 3.5-6.3; Clough-Gorr et al., 2008) and was significantly associated with recurrent falls among older adults (Buatois et al., 2010). A two-fold risk of falling was found among Thai older adults who had a history of falls over older adults who had never fallen (*OR* = 2.36, 95% *CI* = 1.30-4.28; Khuankwai, 2007).

Psychological problems. Risk factors for falls among older adults are not solely related to physiological problems. Psychological problems also contribute to the risk of falling. Cognitive function involves thinking, learning, and remembering (Miller, 2009). Cognitive impairment was found among the older adults who fell (Coutinho et al., 2008; Gauchard et al., 2006; Shanthi & Krishnaswamy, 2005; Markle-Reid et al., 2010). Depression is another psychological problem that occurs in older adults due to the significant life losses and physiological decline (Eliopoulos, 2010). Persons with depression have symptoms such as depressed mood or loss of interest in activities, sleep change, and loss of energy and fatigue (Privitera & Lyness, 2007). Falls among older adults was closely associated with depression (Iinattiniemi et al., 2009; Kitkumhang, 2005; Limsuksan, 2008; Steinman, 2008; Ziere et al., 2005). Approximately 26% (n = 71) of older adults who fell had depression which was

significantly higher than those without a history of falls ($p < 0.01$; Iinattiniemi et al., 2009). Other psychological problems including feelings of anxiety (Kitkumhang, 2005) and nervousness, or fear (Iinattiniemi et al., 2009) were also associated with falls among older adults. Moreover, of the older adults who fell approximately 34% ($n = 71$) had more difficulty sleeping (Assantachai et al., 2003). Fear of falling was identified to be the best psychological predictor for falls among older adults (Delbaere et al., 2006). From a sample of 2,167 older adults (53.4%) reported fear of falling; 70.4% of the older adults experienced falls; and only 48.4% of the older adults could be classified as non-fallers (Chang et al., 2010). The prevalence of fear of falling were significantly higher among older adults who fell than those who were non-fallers, especially among older adults in the fall-related injury group (75.1%, $n = 295$; Chang et al., 2010). Those people with fear of falling were more likely to be older ($p < 0.001$), female ($p < 0.001$), and to have a history of falling injury ($p < 0.001$; Chang et al., 2010). Many studies show that fear of falling was significantly associated with falls among older adults (Apikomonkon, 2003; Chang et al., 2010; Khuankwai, 2007; Limsuksan, 2008). Moreover, the older adults with a fear of falling had a higher risk of falls than the older adults with no fear of falling by three-fold (*OR* = 3.73, 95% *CI* = 1.17-11.86; Khuankwai, 2007).

Age, gender, and health state (e.g., mental and physical health problems) are intrinsic risk factors (basic conditioning factors, BCFs) found to be related to falls among older adults in several countries including Thailand. More specifically, the significant factors associated with falls among Thai older populations are age, gender, health state including history of falls, multiple comorbid conditions, mental health status, and physical health status. These basic conditioning factors were frequently found to be related to falls in older adults and they are especially congruent with risks in Thai culture, and thus most appropriate for a study of Thai

older adults. The selected BCFs including age, gender, health state including history of falls, comorbidity, mental health status, and physical health status are next discussed in relationship to self-efficacy.

Relationship between the Selected Basic Conditioning Factors and Self-Efficacy

This section provides a discussion of the relationship between the selected BCFs including age, gender, falls, comorbidity, mental health status, and physical health status and self-efficacy. Self-efficacy can be measured as a specific self-efficacy concept or a general self-efficacy concept and both have been related to falls in older adults. Fall self-efficacy is specific to the confidence in person's ability to perform activities without losing balance or becoming unsteady. In contrast, a general self-efficacy concept, a persons' belief in their capability to perform multiple or difficult tasks or cope with a diversity of stressful situations is a more general conceptualization of self-efficacy. Each selected basic conditioning factor and its relationship to fall self-efficacy, as well as, general self-efficacy are discussed below.

Age and Self-Efficacy

Age was found to be related to lower fall self-efficacy scores in both older adults who experienced falls and non-fallers. Therefore, the relationship between age and fall self-efficacy tends to be significant and negative; as one ages, fall self-efficacy decreases. Sixty three older adults who had experienced falls at least two times in the previous 12 months demonstrated that fall self-efficacy scores were significantly associated with age (Bishop, Patterson, Romero, & Light, 2010). In addition, a study among 82 patients with stroke who had no history of falls reported lower scores on a fall self-efficacy scale but were significantly older (aged 75 years old and older; $p = 0.005$) compared with those who had higher scores on the fall self-efficacy scale (Andersson, Kamwendo, & Appelros, 2008). Age was also found to be related to general self-

efficacy with a similar negative relationship; as one ages, general self-efficacy decreases (Bağ & Mollaoğlu, 2010; Cavanagh et al., n.d.). A study among patients ranging in age from low 30s to over 61 and undergoing hemodialysis found a negative relationship between age and general self-efficacy scores ($p < 0.05$); thus as age increased, general self-efficacy levels decreased (Bağ & Mollaoğlu, 2010). However, a comparison of general self-efficacy scores between younger, aged 16-24 years, and older women aged 25-40 years showed a significant difference between the two age groups. The scores were lower for the younger women than for the older women, but developmental differences (adolescence versus middle age) could also have attributed to these findings (Bailey, Clark, & Shepherd, 2008), and neither group could be classified as "older adults".

Gender and Self-Efficacy

The literature linking gender to differences in self-efficacy scores is inconsistent. A study investigating balance self-efficacy reported male patients had significantly higher balance self-efficacy than female patients (Salbach et al., 2006). On the contrary, another study exploring the correlation between genders and fall self-efficacy found male and female gender were not significantly different in fall self-efficacy among 80 participants with chronic obstructive pulmonary disease (Hellström et al., 2009). Moreover, there was no statistically significant relationship between male gender and fall self-efficacy among older adults in nursing home (Chou et al., 2005). Gender has been associated with differences in general self-efficacy. Patients ($N = 125$) undergoing hemodialysis demonstrated that total general self-efficacy scores were higher for male patients ($p < 0.001$; Bağ & Mollaoğlu, 2010); however, the studies are limited and require further exploration.

Falls and Self-Efficacy

Several studies have reported a significant relationship between a history of falls and fall self-efficacy among older adults; specifically, older adults who have experienced a fall report much lower fall self-efficacy scores (Lajoie & Gallagher, 2004). Patients aged 60 years older who had hip fractures and experienced in falls at four months follow up reported that they had a significantly lower Activities-specific Balance Confidence (ABC) scale score (p = 0.003) and falls self-efficacy score measured by the Fall Efficacy Scale (FES; p = 0.043) than the patients with no experience with falls (Whitehead, Miller, & Crotty, 2003). A trend of higher ABC scores in the non-fall group than the fall group (p = 0.084) was found among patients with chronic stroke (Pang & Eng, 2008). Moreover, the patients with chronic stroke who had experienced falls had significantly lower fall self-efficacy scores than the patients with no falls (Belgen et al., 2006). The number of falls was also negatively related to fall self-efficacy among older residents in nursing homes ($p < 0.01$; Chou et al., 2005). Falls categories (non-falls, one time, and multiple falls) were also found to be significantly related to general self-efficacy (p = 0.0001) among older adults aged 55 years old and older living in communities in the United Kingdom (Cavanagh et al., n.d.). Older adults who never fell had higher a mean score of general self-efficacy than those who had experienced a fall or more multiple falls (Cavanagh et al., n.d.).

Comorbidity and Self-Efficacy

Comorbidity is one of the health status factors associated with fall self-efficacy, such that an increased number of comorbid conditions and certain types of chronic conditions are associated with decreased fall self-efficacy. One study investigated fear of falls (e.g., low confidence) using the Modified Falls Efficacy Scale (MFES) among older adults aged 60 years old and older visiting an emergency department after they fell. The study reported that increasing

the number of chronic health condition was associated with higher levels of fear of falls (low confidence; Hill et al., 2010). Another study explored fall self-efficacy and comorbidity among older adults aged 55 years and older in three long-term care agencies. Older adults reporting angina reported moderate or low fall self-efficacy scores. However, the study did not find any other significant relationships between fall self-efficacy scores and other common medical conditions (Gillespie & Friedman, 2007). Low fall efficacy scores were also found among older patients with chronic obstructive pulmonary disease (Hellström et al., 2009). Comorbidity or health problems are not only associated with fall self-efficacy but health problems (summation of number of illnesses and the self-rated health) are also negatively and significantly related to general self-efficacy among older adults ($p < 0.01$; Fiori, Mcilvane, Brown, & Antonucci, 2006). Therefore, certain types of conditions and the number of comorbid conditions are directly related to a reduction in self-efficacy, both specific and general.

Mental Health Status and Self-Efficacy

Mental health status referred to as mood and feeling features including depression, fear of falling, and global mental health is a significant mental factor associated with fall self-efficacy and general self-efficacy. Depression negatively affects fall and general self-efficacy perceptions among older adults and results in a vicious circular or self-perpetuating process. Depression may hinder attention to surroundings leading to falls and subsequently a fall history leads to more depression. Chou and colleagues found a significant negative relationship between Geriatric Depression Scale-Short Form (GDS) scores and fall self-efficacy among 100 nursing home residents ($p < 0.01$; Chou et al., 2005). A significant negative association was also found between fall self-efficacy scores and depression scores among 63 older adults who had a history of falls at least two times in the last 12 months (Bishop et al., 2010). Similarly, older adults aged

55 years and older reported that those who have low fall efficacy scores were more likely to have depressive symptoms (p = 0.003; Gillespie & Friedman, 2007). Depression was also negatively associated with general self-efficacy. General self-efficacy was found to be significantly and negatively correlated with depressive symptoms (p < 0.01; Fiori et al., 2006). Moreover, the highest negative correlation between general self-efficacy and depression and anxiety among people age range 13-77 years old was found in five countries: Costa Rica, Germany, Poland, Turkey, and the United States (Luszczynska et al., 2005). Depression is not the only psychological condition associated with fall self-efficacy and general self-efficacy but fear of falling was also related to self-efficacy scores. Fear of falling demonstrated a significant negative correlation with fall self-efficacy (Chou et al., 2005; Gillespie & Friedman, 2007). Similarly, general self-efficacy was also found to have a significant and negative association with severe fear of falling (p < 0.05; Kempen et al., 2009). Still, no studies linking the relationship between fear of falling and self-efficacy could be found among Thai older adults. On the other contrary, global mental health measured by the mental component summery (MCS) of SF-12 was not statistical related to fall self-efficacy (Kato et al., 2008) and general self-efficacy (Chan, 2008). The results from limited studies however are unclear; therefore, their relationships need more investigations.

Physical Health Status and Self-Efficacy

Similar to mental health status, physical health status referred to as the ability to engage in basic performances of physical functioning or functional health including physical mobility and ability to perform basic tasks is a significant factor impacting fall self-efficacy and general self-efficacy. Better fall self-efficacy scores were found to be significantly related to the Berg Balance Scale (p < 0.001; Bishop et al., 2010; Gillespie & Friedman, 2007; Pang & Eng, 2008;

Stretton, Latham, Carter, Lee, & Anderson, 2006). Higher fall self-efficacy scores were also significantly associated with faster Timed Up and Go testing (TUG; $p < 0.001$; Pang & Eng, 2008; Stretton et al., 2006), faster gait speed and a 6 minute walk test (Gillespie & Friedman, 2007; Pang & Eng, 2008; Stretton et al., 2006), greater hip and knee strength ($p < 0.001$, $p = 0.006$; Gillespie & Friedman, 2007), and faster stair climbing scores ($\rho = -0.511$, $p < 0.001$; Pang & Eng, 2008). The total scores of the Functional Independence Measure (FIM) assessing activities of daily living, sphincter control, transfer, locomotion, communication, and social cognition among patients with stroke undergoing rehabilitation were significantly and positively associated with fall self-efficacy ($p < 0.001$) at discharge and follow-up (Hellström, Lindmark, Wahlberg, & Fugl-Meyer, 2003). Moreover, higher fall self-efficacy scores were significantly associated with level of activity ($p < 0.01$) and self-related health ($p < 0.05$) among older residents in nursing homes (Chou et al., 2005). Functional health status has also been significantly associated with general self-efficacy (Cavanagh et al., n.d.). Older adults who had high general self-efficacy scores demonstrated that their health were better than those who had low general self-efficacy scores ($df = 10$, $\chi^2 = 202.45$, $p < 0.0001$; Cavanagh et al., n.d.).

The selected BCFs including age, gender, number of falls, comorbidity, mental health status, and physical health status have all been found to be associated with fall self-efficacy and general self-efficacy. Significant negative correlations with fall-self efficacy and general self-efficacy were found among older adults with advancing age and those who had more falls and multiple comorbidities, as well as, those who had mental health problems (e.g., depression and fear of falling). On the other hand, significant positive associations have been found between physical health status and both fall and general self-efficacy. Moreover, significant relationships were found between gender and general self-efficacy, whereas the relationship between gender

and fall self-efficacy has been inconsistent. However, the relationship between global mental health and both fall and general self-efficacy was not significant.

Fall Prevention Behaviors

Various fall prevention programs have been developed to investigate effective methods for reducing the risk factors of falls and fall incidence in older adults. A guideline for prevention of falls in older adults presents the evidence to support the efficacy of several interventions or programs such as exercise, vitamin D supplementation, modification of the home environment, and education and information (Panel on Prevention of Falls in Older Persons, American Geriatrics Society and British Geriatrics Society, 2011). Most programs including single and multifaceted interventions involve teaching older adults about prevention behaviors or actively engaging them in the behaviors to prevent falling. Moreover, many studies have reported fall prevention behaviors among older adults who have and have not received fall prevention programs. Fall prevention behaviors and the effectiveness of these actions, as well as, behaviors incorporated into fall prevention programs among older adults are discussed. In sum, there are many actions or behaviors that individuals engage in to prevent falls, however, little is known about the behaviors that older Thai adults perform using their own self-care abilities to prevent falls in their everyday lives, particularly Thai older adults living in the community. The following discusses the primary fall prevention interventions and behaviors that have been found in the literature: exercise, vitamin D supplementation, environmental modification, group education, and multifaceted programs.

Exercise

Exercise is the most common intervention (and personal self-care behavior) used to reduce the risk of falls in community-dwelling older adults. A multitude of different exercise

programs provide significant evidence to support the positive effect of exercise in reducing falls and reducing the risk factors for falls among older adults. Exercises using social-dance including beguine, cha-cha, and waltz rhymes were evaluated among older adults aged 60 years old and older in communities of Thailand (Pruksasri, 2006). Older adults who participated in the exercise program were asked to perform the social-dance exercise three times per week and one hour each time for eight weeks (Pruksasri, 2006). After six and eight weeks of the intervention, older adults in the exercise group had better balance compared to their balance scores prior to engaging the intervention and compared to those who were not in the program ($p < 0.001$; Pruksasri, 2006). The effectiveness of a simple balance exercise was also investigated among older out-patients with a history of falls in Thailand. The exercises consisted of strengthening exercises with hip abductors and extensors, kinetic chain quadriceps exercise, marching, stepping over a bench, standing up from a chair, and walking heel-to-toe in a straight line (Kuptniratsaikul et al., 2011). Older patients in the intervention group performed the exercises about 15-20 minutes per day for one year. The results showed a reduction in the number of falls in the intervention group over the entire intervention period (Kuptniratsaikul et al., 2011). Balance tests composed of the Timed Up and Go test (TUGT), chair stand, functional reach, and Berg Balance Scale showed significant improvement among older adults in both the infrequent fall group (fall 0-1 time) and the frequent fall group (fall over two times in the past); functional reach in the frequent fall group did not improve significantly (Kuptniratsaikul et al., 2011). Moreover, quality of life and fall self-efficacy scores were significantly increased at the end of the intervention (Kuptniratsaikul et al., 2011).

Tai Chi exercise is another important exercise used for health promotion, rehabilitation, and maintenance of physical and mental health in older adults (Choi et al., 2005). A Sun-style

Tai Chi (characterized by slow, continuous, and gentle motions) exercise program was evaluated among older adults aged 60 years and older in South Korea (Choi et al., 2005). After 12 weeks of the intervention, the experimental group (N = 29) had significant improvement in muscle strength in their knee and ankle flexors ($p < 0.001$) and extensors ($p < 0.01$), and improved flexibility ($p < 0.01$) and mobility ($p < 0.001$) compared with the control group who only engaged in normal daily activities (N = 30; Choi et al., 2005). Moreover, the experimental group had significantly more confidence that they could avoid falling while the control group decreased their confidence ($p < 0.001$; Choi et al., 2005). Similarly, older adults in the Tai Chi Chuang (multiple exercises including balance, strengthening, and resistance exercises) group had significantly improved get-up and go testing and functional reach testing compared to pre-intervention assessments (Huang et al., 2010).

Vitamin D Supplementation

Falls among older adults may be associated with vitamin D deficiency. Older adults with vitamin D insufficiency were found to have abnormal motor operation, increased body sway, and weakness of quadriceps (Flicker et al., 2005). A guideline for prevention of falls in older persons recommends that older adults who had vitamin D insufficiency should receive vitamin D supplementation to decrease fall risk (Panel on Prevention of Falls in Older Persons, American Geriatrics Society and British Geriatrics Society, 2011). One study investigated the effects of vitamin D supplementation as an intervention to reduce the incidence of falls and fractures in older adults (Flicker et al., 2005). Six hundred and fifteen older adults were randomly assigned into two groups: 313 participants received vitamin D supplementation and 312 participants received placebo; those participants were then followed for two years (Flicker et al., 2005). The results showed that the participants in the vitamin D treatment group had a moderate reduction in

the incident rate ratio for falls (*OR* = 0.63, 95% *CI* = 0.48-0.82; Flicker et al., 2005). In addition, the risk of sustaining a fall was moderately lower in the vitamin D treatment group than the placebo supplementation group (*OR* = 0.70, 95% *CI* = 0.50-0.99) and the fracture trend was reduced (Flicker et al., 2005). The researchers concluded that vitamin D supplementation demonstrated a significant reduction of fall rates (Flicker et al., 2005).

Home Hazard and Environmental Modification

Evidence has shown that approximately 30% of falls can be prevented by modifying the environment, particularly the home environment (Meiner, 2006). Home safety checklists identifying hazards in the home are often used to improve safety for older adults (Rubenstein & Josephson, 2006). The major areas of home environment alterations recommended for safety improvement include the steps, floor surfaces, edges and curbs, lighting, and grab rails (Meiner, 2006). Uneven steps often require repair, and a staircases with handrails on both sides of the steps can diminish the risk for falls (Meiner, 2006). Floors can be modified by eliminating loose rugs, slippery floors, and clutter to avoid tripping and slipping (Eliopoulos, 2010). Curbs and landing surfaces should be painted with a contrasting color to indicate edges (Meiner, 2006). The dimly lit areas can be improved by installing lighting. In addition, grab bars and rails should be sturdy and should be installed in appropriate places for older people (e.g., showers and tubs; Meiner, 2006). Home hazard modification is one of the strategies being used to reduce falls in homes. Screening of home environment and follow-up for any necessary modification by healthcare professionals are effective interventions for older adults who had history of falls or fall risk factors (Panel on Prevention of Falls in Older Persons, American Geriatrics Society and British Geriatrics Society, 2011). The efficacy of a home safety program followed up for one year to reduce falls was evaluated among older adults with visual impairment (Grow, Robertson,

Campbell, Clarke, & Kerse, 2006). Older adults aged 75 years and older were randomly allocated into four groups to receive interventions: 100 people received a home safety program, 97 people received the Otago Exercise Program plus vitamin D supplement, 98 people received the home safety program plus the exercise program, and 96 people received only social visits (Grow et al., 2006). The data showed that 903 hazards were recorded over the year, or 4.7 hazards per home, and 508 recommendations for modification were provided or 2.6 modifications per person at the first home visit. Approximately 90% of the home safety group complied with the recommendations at follow up. Moreover, the numbers of falls at home with and without an environmental hazard were decreased in the home safety group compared to the social visit group (Grow et al., 2006).

Education and Group Discussion

Education and group discussion regarding fall prevention are significant methods utilized to improve fall prevention knowledge leading to decreases in risk factors for falls and fall incidence. Education programs and group discussion provide a variety of information, including: risk factors for falls; fall prevention behaviors; performing activities in daily life; exchange in experience of fall knowledge; taking medicines safely; appropriate nutrition; maintaining a safe environment inside and outside the home; choosing appropriate shoes; and practicing appropriate posture as well as training exercise. The education and group discussion programs show reductions in fall risk factors leading to a decrease of falls among Thai older adults in Thailand (Julabute, 2010; Pallit, 2001; Pimdee, 2010; Poomsree, 2004; Poothong, 2002). After participating in the programs, older adults demonstrated higher scores on fall prevention knowledge, reduced perceived susceptibility of falling, reduced perceived danger of falling, increased perceived benefits of preventing falling, and reduced perceived barriers of performing

falling prevention (Pallit, 2001; Pimdee, 2010). The scores of fall prevention behaviors (Areerak, 2011; Pallit, 2001; Pimdee, 2010; Poomsree, 2004; Poothong, 2002), perceived self-efficacy in fall prevention (Areerak, 2011), and modification of the home environment were improved following the intervention (Julabute, 2010; Pallit, 2001). A significant improvement on the scores for health promotion behaviors, activities of daily living ($p < 0.05$; Julabute, 2010) as well as personal practices and change in posture ($p < 0.001$; Pallit, 2001) were found among participants compared to preprogram scores. Moreover, the education program has been found to significantly decrease fear of falling and risk factors in the home including the kitchen, bathroom, living room, and dining room among older adults who participated in the program (Huang et al., 2010). The older adults also had improvements in the get-up and go scores compared with preprogram scores (Huang et al., 2010).

Multifaceted Modifications

Since fall risks are multifaceted, broad based interventions have been developed to modify multiple fall risk factors and reduce fall incidence. Actions found in multifaceted interventions commonly include the following: fall evaluation and comprehensive fall risk assessment, balance training, home hazard management and environment modification, home visitations, medication, receiving protein and calcium/vitamin D supplements, exercise, Tai Chi exercise, and fall prevention education (Huang et al., 2010; Khanork, 2010; Shumway-Cook et al., 2007; Sze et al., 2008; Swanenburg et al., 2007). The major aims of these multifaceted interventions are to reduce risk factors for falls and reduce incidence of falls among older adults. The effectiveness of multifaceted interventions for reducing fall incidence and risk factors for falls was reported in various randomized control trial studies (Huang et al., 2010; Khanork, 2010; Shumway-Cook et al., 2007; Sze et al., 2008; Swanenburg et al., 2007). One multifaceted

program consisting of fall evaluation, balance training, home hazard management, and medication for three months as well as prevention education, exercise classes, and two home visitations for nine months was evaluated (Sze et al., 2008). The older adults who participated in the program demonstrated a significant improvement in balance ($p < 0.001$) and a decrease in their fear of falling. Moreover, the fall rate of the participants dropped from 1.31 to 0.032 falls per person per year (Sze et al., 2008). Similarly, the effect of a multifaceted intervention consisting of exercise 3 times per week, fall prevention education, and comprehensive fall risk assessment found that older adults in the intervention group reported that their balance, leg strength, and mobility had small but significant improvements, and the incidence rate of falls decreased by 25% as compared to the control group (Shumway-Cook et al., 2007). The reduction of falls was also found among older adults who participated in a combination program of exercise/protein with calcium/vitamin D supplements (Swanenburg et al., 2007) and an education plus Tai Chi Chuan (multiple exercises including balance, strengthening, and resistance exercises) program (Huang et al., 2010). Moreover, a Thai multifaceted program including an education program, a Tai Chi exercise program, an environment modification program, and a medication program provided evidence that multifaceted programs can prevent falls. Older adults who participated in the program demonstrated significant differences ($p = 0.05$) on mean score of fall prevention knowledge, fall prevention behaviors, and physical balance compared with those in control group (Khanork, 2010).

According to the fall prevention literature, performing fall prevention behaviors and actions by older adults or other people is a significant strategy and an effective method for reducing risk factors for falls and fall incidence in older adults. Therefore, if older adults have

regular performance and awareness for fall prevention, they can reduce risk factors for falls and protect themselves from falls.

Personal Fall Prevention Behaviors

Fall prevention behaviors were explored among older adults in both community and hospital settings in Thailand. Three studies in community settings comprised community-dwelling older adults aged 60 years and older in three provinces and regions of Thailand: 200 from Chiang Mai province in the North region (Pornputasa, 1999), 400 from Yala province in the South region (Siriprapha, 2006), and 202 from Khon Kaen province in the Northeast region (Ounlamai, 2010). All of those studies reported that most of participants in each province had moderate mean scores of fall prevention behaviors (Ounlamai, 2010; Pornputasa, 1999; Siriprapha, 2006). In contrast to two hospital studies of participants that included 240 older outpatients with hypertension from Nakon Si Thammarat and Songkla provinces in the South region (Kumsri, 2006) and 70 older patients who had experienced falls and were admitted to a female trauma ward in Bangkok of the Central region (Thiya, 2008) reported high total scores of fall prevention behaviors (Kumsri, 2006; Thiya, 2008). Performing fall prevention behaviors and actions were also found to be related to several factors. Factors significantly associated with fall prevention behaviors were knowledge of risk of falls, perceived severity of falls, perceived value of fall protection, perceived difficulty of fall prevention ($p < 0.05$; Thiya, 2008), and knowledge of fall prevention (Pornputasa, 1999; Thiya, 2008). Attitude toward fall prevention ($r = 0.327$, $p < 0.01$; Pornputasa, 1999), perceived risk factors for falls ($r = 0.277$, $p < 0.01$; Siriprapha, 2006), age ($r = -0.242$, $p < 0.01$), and self-efficacy in fall prevention ($r = 0.442$, $p < 0.01$; Ounlamai, 2010) were also associated with fall prevention behaviors. Moreover, perceived benefit of fall

prevention behaviors and perceived self-efficacy was found as significant predictors of fall prevention behaviors among older adults ($R^2 = 0.30$, $p < 0.05$; Kumsri, 2006).

Fall prevention behaviors including several actions or behaviors engaged to prevent falls have demonstrated their effectiveness for reducing risk factors and fall incidence among older adults in various studies. Exercise and multifaceted action modification can reduce rate of falls and risk factors of falls (e.g., improvement of balance, muscle strength, confidence to avoid falling). Vitamin D supplementation and modification of home hazard and environment effected the reduction of fall rates, whereas education and group discussion produced the diminution of risk factors for falls such as improvement in the knowledge to prevent falls, decreases fear of falling, and reduction of hazardous environment in homes. Moreover, personal fall prevention behaviors among Thai older adults were reported in the moderate mean scores of fall prevention behaviors in community settings, while the high mean scores were found among hospital settings. Fall prevention behaviors were also found to be associated with several factors such as knowledge of risk of falls, perceived severity of falls, and perceived difficulty of fall prevention as well as perceived self-efficacy in fall prevention.

Relationship between Self-Efficacy and Fall Prevention Behaviors

Self-efficacy is the belief of individuals in their competence to execute a task to obtain a desired outcome (e.g., no falls or reduction in the number of risk factors for falls; Bandura, 1997). Self-efficacy is also a significant factor influencing and predicting persons' behaviors (e.g., performing fall prevention behaviors; Bandura, 1997). A few studies have used the concept of self-efficacy within the Health Belief Model to determine the relationship between perceived self-efficacy and fall prevention behaviors among Thai older adults. A study utilizing hospital outpatient department participants investigated the level of health belief, fall prevention

behaviors, and factors (e.g., perceived susceptibility, perceived severity, and perceived self-efficacy in fall prevention) predicting fall prevention behaviors among older adults with hypertension (Kumsri, 2006). The participants, all older adults aged 60 years and older (N = 240), reported a high mean perceived self-efficacy in fall prevention score ($\overline{x}$ = 2.87, SD = 0.16, mean ranged 2.34-3.00 = a high level; Kumsri, 2006). Perceived self-efficacy in fall prevention was significantly associated with fall prevention behaviors ($p < 0.01$) and was a significant predictor for fall prevention behaviors (R^2 = 0.28, $p < 0.001$; Kumsri, 2006). A descriptive correlational study also investigated the relationship between self-efficacy in fall prevention and fall prevention behaviors among 202 community-dwelling older adults. The study found that most participants reported high mean perceived self-efficacy in fall prevention scores ($\overline{x}$ = 2.48, SD = 0.575, mean ranged 2.34-3.00 = a high level; Ounlamai, 2010). Moreover, perceived self-efficacy in fall prevention was moderately and positively correlated with fall prevention behaviors (r = 0.442, $p < 0.01$; Ounlamai, 2010). The perceived self-efficacy in fall prevention of both studies was measured by the perceived self-efficacy in fall prevention questionnaires consisting of a 3-point Likert scale. The authors developed questionnaires based on the concept of Bandura's self-efficacy theory.

The relationship between self-efficacy in fall prevention and fall prevention behaviors was found in a few studies with Thai older adults in both community settings and hospital settings in Thailand. Self-efficacy in fall prevention not only was significantly associated with fall prevention behaviors but it also significantly predicted fall prevention behaviors among Thai older adults. Although both studies have demonstrated the relationship between perceived self-efficacy in fall prevention and fall prevention behaviors, knowledge obtained from few studies is not enough to understand the role of self-efficacy contributing behaviors to prevent falls among

community-dwelling Thai older adults. These studies have employed the concept of the Health Belief Model that has limitation to explain persons' daily self-care behaviors engaged to prevention falls in everyday life. Moreover, knowledge of the relationship between fall self-efficacy (confidence to perform activities without loss of balance) and general self-efficacy and fall prevention behaviors have been not investigated among Thai older adults living in communities.

Conclusion

Falls among older adults have been found to be associated with three BCFs including age, gender, health state (e.g., mental and physical health problems) as intrinsic risk factors. Falls among Thai older adults were significantly associated with advancing age and were significantly higher in women. Thai older adults who have health problems (e.g., one or more chronic illnesses) and a history of falls had a higher risk for falls. In addition, mental health factors (e.g., depression and fear of falling), and physical health status factors (e.g., functional ambulation limitations and inability to perform basic tasks) were also significantly associated with falls among Thai older adults in Thailand.

The selected BCFs (age, gender, number of falls, comorbidity, mental health status, and physical health status) were found to be related to fall self-efficacy and general self-efficacy. Age, falls, comorbidity levels, and mental health deficits (depression and fear of falling) were significantly and negatively related to fall self-efficacy and general self-efficacy, whereas improved physical health status has been found to be positively related to both fall and general self-efficacy. On the contrary, gender was associated with general self-efficacy, but the relationship with fall self-efficacy is unclear, particularly when not controlling for a history of

falls and number of falls. Moreover, the relationship between global mental health and both fall and general self-efficacy was not significant.

Fall prevention behaviors or actions including exercise, vitamin D supplementation, home hazard and environmental modification, education and group discussion, and multifaceted modification as well as personal fall prevention behaviors were found in the literature on fall prevention interventions among older adults. The behaviors or actions aimed to prevent falls primarily effected a reduction of risk factors and a reduction in the incidence of falls among older adults. Exercise and multifaceted modification are significant behaviors to reduce fall rates and risk factors of falls (e.g., improvement of balance and muscle strength). Vitamin D supplementation and modification of home hazards and environment are able to decrease rates of falls, whereas education and group discussion are effective actions to reduce risk factors of falls. Moreover, the moderate-to-high level scores of personal fall prevention behaviors engaged to prevent falls were found among Thai older adults. Fall prevention behaviors have been also found to be associated with several factors as well as self-efficacy.

Self-efficacy in fall prevention was significantly associated with falls prevention behaviors and also was a significant predictor for fall prevention behaviors among Thai older adults. Self-efficacy as a persons' belief in their ability to perform specific task or difficult tasks or cope with stressful situations is similar with self-care agency regarding estimative operations, seeking personals' intrinsic factors to know their ability to engage in self-care. Although self-efficacy is a significant factor in fall prevention behaviors, few studies, based on the Health Belief Model, have investigated the relationship between self-efficacy and fall prevention behaviors using a small sample of older adults. Moreover, no study has reported the association between fall self-efficacy and general self-efficacy and fall prevention behaviors among Thai

older adults living in communities. Therefore, this study based on Orem's self-care theory is necessary to investigate the relationship of the selected BCFs and perceived fall and general self-efficacy and the association between perceived fall and general self-efficacy and fall prevention behaviors to understand the role of both perceived self-efficacies as self-care agency engaged in fall prevention behaviors as self-care behaviors. Moreover, this study will provide knowledge to fill the gap in knowledge of perceived fall and general self-efficacy contributing behaviors to prevent falls for Thai older adults.

CHAPTER 3

RESEARCH METHODOLOGY

This study explored age, gender, falls, comorbidity, mental health status, physical health status, perceived fall self-efficacy, perceived general self-efficacy, and fall prevention behaviors among community-dwelling Thai older adults in Thailand. The study was designed to: 1) examine the relationships among basic conditioning factors (BCFs; e.g., age, gender, falls, comorbidity, mental health status, and physical health status) and self-care agency (e.g., perceived fall self-efficacy and perceived general self-efficacy) among community-dwelling Thai older adults, 2) determine the relationship between self-care agency (perceived fall self-efficacy and perceived general self-efficacy) and self-care behaviors (fall prevention behaviors) among community-dwelling Thai older adults, 3) determine which BCFs (age, gender, falls, comorbidity, mental health status, and physical health status) best predict self-care agency, 4) determine which self-care agency is more predictive of self-care behaviors, and 5) determine which BCFs and which self-care agency best predicts self-care behaviors. This chapter describes the study design, setting, sample, and protection of human subjects, instruments and measurement used for collecting data, instrument translation processes, data collection procedures, and data analyses.

Study Design

This study employed a descriptive correlational and cross-sectional design to explore the relationships among age, gender, falls, comorbidity, mental health status, physical health status, perceived fall self-efficacy, perceived general self-efficacy, and fall prevention behaviors. The design was also used to determine the capability of age, gender, falls, comorbidity, mental health status, and physical health status to predict perceived fall self-efficacy and perceived general

self-efficacy and for perceived fall self-efficacy and perceived general self-efficacy to predict fall prevention behaviors in Thai older adults. In addition, the capability of age, gender, falls, comorbidity, mental health status, physical health status, perceived fall self-efficacy, and perceived general self-efficacy to predict fall prevention behaviors were also determined. Data were collected from Thai older adults living in communities in Thailand.

Setting

The setting for this study was two districts, Muang Saraburi and Sao Hai, including five sub-districts in the Saraburi province of Thailand. Thailand, a country located in the Southeast Asia, comprises 76 provinces and is divided into four regions consisting of the North, Central, Northeast, and South regions. Saraburi, a province in the Central region, is located northeast and approximately 107 kilometers from Bangkok the capital of Thailand (Saraburi province, n.d.). The topography of Saraburi is primarily plains (60% of the area) with the plateau and mountain taking up 40% of the area. The climate is tropical savanna (Saraburi province, n.d.). The annual personal income of the population is approximately 199,088 baht (~$6,636; $1~30 baht) which is the 9th highest in the country and the 2nd highest of the Central region (Saraburi province, n.d.). The administration of Saraburi province is divided into 13 districts and 111 sub-districts. Most of the population living in the province is Buddhists (99.14%) followed by other and unknown (0.75%), Muslim (0.06%), and Christians (0.02%; Saraburi Provincial Health Office, 2011). The total number of older adults (age 60 year old and over) in Saraburi province and Muang Saraburi and Sao Hai district on June 30, 2011 was approximately 140,594 and 39,277 people, respectively (Saraburi Provincial Health Office, 2011).

Muang Saraburi district is located in the central areas of Saraburi province, and it is also the capital district of the province (Muang Provincial Agricultural Extension Office, n.d.).

Muang Saraburi district is the center of Saraburi provincial public offices, important businesses, and an important land transportation hub of Saraburi province. The total population on June 30, 2011 was approximately 184,190 people, and approximately 28,237 were older adults (Saraburi Provincial Health Office, 2011). Administration is divided into 11 sub-districts as well as four municipalities (Muang Provincial Agricultural Extension Office, n.d.). Pakpreiw sub-district is an important sub-district of Muang Saraburi district. Pakpreiw sub-district is the location of the capital of Saraburi province, Saraburi provincial offices, important business, and the center of transportation. Pakpreiw sub-district's administration is a municipal administration. The number of total population and older population on June 30, 2011 were approximately 130,600 and 19,674, respectively (Saraburi Provincial Health Office, 2011).

Sao Hai district is one of the districts of Saraburi province and is located in nearby and West of Muang Saraburi district. A total population and older population on June 30, 2011 were approximately 53,651 and 11,040, respectively (Saraburi Provincial Health Office, 2011). Governance is divided into 12 sub-district and three municipalities (Saohai District Agricultural Extension Office, n.d.). Sao Hai, Suan Dok Mai, Tha Chang, and Ton Tan sub-districts are sub-districts of Sao Hai district. Sao Hai sub-district is the location of the Sao Hai District Office. Administration of Sao Hai and Suan Dok Mai sub-districts is municipalities (Saohai district Agricultural Extension Office, n.d.). A total population and older population on June 30, 2011 were approximately 22,701 and 4,754, respectively in Sao Hai sub-district, while approximately 6,024 and 1,018 were in Suan Dok Mai, respectively (Saraburi Provincial Health Office, 2011). Main occupations of both sub-districts are agriculture (e.g., farmer), employees of factories, and government officers (Saohai District Agricultural Extension Office, n.d.). Tha Chang and Ton Tan sub-district are rural communities. A total population and older adult population on June 30,

2011 were in Tha Chang approximately 1,634 and 409 and in Ton Tan approximately 2,117 and 426, respectively (Saraburi Provincial Health Office, 2011). Major occupations in both sub-districts are agriculture (e.g., farmer) and weaving.

Sample

During July to August 2012, which was the period of investigation, the most accessible population was the Thai older adults living in the communities of Sao Hai and Muang Saraburi districts in the Saraburi province. The researcher selected the Sao Hai and Muang districts because the researcher is familiar with the area as it is the researcher's hometown and has convenient transportation; therefore, it is convenient for data collection.

Eligible older adults for the sample had to meet the following inclusion criteria. First, Thai older adults were 60-years or older because this is the Thai definition of older adult (National Statistic Office, 2007). Second, older adults must live in the communities of Sao Hai or Muang Saraburi district. Third, the older adults were able to communicate in the Thai language. Fourth, scores on the Thai Mental State Exam (TMSE) was over 23. Finally, they were willing to participate in the study. The exclusion criteria included the following three items: first, older adults who had evidence of severe psychiatric or dementia history (e.g., Schizophrenia and Alzheimer) or delirium; second, older adults who were unable to verbally communicate; and finally, older adults who were admitted to a hospital and were not in the communities during the data collection.

Sample Size

Based on a formulation of 80% power, a critical effect size of 0.15 (R^2 = 0.13), at least 10 predictors, and significance level of 0.05, a sample of 118 subjects was deemed sufficient to address the research questions. However, an effort was made to recruit 200 subjects for this

study to ensure an adequate sample in the event of any missing data. In that case the effect size required declined from 0.15 to 0.085. Gpower computer software (Version 3) was used to calculate the required sample size (Faul, Erdfelder, Lang, & Buchner, 2007).

Sampling

The sampling strategy employed was a convenience sampling process; this type of sampling was used to save time and expenditures (Burns & Grove, 2005). Steps for the sampling process consisted of the following: first, the researcher selected sub-districts that provided convenient transportation, safety for the researcher, and easy access to older adults. One sub-district, Pakpreiw, of the Muang Saraburi district and four sub-districts including Sao Hai, Suan Dok Mai, Ton Tan, and Tha Chang from the Sao Hai district met the criteria described above. Second, the researcher contacted the directors of Sub-district Health Promoting Hospitals of each selected sub-district and the head of Health Promotion Department of Saraburi hospital and Saohai hospital to request a roster of older adults. Finally, the researcher met with eligible older adults at their homes and any convenient place (e.g., senior clubs and temples) for data collection. The specific data collection procedures are described later in the chapter.

Protection of Human Subjects

The researcher requested and received permission from the Saraburi Provincial Public Heath Office to collect data in the Thailand districts. The researcher submitted documents to Wayne State University Export Control Compliance Office for review because this study was conducted outside the United States. The office indicated there were no export control issues for this study. The researcher submitted documents to the Institutional Review Board (IRB) of Wayne State University (WSU) and the Ethical Review Committee (ERC) for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi (BCNS) in Thailand to review

this study. This study did not involve greater than minimal risk. The IRBs of both Wayne State University and the ERC of BCNS approved this study. After this study was approved, the researcher submitted two amendments: the first amendment was modifications of the research information sheet and the research informed consent based on the ERC of BCNS's suggestions to the IRB of WSU and the ERC of BCNS. The second amendment was modification of instruments based on the suggestions of three focus groups that were conducted to assist with instrument translation (discussed later in this chapter). The changes did not affect risk to participants of this study; therefore, the amendments were approved. All approval documents were displayed in Appendix B.

Instruments and Measurement

A general overview of all eight instruments and a mobility measure used in this study, consisting of the Thai Mental State Exam (TMSE), a demographic questionnaire, the Self-Administered Comorbidity Questionnaire (SCQ), the Thai Geriatric Depression Scale (TGDS), the Short Form Health Survey-12 (SF-12), the General Self-Efficacy Scale (GSE), the Activities-specific Balance Confidence (ABC) Scale, the Falls Behavioural (FaB) Scale for the Older Person, and the walking speed, is described below. Instruments that have received previous psychometric testing in a Thai population are described within the discussion of each instrument. The TMSE that was used for screening older adults is discussed first followed by the seven study instruments and a mobility measure. Since three of the instruments, the Self-Administered Comorbidity Questionnaire (SCQ), the Activities-specific Balance Confidence (ABC) Scale, and the Falls Behavioural (FaB) Scale for the Older Person, had not been translated into Thai prior to this study, data were collected in two phases. The phases are described below under the section entitled data collection procedures.

The Thai Mental State Exam (TMSE)

The TMSE was employed to screen older adults before they were recruited to participate in this study. The TMSE was developed by 29 Thai experts including neurology and psychology physicians, gerontological physicians, psychology nurses, and psychologists from 14 institutes throughout Thailand (Train the Brain Forum Committee (TBFC), 1993). The TMSE's development was based on the Mini Mental State Examination of Folstein and colleagues (1975). The TMSE comprises several questions in six domains; the correct answers are scored with a total possible score of 30. The six domains of the TMSE include 1) orientation (6 points), 2) registration (3 points), 3) attention (5 points), 4) calculation (3 points), 5) language (10 points), and 6) recall (3 points; TBFC, 1993). The TMSE was tested among 180 Thai older adults with a mean total score of 27.38 (*SD* = 2.02). A score over 23 is the cut point indicating normal cognition for Thai older adults. In the TBFC sample of Thai older adults had the greatest cognitive loss for recall (67.43%) followed by calculation (41.14%), language (25.14%), orientation, (24.00%), attention (4.57%), and registration (2.86%; TBFC, 1993). Test-retest reliability was high (r = 0.90; Suebwonglee, 2001). Content validity of the TMSE was secured through evaluations by 29 neurological, psychological, gerontological experts (TBFC, 1993).

The TMSE has been administered among Thai adults and older adults in both hospital settings and community settings to measure cognitive impairment (e.g., dementia; Akkayagorn, Tangwongchai, & Worakul, 2009; Senanarong et al., 2004; Suebwonglee, 2001). The TMSE takes approximately 10 minute to administer. The TMSE was used to screen older adults' cognitive impairment before enrolling them into this study. A score of higher 23, which demonstrates normal cognition for Thai older adults, was used as the inclusion criteria for this study. Further information regarding the handling of excluded volunteers is described later under

data collection procedures. Appendix A provides the instruments to be used in this study in English and in Thai (as available).

The Demographic Questionnaire

The researcher developed a demographic questionnaire for this study. The questionnaire consists of personal information such as age, gender, marital status, educational level, religion, occupation, living status, and income. In addition, health state and history of falls and fear of falling are included. Falls or history of falls was assessed by asking a question: "Have you ever fallen in the past 12 months?" An answer could be either "yes" or "no". If the answer is "yes", the next questions are: "How many times have you fallen?" and "What health problems did you have after the fall (s)?" A question for assessment in fear of falling was "Are you afraid of falling?" An answer could be either "yes" or "no". The demographic questionnaire required approximately five minutes to complete.

The Self-Administered Comorbidity Questionnaire (SCQ)

The SCQ developed by Sangha and colleagues was used to measure comorbidity status (Sangha, Stucki, Liang, Fossel, & Katz, 2003). The instrument consists of three questions for each medical condition including heart disease, high blood pressure, lung disease, diabetes, ulcer or stomach disease, kidney disease, liver disease, anemia or other blood disease, cancer, depression, osteoarthritis, back pain, rheumatoid arthritis, and other medical problems (two additional medical problems can be written in by the participant). The three questions that are asked per condition, include: "Do you have the problem?"; "Do you receive treatment for it?"; and "Does it limit your activities?" (Sangha et al., 2003, p. 157; see Appendix A). The answer may be "yes" or "no", yes = 1 score and no = 0 score. A total score of the instrument could range from 0-45 as each of the 15 medical conditions is rated from a 0-3; A score of 3 means the

person has the condition, is receiving treatment for the problem and it limits his/her activities. Test-retest reliability was 0.94 (95% confidence interval 0.72, 0.99; Sangha et al., 2003). The SCQ was moderately correlated with the Charlson Comorbidity Index (0.32 as measured with the Spearman Rho correlation coefficient), the standard medical record-based comorbidity measure. Validity of the instrument was evaluated by predictive validity. The SCQ was modestly associated with health status measured by the Medical Outcomes Study Short Form 36 (SF-36). The SCQ was also found to be a significant predictor of the SF-36 subscales including physical function (R^2 = 0.25), role function physical (R^2 = 0.14), social function (R^2 = 0.10), bodily pain (R^2 = 0.19), energy/vitality (R^2 = 0.20), general health (R^2 = 0.24), and physical component summary (R^2 = 0.22) at $p < 0.05$ (Sangha et al., 2003).

The SCQ was used to measure comorbidity in this study because it is short and easy to understand and can be used even if the individual has no medical background. It requires approximately five minutes to administer. It also has high reliability and adequate validity. This instrument was translated into Thai language before data collection.

The Thai Geriatric Depression Scale (TGDS)

The TGDS was used to measure depression as a component of mental health status in these Thai older adults. Train the Brain Forum Committee (TBFC, 1994) developed the TGDS based on the Geriatric Depression Scale (GDS) of Yesavage and colleagues (1983) and the Thai version of GDS translated by Leethong-in (1992). The TGDS instrument was developed by 29 Thai experts including neurology and psychology physicians, gerontological physicians, psychology nurses, and psychologists from 14 institutes all over Thailand (TBFC, 1994). The instrument comprises 30-yes/no items, with10 positive-feeling items (No. 1, 5, 7, 9, 15, 19, 21, 27, 29, and 30). If the answer to any of these items is “no”, the score is 1 for each item. The

remaining 20 items assess negative feeling; therefore, if the answer to any of these items is "yes", the score is 1 for each item. The total scores are divided into four levels by the range of the scores from 0 to 30. The four score levels are: normal (0-12), mild depression (13-18), moderate depression (19-24), and severe depression (25-30; TBFC, 1994). The instrument requires between 5-15 minutes to complete. The original GDS has been tested to determine depression among several populations: community dwelling older adults (Beaudreau & O'Hara, 2009), adults aged 60 years old and older admitted to a long-term care facility (Kane, Yochim, & Lichtenberg, 2010), stroke caregivers and individuals with stroke (Perrin, Heesacker, Uthe, & Rittman, 2010), and older adults from a medical outpatient department (Lopez, Quan, & Carvajal, 2010). Similarly, the TGDS was used to assess depression among patients with stroke in rehabilitation (Kitisomprayoonkul, Sungkapo, Taveemanoon, & Chaiwanichsiri, 2010; Chaiwanichsiri, Jiamworakul, & Kitisomprayoonkul, 2006).

Reliability of the TGDS explored among Thai older adults is 0.93 computed by KR-20. Although validity of this instrument was not clearly indicated in the studies, its content validity was considered from the experts in the area of depression (TBFC, 1994). Reliability of the English version of GDS shows a high degree of internal consistency (alpha coefficient = 0.94; mean intercorrelation among items = 0.36) and stable test-retest reliability (correlation = 0.85). The GDS also has adequate construct validity investigated by comparison with the Hamilton Rating Scale for Depression (HRS-D) and the Zung Self-Rating Depression Scale (SDS; Yesavage et al., 1983).

Short Form Health Survey-12 (SF-12)

The SF-12 was used as an additional mental and physical health status measure because the instrument can measure both mental functioning and physical functioning which are

significant factors related to falls among older adults. The SF-12 items were selected from the SF-36 Health Survey including eight health status domains, such as Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE), and Mental Health (MH; Ware, Kosinski, & Keller, 1996). The summary measures from the eight health status domains of the SF-12 are divided into two areas: Physical Component Summary (PCS) and Mental Component Summary (MCS). Reliability of this instrument was tested among people in the United States and The United Kingdom. The test-retest reliability of the PCS has a correlation coefficient of 0.890 and 0.864 and a correlation coefficient of the MCS was 0.760 and 0.774 in the United States and United Kingdom, respectively (Ware et al., 1996). Relative validity compared with the best 36-item short form scale of the PCS of the SF-12 ranged from 0.43 to 0.93 (median = 0.67), whereas validity of the MCS of the SF-12 ranged from 0.60 to 1.07 (median = 0.97; Ware et al., 1996). The SF-12 is widely used to measure health-related quality of life (Jakobsson, 2006) and health status (Pettit et al., 2001; Gandek et al., 1998). The instrument is available in multiple languages including the Thai version (QualityMetric, 2011). The reliability of the SF-12 in the Thai version was confirmed by internal consistency reliability among patients who have undergone heart surgery demonstrated Cronbach's alpha 0.73 and 0.77 in PCS and MCS, respectively (Kasamthap, Sakthong, & Phupha, 2009). Known groups validity estimates among patients with HIV in Thailand showed that the SF-12 score had small to moderate correlations with CD4 counts, symptom scores (Symptom Distress Module), number of days spent in bed, and number of reduced activity days (Chariyalertsak et al., 2011).

The SF-12 provides acceptable reliability and validity to measure health related quality of life and health status in the Thai version. It is an appropriate measure of health status in a large

sample size (Gandek et al., 1998; Ware et al., 1996). The SF-12 takes approximately three minutes to complete. The instrument was also administered among patients with acute and chronic illness such as heart disease (Kasamthap et al., 2009), musculoskeletal symptoms (Pensri, Janwantanakul, & Chaikumarn, 2010) and hip fractures (Suriyawongpaisal, Chariyalertsak, & Wanvarie, 2003) in various aged groups as well as older aged group in Thailand. Therefore, the SF-12 was employed to measure functional health status in this study.

The General Self-Efficacy Scale (GSE)

The GSE in the Thai version was used to measure general self-efficacy in this study. The original German version of the GSE was developed by Ralf Schwarzer and Matthias Jerusalem in 1979 (Scholz, Doña, Sud, & Schwarzer, 2002). The original GSE consisted of 20 items. It was modified to 10 items in 1981 (Scholz et al., 2002) and has been translated into 30 languages (Schwarzer, 2009). The Thai version of the GSE was translated from the English version by Sukmak and colleagues (Sukmak, Sirisoonthon, & Meena, 2002).

The GSE is a measure of one's sense of personal capabilities to cope with diverse stressful situations (Schwarzer & Luszczynska, n.d.). GSE is thought to be a wide ranging and stable perception of one's capabilities. The GSE will be used to assess a general sense of perceived self-efficacy to predict coping with daily disturbances and adaptations and stressful life events (Jerusalem & Schwarzer, n.d.). This GSE consists of 10 items comprising a 4-point Likert scale of agreement: 1 = not at all true, 2 = hardly true, 3 = moderately true, and 4 = exactly true. The total scores are a sum of scores ranging from 10 to 40 points, or a mean score can be derived. Three examples of GSE questions are the following: "It is easy for me to stick to my aims and accomplish my goals"; "I can solve most problems if I invest the necessary effort"; and "I can usually handle whatever comes my way" (Schwarzer, 2009). The average time to

administer this instrument is 4 minutes. The GSE was used to investigate self-efficacy among several populations including older adults and middle-aged adults (Firoi et al., 2006; Kim & Yu, 2010), pregnant women (Bailey et al., 2008), and patients with chronic disease such as cancer, renal failure, and human immunodeficiency virus (Bağ & Mollaoğ, 2010; Fillipas et al., 2006; Kreitler, Peleg, & Ehrenfeld, 2006). These populations range in age from young to older adults, and the populations have been recruited from the community and outpatient clinics.

Reliability of the Thai version of GSE investigated among Thai young adults showed a Cronbach's alpha coefficient of 0.84 demonstrating high internal consistency (Sukmak et al., 2002). An exploratory analysis with principal component factor analysis found two factors. Moreover, a confirmatory factor analysis showed a good model fit (*GFI* = 0.90, *AGFI* = 0.85, *RMR* = 0.06, and R^2 = 0.87; Sukmak et al., 2002). The validity and reliability of the GSE has been tested in several countries. The internal consistency of its reliability from 25 countries was a Cronbach's alpha of 0.86 (Scholz et al., 2002). The highest and lowest coefficients were found in the Japanese and the South Asian-Indians, α = 0.91 and α = 0.75, respectively (Scholz et al., 2002). Confirmatory factor analyses of the GSE scale showed the global goodness of fit (*GFI* = 0.98, *AGFI* = 0.97, *NFI* = 0.97, *RMR* = 0.03, and *RMSEA* = 0.05; Scholz et al., 2002). Therefore, the instrument is appropriate for investigating general self-efficacy in this study with Thai older adults.

The Activities-specific Balance Confidence (ABC) Scale

The ABC scale was used to assess perceived fall self-efficacy. The ABC scale rooted in the self-efficacy framework (Bandura, 1986) was developed by Powell and Myers (1995) to extend the Falls Efficacy Scale (FES) of Tinetti and colleagues (1990; Li et al., 2002). The ABC scale which comprises 16 items related to a wider continuum of activity difficulty was generated

by 15 clinicians and 12 older outpatients receiving physiotherapy (Powell & Myers, 1995). The ABC scale includes a rating percentage from 0% to 100% (0% = no confidence, 100% = complete confidence) in response to each item (Powell & Myers, 1995). Three examples of ABC questions are: "How confident are you that you will not lose your balance or become unsteady when you: 1) walk up or down stairs?; 2) stand on a chair and reach for something?; and 3) get into or out of a car?" (Powell & Myers, 1995). The ABC scale was used to assess persons' confidence to maintain balance and steadiness during performance in activities among older adults with hip fracture (Whitehead et al., 2003), older women with osteoporosis (Liu-Ambrose et al., 2006), and chronic stroke survivors with low bone mineral density (Pang & Eng, 2008). Moreover, the ABC scale was also used to evaluate older adults' confidence during performance of activities after they received a multidisciplinary falls prevention and balance training intervention (Silsupadol et al., 2009; Sze et al., 2008).

Psychometric testing including reliability and validity of the ABC scale was investigated among 60 older adults ranging in age from 65-95 who were living in the community. The two week test-retest reliability of the ABC scale has high stability ($r = 0.92$, $p < 0.001$; Powell & Myers, 1995). Similarly, internal consistency was also high with a Cronbach's alpha of 0.96 (Powell & Myers, 1995). Convergent and discriminant validity were assessed with the Physical Self-Efficacy Scale (PSES) and Positive and Negative Affectivity Scale (PNAS). The correlation between ABC scores and PSES scores was moderately correlated ($r = 0.49$, $p < 0.001$; Powell & Myers, 1995). Moreover, the physical abilities subscale score was found to be highly correlated with ABC scores ($r = 0.63$, $p < 0.001$), while the relationship between the general self-presentation subscale and the ABC scores was not significant ($r = 0.03$; Powell & Myers, 1995). The discriminant validity of the balance confidence scores investigated from a comparison

between the ABC scores and the PNAS scores demonstrated a low correlation (r = 0.12; Powell & Myers, 1995).

The ABC scale demonstrated a high internal consistency, good test-retest reliability, and strong convergent and discriminant validity in the previous study. The instrument takes approximately five minutes to complete. Because the ABC scale has not been available in a Thai version, it was converted to Thai language using a forward and back translation process in Phase I of this study. A description of the translation process, Phase I, is discussed in more detail under the section entitled Data Collection.

The Falls Behavioural (FaB) Scale for the Older Person

The FaB scale was used to determine fall prevention behaviors including 30 items consisting of 5 point Likert scale ranging from never do = 1, do sometimes = 2, often = 3, to do always = 4; the scale also include a "does not apply" option in which no score is given (Clemson, Bundy, Cumming, Kay, & Luckett, 2008; Clemson, Cumming, & Heard, 2003). The scores of 5 items (No. 7, 8, 9, 10, and 19) are reverse scored. The higher the score the more likely the person engages in the safest fall prevention behaviors while the lower scores suggest more risky (or unsafe) behaviors. The instrument was employed among community-dwelling older adults to assess their behaviors and actions that were used to prevent falling. Moreover, it was used to evaluate change in behavior after older adults received a fall prevention intervention (Clemson et al., 2003; Clemson et al., 2004). Internal consistency reliability of the FaB scale computed by Cronbach's alpha was high (α = 0.84); and test-retest reliability using intraclass correlation coefficients was 0.94 (p < 0.01). Validity investigated by a content validity index was 0.93. Moreover, the construct validity showed a positive relationship between of FaB and increasing

age (r_s = 0.46, p < 0.01) and a negative relationship with greater physical mobility (r_s = -0.68, p < 0.01; Clemson et al., 2003).

The FaB has confirmed high reliability and validity among older adults. It is also easy to complete and provides an adequate assessment of protective behaviors of falling in an older group (Clemson et al., 2003). This instrument requires five to ten minutes to complete. The FaB scale has not yet been translated to a Thai version, but a forward and back translation process was conducted as a first phase of this study. A description of the translation process, Phase I, is discussed in more detail under the section entitled data collection.

Walking Speed

Walking speed was used to measure mobility skills. Walking speed relates to functional ability and balance confidence and predicts health status and functional decline (Fritz & Lusardi, 2009). Walking speed is also able to reflect functional and physiological changes and predict falls and fear of falling (Fritz & Lusardi, 2009). The procedure for assessing walking speed is to request individuals to walk without assistance 8 meters and the intermediate 4 meters is timed, which was adapted from the walking speed procedure of prior studies (Guralnik et al., 1994; Guralnik et al., 2000; Wolf et al., 1999). The time was started and stopped when participants' toes of the leading foot crosses the mark at 2 and 6 meters, respectively to eliminate the results of acceleration and deceleration (Wolf et al., 1999). Then the middle 4 meters are divided by the time (seconds) to compute m/s for the speed of walking. Inter-rater reliability of walking speed showed intraclass correlation coefficients (ICC) of 0.96 (95% *CI* = 0.88-0.98) among older adults with cognitive impairment (Muñoz-Mendoza et al., 2011). Similarly, the ICC of 4-meter walking speed found among older adults living in communities was 0.97 (95% *CI* = 0.94-0.99; Goldberg & Schepens, 2011). Validity of walking speed of 4 meters was evaluated by predictive

validity among community-dwelling older women with moderate to severe disability (Atkinson et al., 2005). Lower baseline walking speed was associated with physical decline (*OR* = 0.70, 95% *CI* = 0.48-1.00) and combine decline (physical and cognitive decline; *OR* = 0.46, 95% *CI* = 0.22-0.97) during 3 years of follow up (Atkinson et al., 2005).

Walking speed was administered among older adults living in communities, adult day-care center, and a nursing home (Atkinson et al., 2005; Muñoz-Mendoza et al., 2011). Walking speed does not require special equipment and is safe, easy, and quick to measure. The reliability and validity of a walking speed of 4 meters are acceptable. Therefore, walking speed is suitable to employ for this study.

A substruction of the basic conditioning factors, self-care agency (self-efficacy), and self-care behaviors (fall prevention behaviors) as a conceptual framework, as well as, the empirical indicators (instruments and measurement) for each of the concepts of this study is shown in Figure 2.

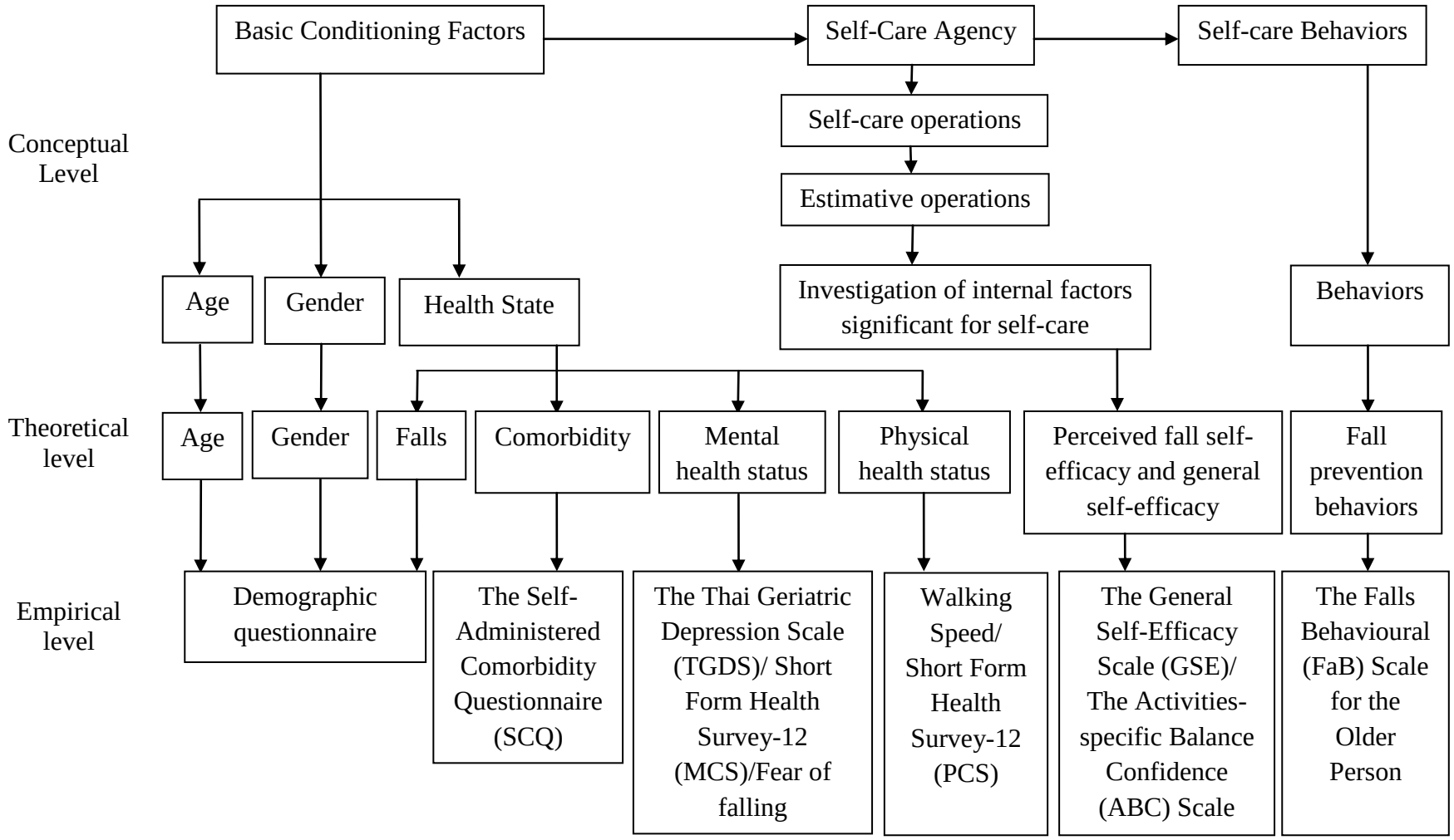


Figure 2. Substruction of conceptual, theoretical, and empirical relationships.

Data Collection Procedures

This study employed seven instruments and a mobility measure to measure the independent and dependent variables and one instrument to screen potential participants for dementia and study exclusion. The data collection occurred in two phases: questionnaire translation and full data collection. The eight instruments and a mobility measure to be used in this study, as described earlier, include: 1) the TMSE for screening older adults before collecting data, 2) demographic information questions to collect personal information such as age, gender, history of falls, and fear of falling; 3) the SCQ to assess comorbidity status; 4) the TGDS to assess mental health status regarding depression; 5) the SF-12 to assess global mental and physical health; 6) the GSE to assess perceived general self-efficacy; 7) the ABC scale to assess perceived fall self-efficacy, 8) the FaB to explore fall prevention behaviors; and 9) the walking speed to assess physical health status regarding functional ambulation. The researcher collected the data from the eligible older adults by using face to face interviews and walking speed test in the Thai communities described earlier.

Method/Procedures

The researcher collected data after the researcher obtained an approval from the Institutional Review Board (IRB) at Wayne State University and the Ethical Review Committee (ERC) for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi (BCNS) in Thailand for the research involving human subjects and received permission from the Saraburi Provincial Public Health Office in Thailand to collect data. Data were collected in two phases. The phases are described below: Phase I involved instrument translation and Phase II involved full data collection. The data collection period including the focus groups and individual data collection took approximately two months from July to August, 2012.

Phase I: Questionnaire translation. The first phase of the research methods contained two steps: questionnaire translation and focus groups. Step one was the translation process. The translation process can be completed in a 2-way process: a forward translation and a back translation including three sub-steps (Carlson, 2000; Maneesriwongul & Dixon, 2004). First, a forward translation was processed by a Thai translator who was an expert in the nursing discipline and fluent in the use of the Thai and English languages to translate the Self-Administered Comorbidity Questionnaire (SCQ), the Activities-specific Balance Confidence (ABC) Scale, and the Falls Behavioural (FaB) Scale for the Older Person from the English version to the Thai version. Second, the three Thai version instruments were back-translated by a second Thai translator who had a good understanding of English and had not seen the original English version of the instruments. Third, the new English and the original instruments were compared by the researcher and the dissertation committee to consider each item. The back translation of three instruments had no major differences in meaning compared with the original English version. The translated instruments of the SCQ, the ABC, and the FaB were then evaluated using focus group methodology to obtain input from Thai older adults regarding the translated items.

The second step of Phase I was the use of three focus groups to further clarify the translated instruments for use with a Thai older adult population. A focus group is an open-ended group discussion to elicit ideas to a specific issue (Goodman & Evans, 2010). Three focus groups were employed to provide language and cultural relevance of the SCQ, the ABC, and the FaB. The researcher selected three focus groups to allow for input from the three different sub-districts in Thailand based on the following three criteria: 1) convenience and ready access to older adults in each community; 2) there was a convenient and private location for performing the focus

groups; and 3) the characteristics of the older adults such as life style and cultures in the selected areas were similar to the older adults who were eligible to be participants in Phase II of this study. The sub-district areas meeting these criteria were Pakpreiw, Suan Dok Mai, and Tha Chang.

The processes of the focus group used the following major three steps: The first step was recruitment and screening of participants. The researcher met with the directors of Sub-district Health Promoting Hospitals and the leaders of the senior clubs of each area to explain the purpose of Phase I of the study and the focus group process. The researcher also asked to use the location of Sub-district Health Promoting Hospitals and senior club for carrying out the focus groups. In addition, the researcher requested how to best recruit older adults to the focus group (10 people per group). Eligible older adults recruited into the focus group were older adults who met the inclusion criteria for Phase II of this study and who had good reading, writing and speaking skills in the Thai language. The researcher performed the screening process through assessment of adults' cognitive function by the TMSE. The older adults were also requested to write a sentence and read it; older adults who could perform both skills were considered eligible for the focus group sessions. The screening process to recruit older adults into focus groups was performed before the group started in the private area of Sub-district Health Promoting Hospitals or senior clubs. A convenient sample of 35 participants from three sub-districts was screened using TMSE. Thirty participants having scores over 23, as well as, meeting all of inclusion criteria, were recruited into three focus groups, ten participants/group from each sub-district.

The second step was the focus group process. The researcher as the principal investigator (PI) met the older adults selected for a focus group and explained the objective of this study and the focus group. The PI also explained the process of the focus group to the older adults and

requested permission from the older adults to use an audiotape during the group discussion. The PI used an information sheet to provide the information about the focus group to participants and answered any questions about the study. The PI as moderator distributed the demographic questionnaire to older adults to fill out. The PI also distributed the SCQ, the ABC, and the FaB to the older adults to answer all questions on the questionnaire. If any item was unclear, older adults could note and give suggestions to modify the item. After all members of the group completed the questionnaires, the PI asked questions of the group about the instruments, item by item. The questions for the SCQ included: 1) as an older adult, what health problems or chronic diseases do older adults currently have?; 2) please, describe what you do when you have health problems or chronic diseases?; 3) what impact do you have from the health problems or chronic diseases?; 4) based on the questionnaire, what health problems or chronic diseases are not found among Thai older adults?; and 5) what health problems or chronic diseases are unclear and should be modified? The questions for the ABC included: 1) what daily activities may lead you to lose balance?; 2) based on the questionnaires, what items are inappropriate or appropriate to represent activities performed by Thai older adults living in the community?; and 3) What items are unclear and should be modified? The questions for the FaB included: 1) as an older adult, what do you do to prevent falls in your daily life?; 2) can you describe resources you can use to prevent falls?; 3) based on the questionnaires, what items representing fall prevention behaviors are inappropriate or appropriate to perform in the daily life of Thai older adults living in the community?; 4) what items are unclear and should be modified?; and 5) what kind of behaviors for fall prevention do we need to add in the instrument? The PI observed group members and noted their behaviors during group discussion. The PI audio taped all discussions of the focus group. The PI also provided a break with snacks and drink during the process of the focus group.

After the focus group was completed, the PI collected the questionnaires from the group members, thanked them for participating, and also gave travelling fare (30 baht; ~$1) and a gift (approximately 90 bath; ~$3) as compensation for participation in the groups. The process took approximately one and a half hours per group.

The third step was transcription of the tapes and modification of the instruments. The PI verbatim transcribed the taped recordings of the three focus groups. The PI read the transcripts to find item themes and highlight them. Then the PI considered each item on the SCQ, the ABC, and the FaB and compared with item themes elicited from the focus groups. The only items requiring revisions were the next, the instructions of the SCQ and only one item (No. 24) of the FaB. These items were modified; there were no new themes or items added in any other instrument. Finally, the revised instruments were brought to the dissertation committee for consideration and the PI developed the final version of the instruments. The revised instruments were approved by both review boards at WSU and BCNS. The researcher administered the revised instrument in this study after the dissertation committee and the researcher had reached agreement that the final instrument was ready for use.

A brief summary of the finding of three focus groups is presented. Sample demographics and personal information of participants for three focus groups is described first. All of participants described their religion as Buddhism (100%, n = 30), and most of them were female (83.3%, n = 25). Participants ranged in age from 60 to76 years with a mean age of 67.77 (SD = 4.63). A majority of the participants ranged in age from 60 to 69 years (60.0%, n = 18), whereas 40.0% (n = 12) of participants ranged in age from 70 to 76 years. Over one third of participants reported that their marital status was as a couple (e.g., married, common law partnership; 43.3%, n = 13) and widow (43.3%, n = 13). The majority of participants indicated their educational level

was primary education (1-6 academic years; 63.3%, *n* = 19) followed by upper secondary education (10-12 academic years; 20.0%, *n* = 6), and diploma and bachelor (13.4%, *n* = 4). Most participants (83.3%, *n* = 25) reported they did not work and 34.4% (*n* = 22) of their monthly income came from Thai government subsidy for older adults followed by offspring (32.8%, *n* = 21). The majority (80.0%, *n* = 24) had at least one health problem or chronic illness and the top three of health problem or chronic disease was hypertension (28.8%, *n* = 17), low back pain (23.7%, *n* = 14), and joint disease (18.6%, *n* = 11). In addition, participants reported that most (73.3%, *n* = 22) of them did not have an experience in falls last year, whereas 26.7% (*n* = 8) of them fell at least one time. The majority of participants 86.7% (*n* = 26) however reported a fear of falling. The sample demographic and health information of the participants in three focus groups are similarity with participants in full sample data collection.

The findings that clarified three translated instruments by the three focus groups are summarized next. Overall, participants mentioned that the three instruments were clear and appropriate for Thai older adults and culture. The majority did not have suggestions for changing in the instruments. However, the Self-Administered Comorbidity Questionnaire (SCQ) and the Falls Behavioural (FaB) for the Older Person were modified to better clarify language and culture based on participants' suggestions. First, the instruction of Thai version of the SCQ was modified to improve the statements without changing in the meaning of the Thai version and English version. For example, if you have any disease, please specify in column 2. Participants also commented that many diseases (e.g., spondylosis, thyroid, dementia, stroke, infection, benign prostatic hyperplasia, hernia, Parkinson's disease, hearing loss, eye problems, allergic, skin disease, gout, and high cholesterol) did not appear in the SCQ and two spaces to add other disease may not be enough. However, the diseases and more space were not added in the SCQ

because if participants had an additional disease or more than two diseases, the diseases were put in the space provided; any and all additional diseases were added in the appropriate space. Second, the ABC of Thai version was not changed although one participant was concerned about how the answer response type was written; this person felt that using a percent scale may confuse older adults because they may not understand how to evaluate their confidence in a percent level. Therefore, an administer using the ABC needs to explain to the older adults the meaning of the percent scale to achieve a full understanding of the evaluation. Finally, the wording of question No 24 of the FaB in Thai version was modified to improve the understanding of the questions without changing the original meaning. For example, the original question mentioned that "when I am outside of the house, I think how to increase safety during movement"; the question was changed to be "when I go outside of the house, I think how to move carefully". Moreover, although the question No 14 and 19 were suggested by one participant be shortened or turned into two sub questions for each because they were too long questions, they were not changed. Those questions were not changed because the aim of assessment and meaning of each question had a single aim and meaning in each question; it is not appropriate to separate.

Phase II: Full sample data collection and psychometric testing of the instruments and measurement. The second phase of the study comprised data collection from the full sample and psychometric testing of the instruments and measurement. The PI met older adults listed in the healthcare provider roster at their homes or a convenient place, including senior clubs in communities or hospitals. If the elders were willing to participate, the PI screened the potential participant with the TMSE. If the older adult did not meet the criteria, they were thanked for their information and excused from the study. If the older adult met the inclusion criteria (based on the screening criteria), they were invited to be in the study. The PI provided

informed consent for the older adults to sign before data collection began. Then the PI performed the data collection. A face to face interview method was used to collect data because the researcher was able to ensure that the older adult participants understood the questions and scales, as well it ensured data reliability. The PI interviewed the older adults in the following steps:

Step 1, the PI introduced herself to the older adult; the PI explained the purpose of the study, explained how long each interview would take, and asked the questions from each instrument. While the PI asked the questions, the PI recorded data on the questionnaires.

Step 2, after the PI completed the questions, older adults were requested to perform a walking speed test in a straight path without assistance for 8 meters and the intermediate 4 meters was timed. This walk speed test was repeated twice.

Step 3, after the PI completed the data collection, the PI thanked the older adults for his/her cooperation and gave 100 baht (~$ 3.50) as compensation.

The PI reviewed the data for completion for every participant after collecting individual data. Data collection took approximately 30-50 minutes per each individual interview. The researcher entered data from the completed questionnaires into the Statistical Package for the Social Sciences (SPSS version 17) after data collection was completed.

Psychometric testing is focused on reliability and validity of each of the instruments and measurement. Psychometric tests were performed after the PI obtained the data from the entire sample. Prior to psychometric testing, all data was cleaned, evaluated, and assessed for basic analyses (means, standard deviations, etc.). All instruments including the Thai Mental State Exam (TMSE), the demographic questionnaire, the Thai Geriatric Depression Scale (TGDS), the Self-Administered Comorbidity Questionnaire (SCQ), the Short Form Health Survey-12 (SF-12),

the General Self-Efficacy Scale (GSE), the Activities-specific Balance Confidence (ABC) Scale, and the Fall Behavioural (FaB) Scale for the Older Person and the walking speed were reinvestigated for validity and reliability excepted the demographic questionnaire which was evaluated using only content validity. Content validity was evaluated using experts from the researcher's dissertation committee for all instruments and measurement before Phase I was performed. Concurrent validity was performed for three instruments including the SCQ, the ABC Scale, and the FaB Scale. SCQ scores were analyzed for correlation with the PCS of the SF-12 scores. The ABC scores were evaluated for the relationship with fear of falls, the PCS of the SF-12, and the walking speed. The FaB scores were analyzed for the relationship with fear of falling and the walking speed. Internal consistency was assessed by using coefficient alpha or Cronbach's alpha to confirm the reliability of the TMSE, the SCQ, the TGDS, the SF-12, the GSE, the ABC, and the FaB, whereas test-retest reliability was assessed by using Pearson product moment correlation coefficient and intraclass correlation coefficient to confirm the reliability of the walking speed. These findings are presented in Table 4 in chapter 4. The normal range of the coefficient is between 0.00 and +1.00. Higher alpha scores indicate that the instruments have higher internal consistency (Polit & Beck, 2008).

Data Analysis

Data management and statistical analyses were performed using the SPSS version 17. The process of cleaning data includes the following steps: 1) checking accuracy of the data file, 2) checking for missing data, 3) checking for linearity and homoscedasticity, 4) detecting outliers, and 5) evaluating for multicollinearity and singularity (Tabachnick & Fidell, 2007).

Descriptive statistics, such as frequency and percent were employed to analyze sample demographic and personal information (e.g., gender, aged range, falls, health problem or chronic

disease, depression level, fear of falling, etc.) Moreover, means and standard deviations of interval level data (e.g., age, health problems or chronic disease, falls, etc.) were assessed.

Specific Aim 1: Determine how age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) correlate to perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy) and determine the direction of the correlation between these variables.

Hypothesis 1a: Age, number of falls, comorbidity, depression, and fear of falling will be negatively correlated with perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 1b: Gender will be related to perceived fall self-efficacy and general self-efficacy.

Hypothesis 1c: Physical health status (functional ambulation and global physical health) and global mental health will be related to perceived fall self-efficacy and perceived general self-efficacy in the predicted direction.

Biserial correlation was used to determine the relationship between the nominal variables including gender and fear of falling (as a dichotomous variable) and the ratio or interval variables including perceived fall self-efficacy and perceived general self-efficacy.

Pearson product moment correlation coefficient was utilized to determine the relationship between the ratio or interval variables including age, number of falls, comorbidity, depression, global mental health, functional ambulation, global physical health, perceived fall self-efficacy, and perceived general self-efficacy.

Specific Aim 2: Determine if age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status

(functional ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 2a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

Multiple regression analysis was utilized to evaluate the potential impact of age, gender, number of falls, cormorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) on perceived fall self-efficacy and perceived general self-efficacy. Backward elimination of step-type regression analysis was used to obtain the optimal model.

Specific Aim3: Determine how perceived fall self-efficacy and perceived general self-efficacy correlate with fall prevention behaviors and the direction of the correlation between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors.

Hypothesis 3a: Perceived fall self-efficacy and perceived general self-efficacy will be positively related to fall prevention behaviors.

Pearson product moment correlation coefficient was utilized to determine the relationship between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors.

Specific Aim 4: Determine if perceived fall self-efficacy and perceived general self-efficacy can be used to predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Hypothesis 4a: Perceived fall self-efficacy and perceived general self-efficacy can predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Multiple regression analysis was utilized to evaluate the potential impact of perceived fall self-efficacy and perceived general self-efficacy on fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Specific Aim 5: Determine if age, gender, number of falls, comorbidity, mental health status (which includes depression, fear of falling, and global mental health), and physical health status (which includes functional ambulation and global physical health), perceived fall self-efficacy, and perceived general self-efficacy can be used to predict fall prevention behaviors.

Hypothesis 5a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived fall self-efficacy will predict fall prevention behaviors.

Multiple regression analyses was used to evaluate the potential impact of age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived fall self-efficacy on fall prevention behaviors. Backward elimination of step-type regression analysis was used to obtain the optimal model.

Hypothesis 5b: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional

ambulation and global physical health), and perceived general self-efficacy will predict fall prevention behaviors.

Multiple regression analyses was used to evaluate the potential impact of age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived general self-efficacy on fall prevention behaviors. Backward elimination of step-type regression analysis was used to obtain the optimal model.

CHAPTER 4

RESULTS

The purposes of the descriptive correlational study were to: 1) examine the relationships among basic conditioning factors (BCFs; e.g., age, gender, falls, comorbidity, mental health status, and physical health status) and self-care agency (e.g., perceived fall self-efficacy and perceived general self-efficacy) among community-dwelling Thai older adults, 2) determine the relationship between self-care agency (perceived fall self-efficacy and perceived general self-efficacy) and self-care behaviors (fall prevention behaviors) among community-dwelling Thai older adults, 3) determine which BCFs (age, gender, falls, comorbidity, mental health status, and physical health status) best predict self-care agency, 4) determine which self-care agency is more predictive of self-care behaviors, and 5) determine which BCFs and which self-care agency best predicts self-care behaviors. This chapter contains the results of statistical analyses that were employed to describe the sample, descriptive analysis of the study variables, the psychometric testing, and tests the five specific aims and eight hypotheses. The chapter is divided into three sections: the first section is a description of the sample demographics and health information. The second section is the psychometric testing of the instruments and measurement. The final section is results of the statistical analyses employed to test hypotheses. The results are presented according to each of the five specific aims.

Sample Demographics Health Information

A convenient sample of 210 community-dwelling Thai older adults in the Saraburi province of Thailand was screened using the Thai Mental State Exam (TMSE). Ten volunteers were excluded from this study because TMSE scores were lower than 24. Therefore, a total of 200 volunteers who met all inclusion criteria were enrolled in this study. Following informed

consent, individual interviews were employed to obtain sample demographics and health information. Sample demographics including gender, age, religion, marital status, educational level, family members living in the same house, number of family members living in the same house, status in the family, work status, income, and source of monthly income are presented in Table 1.

The majority of the participants were female (68.5%, *n* = 137). Participants ranged in age from 60 to 90 years with a mean age of 70.27 (*SD* = 6.44). Most of the participants ranged in age from 60 to 69 years (47.5%, *n* = 95) followed by 70 to 79 years (44.0%, *n* = 88). All but one participant described their religion as Buddhism (99.5%, *n* = 199). Most participants reported that their marital status was as a couple (e.g., married, common law partnership; 55.5%, *n* = 111) followed by widow (31.5%, *n* = 63). The majority of participants indicated their educational level was primary education (1-6 academic years; 63.5%, *n* = 127) followed by upper secondary education (10-12 academic years; 11.5%, *n* = 23); a few participants had a bachelors degree or higher (8.0%, *n* = 16), and a few reported they had no education (3.5%, *n* = 7).

One hundred eighty two (91.0%) participants were living with family members in the same house. Most of them were living with offspring (3l.1%, *n* = 121) followed by a spouse (28%, *n* = 109) or grandchild (19.8%, *n* = 77). Over half (52%, *n* = 104) of the participants reported they had 2 to 5 family members living with them in the same house, and very few of the participants indicated that they were living alone (9%, *n* = 18). Regarding status in family, most participants (64.5%, *n* = 129) indicated that they were the head of the family. Over half (62.5%, *n* = 125) of participants reported they no longer worked outside the home. Monthly income of participants ranged from 700 to 65,600 baht ($23.33 to $2,186.67, $1 ~ 30 baht) with a mode monthly income of 5,600 baht ($186.67). The mode was chosen as a descriptor of income

because a few individuals (*n* = 28) had very high incomes (e.g., 65,600 baht, $2,186/month) and their data significantly skewed the mean monthly income level. Just over sixty percent (*n* = 121) of the participants incomes ranged from 0 to 10,000 ($333.33) baht/month. In addition, participants reported that most of their monthly income came from the Thai government subsidy for older adults (33.0%, *n* = 146) followed by offspring (28.2%, *n* = 125); very few individuals had a pension (8.3%, *n* = 37).

Table 1 *Frequencies and Percentages of Sample Demographics (N = 200)*

Sample Demographics	Number	Percentages
Gender		
Male	63	31.5
Female	137	68.5
Age (years)		
60-69	95	47.5
70-79	88	44.0
80-90	17	8.5
Religion		
Buddhism	199	99.5
Muslims	1	0.5
Marital status		
Couple	111	55.5
Single	18	9.0
Widow	63	31.5
Divorce	5	2.5
Separate	3	1.5
Educational level		
No education	7	3.5
Primary education	127	63.5
Lower secondary education	14	7.0
Upper secondary education	23	11.5
Vocational education and diploma	13	6.5
Bachelor degree and higher	16	8.0
Family members living in the same house		
No	18	9.0
Yes	182	91.0
Spouse	109	28.0
Offspring	121	31.1
Son in-law/Daughter in-law	51	13.1
Grandchild	77	19.8
Relative	29	7.5
Non family member	2	0.5
Total	**389**[a]	**100.0**

Table 1 *Continued*

Sample Demographics	Number	Percentages
Number of family members living in the same house		
0	18	9.0
1 member	55	27.5
2-5 members	104	52.0
6-12 members	23	11.5
Status in the family		
Head	129	64.5
Immediate	70	35.0
Relative	1	0.5
Work status		
No work	125	62.5
Work	75	37.5
Trade	27	31.0
Employee	23	26.4
Agriculture	12	13.8
Other occupations	25	28.8
Total	**87**[a]	**100.0**
Income[b]		
0-5000 baht ($0-$166.67)	68	34.0
5001-10000 baht ($166.70-$333.33)	53	26.5
10001-15000 baht ($333.37-$500.00)	31	15.5
15001-20000 baht ($500.03-$666.67)	20	10.0
20001 baht and more ($666.70 and more)	28	14.0
Source of monthly income		
Offspring	125	28.2
Spouse	22	5.0
Relative	12	2.7
Pension	37	8.3
Subsidy for older adults	146	33.0
Working	75	16.9
Interesting/Rent	16	3.6
Other	10	2.3
Total	**443**[a]	**100.0**

[a]Answer allowed for more than 1 answer. [b]$1 ~ 30 baht.

Participants also reported their health problems, chronic diseases, and treatments. Their health problems and chronic disease, as well as, treatment are presented in Table 2. Most of participants reported they had at least one health problem or chronic disease (94.0%, *n* = 188). The top five reported health problems or chronic diseases were hypertension (22.1%, *n* = 129), joint disease (21.4%, *n* = 125), low back pain (14.9%, *n* = 87), high cholesterol (9.2%, *n* = 54), and diabetes (7.7%, *n* = 45). Thirty two participants (17.0%) indicated they had only one health problem or chronic disease, whereas the majority (75.0%, *n* = 141) had 2 to 5 health problems or diseases; but a few (8.0%, *n* = 15) had 6 to 9 health problems or diseases. All participants were assessed for their depression level. Most participants had no signs of depression (80.5%, *n* = 161), while mild, moderate, and severe depression levels were found in 11.5% (*n* = 23), 7.5% (*n* = 15), and 0.5% (*n* = 1) of participants, respectively.

Regarding medications used (oral and injected medications), the number of medications used by the participants ranged from 1 to 12 with a mean medication use of 3.27 (*SD* = 2.43). Most participants were using either 2 to 3 medications (33.5%, *n* = 67) or 4 to 6 medications (33.0%, *n* = 66). On the contrary, 24 (12.0%) participants reported that they did not use any medications. Moreover, participants also reported using other self-care treatments, such as medications that were applied (47.6%, *n* = 30); diet control (8.0%, *n* = 5), exercise (11.1%, *n* = 7), and herbal products (11.1%, *n* = 7).

Table 2 *Frequencies and Percentages of Health Problems and Treatment (N = 200)*

Health Problems and Treatment	Number	Percentages
Health problems/Chronic disease		
No	12	6.0
Yes	188	94.0
Heart disease	26	4.5
Hypertension	129	22.1
Lung disease	8	1.4
Diabetes	45	7.7
Gastritis/Ulcer/Stomach disease	17	2.9
Kidney disease	6	1.0
Anemia or other blood disease	7	1.2
Cancer	4	0.7
Depression/Stress	7	1.2
Joint disease	125	21.4
Low back pain	87	14.9
High cholesterol	54	9.2
Gout	11	1.9
Thyroid	5	0.8
Skin disease	4	0.7
Allergy	5	0.8
Stroke	8	1.4
Benign prostatic hypertrophy	8	1.4
Osteoporosis	7	1.2
Sensory problems	15	2.6
Other	6	1.0
Total	**584**[a]	**100.0**
Number of health problems/chronic disease		
1	32	17.0
2-5	141	75.0
6-9	15	8.0
Total	**188**[a]	**100.0**
Depression level		
Normal	161	80.5
Mild depression	23	11.5
Moderate depression	15	7.5
Severe depression	1	0.5

Table 2 *Continued*

Health Problems and Treatment	Number	Percentages
Number of medications used		
0	24	12.0
1	28	14.0
2-3	67	33.5
4-6	66	33.0
7-12	15	7.5
Other treatments or self-care		
No	139	69.5
Yes	61	30.5
Drug applied	30	47.6
Diet control	5	8.0
Exercise	7	11.1
Herb	7	11.1
Other	14	22.2
Total	**63**[a]	**100.0**

[a]Answer more than 1 answer.

Participants also indicated their history of falls, injury/problems related to falls, and fear of falling. This fall information is summarized in Table 3. Over half of the participants (59.0%, *n* = 118) reported that they had never experienced a fall in the last 12 months; however, 21% (*n* = 42) had experienced 2 or more falls. The number of falls ranged from 1 to 10 falls with a mean fall of 0.91 (*SD* = 1.65). The participants who experienced falls (*n* = 82) reported that most falls occurred outdoors 57.4% (*n* = 54), with falls occurring indoors 42.6% (*n* = 40) of the time (the "*n*" does not total to 82 because a few individuals had more than one fall). Common location of outdoor falls were around the house (35.6%, *n* = 21) followed by road (16.9%, *n* = 10), garden (15.3%, *n* = 9), market (10.2%, *n* = 6), and garage (3.4%, *n* = 2). Indoor falls occurred throughout the house, in the bath area (18.6%, *n* = 8), kitchen area (16.3%, *n* = 7), on stairs (11.6%, *n* = 5), at the door opening (9.3%, *n* = 4), and in the bedroom (7.0%, *n* = 3). However, 37.2% (*n* = 16) of the participants who fell indoors and 18.6% (*n* = 11) of those who fell

outdoors could not recall a specific fall location. Fifty four (65.9%) of the participants who fell also incurred an injury or problem related to the fall. The most common injuries were a sprain (30.4%, *n* = 32), hand/leg pain (21.9%, *n* = 23), wound (20.0%, *n* = 21), and contusion (14.3%, *n* = 15). Whether participants were faller or non-fallers, most (84.0%, *n* = 168) reported that they had a fear of falling.

Table 3 *Frequencies and Percentages of History of Falls, Injury/Problems Related to Falls, and Fear of Falling (N = 200)*

Fall Information	Number	Percentages
Number of falls		
0	118	59.0
1	40	20.0
2-10	42	21.0
Fall location		
Indoor	40	42.6
Outdoor	54	57.4
Total	**94**[a]	**100.0**
Indoor falls		
Bath room	8	18.6
Bed room	3	7.0
Kitchen room	7	16.3
Stair	5	11.6
Door	4	9.3
Other	16	37.2
Total	**43**[a]	**100.0**
Outdoor falls		
Market	6	10.2
Road	10	16.9
Around house	21	35.6
Garden	9	15.3
Garage	2	3.4
Other	11	18.6
Total	**59**[a]	**100.0**

Table 3 *Continued*

Fall Information	Number	Percentages
Injury/Problems related to falls		
No	28	34.1
Yes	54	65.9
Total	**82**[b]	**100**
Wound	21	20.0
Dizziness	5	4.8
Contusion	15	14.3
Swell	4	3.8
Sprain	32	30.4
Hand/Leg Pain	23	21.9
Other problems	5	4.8
Total	**105**[a]	**100.0**
Fear of falling		
No	32	16.0
Yes	168	84.0

[a]More than 1 answer was possible. [b]Number of participants experienced in falls.

Psychometric Testing of the Instruments and Measurement

Psychometric testing of the instruments and measurement is focused on reliability and validity of each of the instruments and measurement. The results of investigating reliability of instruments and a measurement and concurrent validity of three instruments including the SCQ, the ABC Scale, and the FaB Scale are presented according to each of the instruments and measurement. Table 4 presents the instrument and measurement statistics for the current study.

Reliability and Validity of the Instruments and Measurement

Reliability and validity of the instruments and measurement are disrobed in this section.

The Thai Mental State Exam (TMSE). The instrument's reliability had a coefficient alpha 0.561. The moderate coefficient alpha may come from screening participants who had a narrow range of scores from 24 to 30 scores to meet the inclusion criteria. Potential range was

from 0-30, study range was from 24 to 30, and the total score mean was 27.51 (*SD* = 1.62). The instrument statistics are presented in Table 4.

The Self-Administered Comorbidity Questionnaire (SCQ). The reliability of the SCQ determined using coefficient alpha was 0.742. Potential range was from 0-78 as each of the 26 medical conditions, study range was from 0 to 21, and a total score mean was 6.04 (*SD* = 3.85). The instrument statistics are presented in Table 4. The SCQ scores analyzed for correlation with the PCS of the SF-12 scores to investigate concurrent validity. The correlation demonstrated that the SCQ had sufficient concurrent validity ($r = -0.324$, $p < 0.01$).

The Thai Geriatric Depression Scale (TGDS). Reliability of the TGDS was confirmed using a coefficient alpha for this study; the Cronbach's alpha coefficient was high at 0.895. Potential range and study range were from 0-30 and 0 to 25, respectively. A total score mean was 7.54 (*SD* = 6.06). The instrument statistics are presented in Table 4.

Short Form Health Survey-12 (SF-12). Reliability of the instrument for this study was confirmed using coefficient alpha. The reliability of the entire instrument was 0.838 using Cronbach's alpha coefficient. A total score mean of the entire instrument was 56.26 (*SD* = 4.88) with a total scale mean of 3.73 (*SD* = 0.57). The reliability of the PCS was 0.777 of coefficient alpha and a total score mean was 50.74 (*SD* = 9.12) with a total scale mean of 3.32 (*SD* = 0.64). The reliability of the MCS was 0.754 of coefficient alpha and a total score mean was 61.76 (*SD* = 8.61) with a total scale mean of 4.14 (*SD* = 0.66). The instrument statistics are presented in Table 4.

The General Self-Efficacy Scale (GSE). Reliability of the GSE was confirmed by using Cronbach's alpha coefficient for this study; the Cronbach's alpha coefficient was found to be high at 0.917. Potential range and study range were from 10 to 40 and a total score mean was

29.56 (*SD* = 6.30) with a total scale mean of 2.96 (*SD* = 0.63). The instrument statistics are presented in Table 4.

The Activities-specific Balance Confidence (ABC) Scale. For this study, reliability of the ABC scale was confirmed by Cronbach's alpha coefficient and was found to have a high Cronbach's alpha coefficient (α = 0.953). Potential range and study range were from 0 to 100 and 12.50-100, respectively. A total score mean was 76.62 (*SD* = 18.84). The instrument statistics are presented in Table 4. Concurrent validity of the ABC scores were evaluated for the relationship with fear of falling, the PCS of the SF-12, and the walking speed. The correlation between the ABC and fear of falls (r = -0.169, $p < 0.05$), the PCS of the SF-12 (r = 0.438, $p < 0.01$), and the walking speed (r = 0.535, $p < 0.01$) indicated that the ABC had sufficient concurrent validity.

The Falls Behavioural (FaB) Scale for the Older Person. The reliability of this instrument confirmed by Cronbach's alpha coefficient showed a Cronbach's alpha coefficient of 0.777. Potential range and study range were from 17 to 120 and 47-117, respectively. A total score mean was 83.86 (*SD* = 12.35) with a total scale mean of 2.80 (*SD* = 0.41). The instrument statistics are presented in Table 4. The FaB scores were analyzed for the relationship with fear of falling and the walking speed to determine concurrent validity. The relationship between the FaB and fear of falling (r = 0.256, $p < 0.01$) and the walking speed (r = -0.228, $p < 0.01$) presented sufficient concurrent validity of the FaB scale.

Walking speed. The reliability of the walking speed was investigated by using Pearson product moment correlation coefficient. Test-retest reliability of the walking speed for this study showed high correlation coefficient (r = 0.953, $p < 0.0001$). In addition, the intraclass correlation coefficient (ICC) was run. The ICC was 0.976 (95% *CI* = 0.968-0.982, F = 41.075, df = 199, $p <$

0.0001). Study range was from 0.14 to 1.62 m/s and a total score mean was 0.91 (*SD* = 0.24). The measurement statistic was presented in Table 4.

Table 4 *Instrument and Measurement Statistic*

Instruments and Measurement	Rating Scale	Potential Range	Study Range	Total Score Mean (*SD*)
1. The Thai Mental State Examination (TMSE) (α = 0.561)	NA	0-30	24-30	27.51 (1.62)
2. The Self-Administered Comorbidity Questionnaire (SCQ) (α = 0.742)	0-3	0-78	0-21	6.04 (3.85)
3. The Thai Geriatric Depression Scale (TGDS) (α = 0.895)	NA	0-30	0-25	7.54 (6.06)
4. Short Form Health Survey-12 (SF-12) (α = 0.838)	Varies	0-100	37.66-65.98	56.26 (4.88)
- Physical Component Summary (PCS) (α = 0.777)	Varies	0-100	16.92-72.06	50.74 (9.12)
- Mental Component Summary (MCS) (α = 0.754)	Varies	0-100	34.86-86.14	61.76 (8.61)
5. The General Self-Efficacy Scale (GSE) (α = 0.917)	1-4	10-40	10-40	29.56 (6.30)
6. The Activities-specific Balance Confidence (ABC) Scale (α = 0.953)	0-100	0-100	12.50-100	76.62 (18.84)
7. The Falls Behavioural (FaB) Scale for the Older Person (α = 0.777)	Varies	17-120	47-117	83.86 (12.35)
8. Walking Speed (m/s) (r = 0.953, p < 0.0001) (*ICC* = 0.976, 95% *CI* = 0.968-0.982)	NA	NA	0.14-1.62	0.91 (0.24)

Specific Aims and Hypotheses

This section presents the results of the research hypotheses testing. Eight hypotheses based on five specific aims were tested by employing inferential statistical analyses.

Specific Aim 1: Determine how age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) correlate to perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy) and determine the direction of the correlation between these variables.

Hypothesis 1a: Age, number of falls, comorbidity, depression, fear of falling will be negatively correlated with perceived fall self-efficacy and perceived general self-efficacy.

This hypothesis used Pearson product moment correlation coefficient to determine the relationship between basic conditioning factors (BCFs) including age, number of falls, comorbidity, and depression and perceived self-efficacy including perceived fall self-efficacy (measured by the Activity-specific Balance Confidence, ABC scale) and perceived general self-efficacy (measured by the General Self-Efficacy Scale, GSE). Biserial correlation coefficients were also used to determine the correlation between fear of falling (as a dichotomous variable) and both perceived fall and general self-efficacy. The results of the correlations are displayed in Tables 5 and 6. The hypothesis was partially supported. With exception of the relationships between fear of falling and the number of comorbid conditions and perceived general self-efficacy, all other correlations were significant and in the predicted direction. The examination found that age had a negative significant relationship with both perceived fall self-efficacy (r = -0.227, $p < 0.01$) and perceived general self-efficacy (r = -0.224, $p < 0.01$). The relationship between number of comorbid conditions and perceived fall self-efficacy was also negatively

significant (r = -0.345, p < 0.01), whereas the relationship between the number of comorbid conditions and perceived general self-efficacy was not significant (r = -0.111, p = 0.12). Statistically significant negative relationships were found between depression scores and perceived fall self-efficacy (r = -0.415, p < 0.01) and perceived general self-efficacy (r = -0.468, p < 0.01). Moreover, the relationships between number of falls and perceived fall self-efficacy (r = -0.326, p < 0.01) and perceived general self-efficacy (r = -0.260, p < 0.01) were statistically significant negative relationships.

In addition, this hypothesis utilized Biserial correlation coefficients to analyze correlations between fear of falling (as a dichotomous variable) and perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy). The results are presented in Table 6. Fear of falling had a statistically significant negative relationship with perceived fall self-efficacy (r = -0.169, p < 0.05), but fear of falling had no statistically significant relationship with perceived general self-efficacy (r = -0.059, p = 0.41).

Hypothesis 1b: Gender will be related to perceived fall self-efficacy and perceived general self-efficacy.

This hypothesis employed Biserial correlation coefficients to determine the correlation between gender (as a dichotomous variable) and perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy). Table 6 presents the results of the analysis. The hypothesis was not supported. The relationship between male gender and perceived general self-efficacy was not statistically significant relationship (r = 0.092, p = 0.19). In contrast, a statistically significant relationship between male gender and perceived fall self-efficacy (r = 0.146, p < 0.05) was found.

Hypothesis 1c: Physical health status (functional ambulation and global physical health) and global mental health will be related to perceived fall self-efficacy and perceived general self-efficacy in the predicted direction.

This hypothesis used Pearson product moment correlation coefficients to examine the relationship between physical health status including functional ambulation (measured by walking speed test) and global physical health (measured by the Physical Component Summary, PCS, of SF-12) and global mental health (measured by the Mental Component Summary, MCS, of SF-12) and both perceived fall and general self-efficacy. The examination is displayed in Table 5. The hypothesis was partially supported.

There were statistically significant positive correlations between functional ambulation and perceive fall self-efficacy ($r = 0.535$, $p < 0.01$) and between functional ambulation and general self-efficacy ($r = 0.305$, $p < 0.01$). Similarly, global physical health had a statistically significant positive relationship with perceived fall self-efficacy ($r = 0.438$, $p < 0.01$) and with perceived general self-efficacy ($r = 0.277$, $p < 0.01$). Moreover, the examination also found a negative correlation between global mental health and perceived fall self-efficacy ($r = -0.083$, $p = 0.24$), whereas a positive relationship was found between global mental health and perceived general self-efficacy ($r = 0.004$, $p = 0.96$). Those relationships, however, were not statistically significant.

Table 5 *Pearson Product Moment Correlation between Basic Conditioning Factors and Perceived Self-Efficacy (N = 200)*

Basic Conditioning Factors	Perceived Self-Efficacy	
	Perceived Fall Self-Efficacy	**Perceived General Self-Efficacy**
Age	-0.227**	-0.224**
Number of comorbid Conditions	-0.345**	-0.111
Depression score	-0.415**	-0.468**
Number of falls	-0.326**	-0.260**
Global mental health	-0.083	0.004
Functional ambulation	0.535**	0.305**
Global physical health	0.438**	0.277**

** Correlation is significant at the 0.01 level (2-tailed).

Table 6 *Biserial Correlation between Gender and Fear of Falling and Perceived Self-Efficacy (N = 200)*

Basic Conditioning Factors	Perceived Self-Efficacy	
	Perceived Fall Self-Efficacy	**Perceived General Self-Efficacy**
Gender	0.146 *	0.092
Fear of falling	-0.169 *	-0.059

* Correlation is significant at the 0.05 level (2-tailed).

Specific Aim 2: Determine if age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

Hypothesis 2a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health) can predict perceived fall self-efficacy and perceived general self-efficacy.

This hypothesis employed multiple regression analysis to evaluate the potential impact of age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health on perceived fall self-efficacy and perceived general self-efficacy. Backward elimination step-type regression analysis was used to obtain the optimal model. The examination found the best model of the predictors of perceived fall self-efficacy as presented in Table 7.

Table 7 *Prediction of Perceived Fall Self-Efficacy using Basic Conditioning Factors (N = 200)*

Predictor Variables	***B***	**Std. Error**	***β***	***t***	**Sig.**
(Constant)	80.414	9.049		8.887	0.000
Number of falls	-1.607	0.660	-0.140	-2.434	0.016
Comorbidity	-0.710	0.282	-0.145	-2.516	0.013
Depression	-0.792	0.185	-0.255	-4.271	0.000
Global mental health	-0.336	0.121	-0.154	-2.780	0.006
Functional ambulation	31.685	4.481	0.409	7.071	0.000

$R^2 = 0.43$, $F_{(5, 194)} = 29.67$, $p < 0.0001$.

The best fitting model based on the backward stepwise regression included number of falls, comorbidity, depression, global mental health, and functional ambulation as predictors of perceived fall self-efficacy. Approximately 43% (R^2 = 0.43, $F_{(5, 194)}$ = 29.67, p < 0.0001) of the variance in perceived fall self-efficacy can be explained by the predictor variables. The analysis means that a higher number of falls, more comorbid conditions, higher depression scores, higher global mental health scores, and more limited functional ambulation predicted a lower fall self-efficacy.

Table 8 displays the best model of the predictors of perceived general self-efficacy. The best fitting model based on the backward stepwise regression analysis determined that four predictor variables including age, male gender, number of falls, and depression predicted perceived general self-efficacy. About 29% (R^2 = 0.29, $F_{(4, 195)}$ = 20.14, p < 0.0001) of the variance in perceived general self-efficacy can be explained by predictor variables including age, male gender, number of falls, and depression. All variables were statistically significant predictors of perceived general self-efficacy except male gender which was not statistically significant (t = 1.963, p = 0.051). The analysis means that older age, an increased number of falls, and higher depression scores predicted lower general self-efficacy.

Table 8 *Prediction of Perceived General Self-Efficacy using Basic Conditioning Factors (N = 200)*

Predictor Variables	*B*	Std. Error	*β*	*t*	Sig.
(Constant)	47.979	4.199		11.427	0.000
Age	-0.216	0.060	-0.221	-3.611	0.000
Gender	1.613	0.822	0.119	1.963	0.051
Number of falls	-0.598	0.242	-0.156	-2.476	0.014
Depression	-0.425	0.066	-0.409	-6.486	0.000

$R^2 = 0.29$, $F_{(4, 195)} = 20.14$, $p < 0.0001$.

Specific Aim 3: Determine how perceived fall self-efficacy and perceived general self-efficacy correlate with fall prevention behaviors and the direction of the correlation between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors.

Hypothesis 3a: Perceived fall self-efficacy and perceived general self-efficacy will be positively related to fall prevention behaviors.

This hypothesis used Pearson product moment correlation coefficient to determine the relationship between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors. The results of the correlation are presented in Table 9. The hypothesis was not supported. A determination of the relationship between perceived fall self-efficacy and fall prevention behaviors found a negative significant relationship ($r = -0.159$, $p < 0.05$); however, there was no statistically significant relationship between perceived general self-efficacy and fall prevention behaviors ($r = 0.064$, $p = 0.37$). The statistically significant analysis means that a lower perceived fall self-efficacy was related with more fall prevention behaviors.

Table 9 *Pearson Product Moment Correlation between Perceived Self-Efficacy and Fall Prevention Behaviors (N = 200)*

Perceived Self-Efficacy	Fall Prevention Behaviors
Perceived fall self-efficacy	-0.159*
Perceived general self-efficacy	0.064

* Correlation is significant at the 0.05 level (2-tailed).

Specific Aim 4: Determine if perceived fall self-efficacy and perceived general self-efficacy can be used to predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

Hypothesis 4a: Perceived fall self-efficacy and perceived general self-efficacy can predict fall prevention behaviors, controlling for age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health).

This hypothesis employed multiple regression analysis to evaluate the potential impact of perceived fall self-efficacy and perceived general self-efficacy on fall prevention behaviors, in two distinct regression analyses, controlling for basic conditioning factors including age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health. The prediction of perceived fall self-efficacy and perceived general self-efficacy on fall prevention behaviors, without controlling for the basic conditioning factors was presented in Table 10. The hypothesis was supported, but the explained variance was very small when not controlling for the basic conditioning factors. When

controlling for these factors, the explained variance increased to approximately 30% but neither of the predicted self-efficacy measures remained as significant predictors of fall prevention behaviors. The results indicate that the basic conditioning factors are more significant predictors of fall prevention behaviors than either self-efficacy measure. Based on Table 10, approximately 5% (R^2 = 0.05, $F_{(2, 197)}$ = 4.93, p < 0.01) of the variance in fall prevention behaviors can be explained by perceived fall self-efficacy and perceived general self-efficacy. The examination showed that perceived fall self-efficacy (t = -3.004, p = 0.003) and perceived general self-efficacy (t = 2.157, p = 0.032) predicted approximately 5% of the variance of fall prevention behaviors.

Table 10 *Prediction of Fall Prevention Behaviors using Perceived Self-Efficacy (N = 200)*

Predictor Variables	***B***	**Std. Error**	***β***	***t***	**Sig.**
(Constant)	85.872	4.536		18.933	0.000
Perceived fall self-efficacy	-0.010	0.003	-0.233	-3.004	0.003
Perceived general self-efficacy	0.328	0.152	0.167	2.157	0.032

R^2 = 0.05, $F_{(2, 197)}$ = 4.93, p < 0.01.

Given the limited predictive ability of the self-efficacy measures (Table 10) when not controlling for the basic conditioning factors, Table 11 presents the regression model analysis showing the effect of perceived fall self-efficacy on fall prevention behaviors when age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health were controlled.

Approximately 30% (R^2 = 0.30, $F_{(10,\ 189)}$ = 8.15, p < 0.0001) of the total variation in fall prevention behaviors can be explained by basic conditioning factors including age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health, as well as, perceived fall self-efficacy. The results however showed that there were no statistically significant effect of age (t = 1.839, p = 0.067), the number of falls (t = 0.574, p = 0.567), and perceived fall self-efficacy (t = -0.409, p = 0.683) on fall prevention behaviors. The analysis indicates that female gender, higher comorbid conditions, lower depression scores, a fear of falling, slower walking speed, and higher global physical and mental health scores can predict higher fall prevention behaviors.

Table 11 *Prediction of Fall Prevention Behaviors with Perceived Fall Self-Efficacy while Controlling for Basic Conditioning Factors (N =200)*

Predictor Variables	*B*	Std. Error	*β*	*t*	Sig.
(Constant)	41.744	16.156		2.584	0.011
Age	0.248	0.135	0.129	1.839	0.067
Gender	-6.643	1.724	-0.250	-3.852	0.000
Number of falls	0.288	0.501	0.038	0.574	0.567
Comorbidity	0.626	0.219	0.195	2.858	0.005
Depression	-0.434	0.149	-0.213	-2.915	0.004
Fear of falling	6.217	2.157	0.185	2.883	0.004
Functional ambulation	-9.155	4.240	-0.180	-2.159	0.032
Global physical health	0.239	0.111	0.176	2.143	0.033
Global mental health	0.302	0.105	0.211	2.871	0.005
Perceived fall self-efficacy	-0.022	0.054	-0.033	-0.409	0.683

$R^2 = 0.30$, $F_{(10,\ 189)} = 8.15$, $p < 0.0001$.

Given the limited predictive ability of the self-efficacy measures (Table 10) when not controlling for the basic conditioning factors, Table 12 displays the regression model analysis showing the effect of perceived general self-efficacy on fall prevention behaviors when age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health were controlled.

Approximately 31% ($R^2 = 0.31$, $F_{(10,\ 189)} = 8.44$, $p < 0.0001$) of the total variation in fall prevention behaviors was explained by basic conditioning factors including age, gender, number

of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health as well as perceived general self-efficacy. The results however showed that there was no statistically significant effect of the number of falls (t = 0.895, p = 0.372), and perceived general self-efficacy (t = 1.479, p = 0.141) on fall prevention behaviors. Somewhat similar to the previous analysis, this analysis indicates that older age, female gender, higher comorbid conditions, lower depression scores, a fear of falling, slower walking speed, and higher global physical and mental health scores can predict higher fall prevention behaviors. The only difference in this analysis is the significant contribution of age to the regression model.

Table 12 *Prediction of Fall Prevention Behaviors with Perceived General Self-Efficacy while Controlling for Basic Conditioning Factors (N = 200)*

Predictor Variables	*B*	Std. Error	*β*	*t*	Sig.
(Constant)	31.100	16.496		1.885	0.061
Age	0.290	0.135	0.151	2.139	0.034
Gender	-7.020	1.724	-0.265	-4.072	0.000
Number of falls	0.444	0.496	0.059	0.895	0.372
Comorbidity	0.618	0.216	0.193	2.865	0.005
Depression	-0.330	0.155	-0.162	-2.127	0.035
Fear of falling	6.079	2.147	0.181	2.832	0.005
Functional ambulation	-10.086	4.013	-0.199	-2.513	0.013
Global physical health	0.224	0.110	0.165	2.025	0.044
Global mental health	0.314	0.104	0.219	3.015	0.003
Perceived general self-efficacy	0.211	0.142	0.108	1.479	0.141

$R^2 = 0.31$, $F_{(10,\ 189)} = 8.44$, $p < 0.0001$.

Specific Aim 5: Determine if age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), and physical health status (functional ambulation and global physical health), perceived fall self-efficacy, and perceived general self-efficacy can be used to predict fall prevention behaviors.

Hypothesis 5a: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional

ambulation and global physical health), and perceived fall self-efficacy will predict fall prevention behaviors.

Before testing this hypothesis, Pearson product moment correlation was utilized to analyze correlations among the basic conditioning factors (e.g., age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health), the perceived self-efficacy (e.g., perceived fall self-efficacy and perceived general self-efficacy), and fall prevention behaviors. The examination is displayed in Table 13. The finding showed statistically significant negative relationships between female gender, perceived fall self-efficacy, functional ambulation, and depression and fall prevention behaviors, whereas statistically significant positive relationships were found between fear of falling, comorbidity, and global mental health and fall prevention behaviors. No statistically significant relationships, however, were found between perceived general self-efficacy, age, number of falls, and global physical health and fall prevention behaviors. In addition, the finding also presented the same results of the relationship between perceived fall self-efficacy and perceived general self efficacy and fall prevention behaviors as mentioned in hypothesis 3a and Table 9.

Table 13 *Pearson Product Moment Correlation among Basic Conditioning Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors (N = 200)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Perceived fall self-efficacy	1.000											
2. Perceived general self-efficacy	0.444**	1.000										
3. Fall prevention behavior	-0.159*	0.064	1.000									
4. Gender	0.146*	0.092	-0.341**	1.000								
5. Fear of falls	-0.169*	-0.059	0.256**	-0.233**	1.000							
6. Age	-0.227**	-0.224**	0.117	0.122	-0.041	1.000						
7. Number of Falls	-0.326**	-0.260**	0.046	-0.026	0.058	-0.070	1.000					
8. Comorbidity	-0.345**	-0.111	0.223**	-0.178*	0.100	-0.050	0.244**	1.000				
9. Functional ambulation	0.535**	0.305**	-0.228**	0.145*	-0.179*	-0.408**	-0.191**	-0.253**	1.000			
10. Depression	-0.415**	-0.468**	-0.153*	0.011	0.138	0.070	0.283**	0.220**	0.260**	1.000		
11. Global physical health	0.438**	0.277**	-0.083	0.120	-0.157*	-0.148*	-0.186**	-0.324**	0.417**	-0.293**	1.000	
12. Global mental health	-0.083	0.004	0.209**	-0.071	0.074	-0.009	-0.001	0.041	0.069	-0.187**	-0.395**	1.000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

This hypothesis employed multiple regression analysis to evaluate the potential impact of age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, global physical health, and perceived fall self-efficacy on fall prevention behaviors. Backward multiple regression analysis was used to obtain the optimal model. The examination found the best predictor model of fall prevention behaviors as shown in Table 14. The hypothesis was supported; however, the number of falls and both perceived self-efficacy scores were not significant predictors of fall prevention behaviors. The best fitting model based on the backward multiple regressions included age, gender, comorbidity, depression, fear of falling, functional ambulation, global mental health, and global physical health for predicting fall prevention behaviors. Approximately 30% (R^2 = 0.30, $F_{(8,\ 191)}$ = 10.19, p < 0.0001) of the variance in fall prevention behaviors can be explained by age, gender, comorbidity, depression, fear of falling, functional ambulation, global mental health, and global mental health. All of these predictor variables had a statistically significant effect on fall prevention behaviors except age which was not statistically significant (t = 1.825, p = 0.070). Similar to the previous analysis, this analysis indicates that older age, female gender, higher comorbid conditions, lower depression scores, a fear of falling, lower walking speed, and higher global physical and mental health scores can predict higher fall prevention behaviors. The difference in this analysis, however, is the lack of a significant contribution from age on the regression model.

Table 14 *Prediction of Fall Prevention Behaviors using all Predictor Variables (N = 200)*

Predictor Variables	*B*	Std. Error	*β*	*t*	Sig.
(Constant)	40.997	15.326		2.675	0.008
Age	0.241	0.132	0.126	1.825	0.070
Gender	-6.651	1.712	-0.251	-3.886	0.000
Comorbidity	0.661	0.213	0.206	3.097	0.002
Depression	-0.399	0.140	-0.196	-2.843	0.005
Fear of falling	6.218	2.147	0.185	2.896	0.004
Functional ambulation	-10.038	3.978	-0.198	-2.523	0.012
Global physical health	0.233	0.110	0.172	2.107	0.036
Global mental health	0.309	0.104	0.215	2.967	0.003

$R^2 = 0.30$, $F_{(8,\ 191)} = 10.19$, $p < 0.0001$.

Hypothesis 5b: Age, gender, number of falls, comorbidity, mental health status (depression, fear of falling, and global mental health), physical health status (functional ambulation and global physical health), and perceived general self-efficacy will predict fall prevention behaviors.

This hypothesis utilized multiple regression analysis to evaluate the potential impact of age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, global physical health, and perceived general self-efficacy on fall prevention behaviors. Backward multiple regression analysis was used to obtain the best fitting model. The examination found identical results as was found in hypothesis 5a (see Table 14). This analysis indicates that older age, female gender, higher comorbid conditions, lower depression scores, a fear of falling, lower walking speed, and higher global physical and mental

health scores can predict higher fall prevention behaviors; however, age did not contribute significantly in the regression model.

CHAPTER 5

DISCUSSION

This study was a descriptive correlational and cross-sectional study conducted in two districts, Muang Saraburi and Sao Hai, including five sub-districts in the Saraburi province of Thailand. The participants of this study were Thai older adults living in the communities of the selected areas. The aims of this study were to: 1) examine the relationships among basic conditioning factors (BCFs; e.g., age, gender, falls, comorbidity, mental health status, and physical health status) and self-care agency (e.g., perceived fall self-efficacy and perceived general self-efficacy) among community-dwelling Thai older adults; 2) determine the relationship between self-care agency (perceived fall self-efficacy and perceived general self-efficacy) and self-care behaviors (fall prevention behaviors) among community-dwelling Thai older adults; 3) determine which BCFs (age, gender, falls, comorbidity, mental health status, and physical health status) best predict self-care agency; 4) determine which self-care agency is more predictive of self-care behaviors; and 5) determine BCFs and which self-care agency best predicts self-care behaviors.

Data collection for this study consisted of two phases: questionnaire translation (Phase I) and full sample data collection, testing the aims of the study and psychometric testing of the instruments and measurement (Phase II). Phase I contained two steps: instrument translations and focus groups. Three instruments including the Self-Administered Comorbidity Questionnaire (SCQ), the Activities-specific Balance Confidence (ABC) Scale, and the Falls Behavioural (FaB) Scale for the Older Person were translated to Thai language using a forward and back translation process. The final versions of translated instruments were reviewed by three focus groups to

clarify language and cultural relevance. Phase II was performed among 200 participants with a face to face interview method using eight instruments and performance of walking speed test.

The focus groups indicated that the three instruments were clear and appropriate for Thai older adults and culture. The sample of participants in the three focus groups was nearly identical to the Phase II sample. For example, most participants of Phase I and II were female, Buddhist, and ranged in age from 60 to 69 years old. Most of participants reported that their marital status was a couple and educational level was primary education. Moreover, most of them indicated that they did not work, had at least one health problem/chronic disease, had no experience with a fall in the last year, and had a fear of falling. Minor modifications were performed for two translated instruments, the Self-Administered Comorbidity Questionnaire (SCQ) and the Falls Behavioural (FaB) Scale for the Older Person to improve the clarity of a few statements. The Activities-specific Balance Confidence (ABC) Scale did not require any modifications for readability or Thai cultural relevance. The final versions of three translated instruments (the SCQ, the ABC, and the FaB) were reviewed by the researcher and the dissertation committee and the revisions were found to be satisfactory for use. These final versions were utilized for data collection in Phase II. A summary of Phase II findings are described next.

Age, the number of falls, and depression scores had negative and statistically significant relationships with perceived fall self-efficacy and perceived general self-efficacy, whereas functional ambulation and global physical health had a positive and statistically significant correlation with both perceived self-efficacy scales. In contrast, the number of comorbidities and fear of falling had negative and statistically significant relationship with perceived fall self-efficacy, but they were not significantly related to perceived general self-efficacy. Similarly, a statistically significant relationship was found between male gender and perceived fall self-

efficacy, but there was no statistically significant relationship between male gender and perceived general self-efficacy. Moreover, global mental health was not significantly related to either self-efficacy measure. Lower perceived fall self-efficacy was correlated with the older adults using more fall prevention behaviors, but perceived general self-efficacy had no significant correlation with fall prevention behaviors. This means that as individuals had a decreased confidence in their activities and balance, they engaged in more fall prevention behaviors.

The prediction analyses using backward multiple regression analysis had some new and interesting findings. Different basic conditioning factors predicted the two measures of self-efficacy (self-care agency), and the predictors of fall self-efficacy explained more of the variance (43%) in the fall self-efficacy as compared to the predictors of general self-efficacy (29%). The statistically significant predictors of perceived fall self-efficacy included number of falls, number of comorbidities, depression, global mental health, and functional ambulation; whereas statistically significant predictors of perceived general self-efficacy consisted of age, number of falls, and depression. For prediction without controlling for the basic conditioning factors, the examination showed that perceived fall self-efficacy and perceived general self-efficacy only predicted 5% of the variance of fall prevention behaviors. When controlling for these factors, two regression models were run: one in which the fall self-efficacy measure was used for the self-care agency concept and one in which the general self-efficacy measure was used for self-care agency. The explained variance increased to approximately 30% for the model including fall self-efficacy and approximately 31% for the model including general self-efficacy when the BCFs were controlled; however, in both models neither of the self-efficacy measure were significant predictors of fall prevention behaviors. The finding also indicated slightly different

predictive models with the differing self-efficacy measure. In the model that included fall self-efficacy (ABC scale), female gender, a higher number of comorbid conditions, lower depression scores, a fear of falling, lower walking speed, and higher global physical and mental health scores predicted higher fall prevention behaviors. In contrast, in the model that included general self efficacy, older age was also included as a significant predictor of fall prevention behaviors.

The remainder of the chapter will discuss the results by each specific aim and research hypotheses. The discussion includes the correlation between basic conditioning factors (BCFs) and perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy), prediction of perceived self-efficacy using BCFs, the correlation between perceived self-efficacy and fall prevention behaviors, prediction of fall prevention behaviors using perceived self-efficacy, and prediction of fall prevention behaviors using BCFs and perceived self-efficacy. The chapter also includes a discussion of the study limitations and recommendations and implications for nursing practice and future nursing research.

Correlation between Basic Conditioning Factors and Perceived Self-Efficacy

The correlation between the selected BCFs and perceived self-efficacy was the focus of specific aim 1 and included three hypotheses (hypothesis 1a, 1b, and 1c). A discussion based on these findings follows.

Age and Perceived Self-Efficacy

Age had a statistically significant negative relationship with both perceived fall self-efficacy and perceived general self-efficacy. The finding supported hypothesis 1a that age would be negatively correlated with perceived fall self-efficacy and perceived general self-efficacy. This finding implied that participants who are older have less confidence in their ability to perform several activities without falling and have less confidence in their ability to perform

difficult tasks or cope with stressful situations. In advancing age, older adults have physical changes that can lead to deterioration of function (Klingman, 2008). The consequences of deterioration of function may lead to lower self-efficacy and a limitation in performing activities. The findings were congruent with other studies. A prior study reported that age was significantly and negatively related to perceived fall self-efficacy among older adults who were experienced fallers and those who had never fallen (Bishop et al., 2010). Similarly, other studies found that as age increased, perceived general self-efficacy decreased among patients undergoing hemodialysis (Bağ & Mollaoğlu, 2010) and older adults living in the community (Cavanagh et al., n.d.). Thus, age alone can lead to diminished confidence in abilities to perform activities of daily living, to stay balanced and to cope with stressful situations.

Comorbidity and Perceived Self-Efficacy

There was a statistically significant negative correlation between the number of comorbid conditions and perceived fall self-efficacy, but there was no significant relationship between the number of comorbidities and general self-efficacy. The finding partially supported hypothesis 1a. The relationship between the number of comorbidities and perceived general self-efficacy was not supported. The finding of the significant relationship between the number of comorbidities and fall self-efficacy indicated that participants who had more comorbidities had a trend toward lower perceived fall self-efficacy. Health problems (e.g., joint disease, low back pain, sensory deficits, and gout as found in the sample of the present study) may reduce physical functioning and lead to decreased confidence to perform activities without loss of balance. The findings of the present study support several previous studies. The results of the previous studies revealed that older adults with angina (Gillespie & Friedman, 2007) and older adults with chronic obstructive pulmonary disease (Hellström et al., 2009) had lower fall self-efficacy. Moreover,

another study found that the number of chronic health conditions was related to lower confidence or higher levels of fear of falling among older adults (Hill et al., 2010).

The number of comorbid conditions was not associated with perceived general self-efficacy, which contradicts previous research. A previous study by Fiori and colleagues found a negative and significant correlation between health problems (standardized summation of the number of illnesses and the self-rated health measure) and general self-efficacy (Fiori et al., 2006). Reasons for the different results may be a result of the differences in mental health of participants in each study. The mean depressive symptom score ($\bar{x}$ = 10.05, *SD* = 9.14) of participants in the previous study was higher than the mean depression score ($\bar{x}$ = 7.54, *SD* = 6.06) of the participants in this present study. The higher depressive symptom scores may be a result of their health problems and may affect their general self-efficacy scores. Moreover, although 188 (94.0%) of the participants in the current study had at least one health problem/chronic disease, over half (57.5%, *n* = 108) of them reported that the problem/chronic disease did not affect their activities of daily living. Most of the participants (76.50%, *n* = 153) also reported that they had good, very good, and excellent health. However, the relationship between the number of comorbidities and general self-efficacy is inconsistent with the extant literature. Therefore, future research will need to better detail the number and level of impact on life of comorbid conditions and correlate each condition individually to general self-efficacy. The relationship between comorbid conditions and general self-efficacy may be disease specific or it may be heavily influenced by the mental health impact from the comorbid conditions.

Number of falls and Perceived Self-Efficacy

Number of falls had a statistically significant negative relationship with perceived fall self-efficacy. Hypothesis 1a that the number of falls would be negatively correlated with

perceived fall self-efficacy was supported. This finding indicated that participants with greater number of falls were less confident in their ability to conduct activities without losing their balance. The outcome of this study was congruent with numerous previous studies that found a negative relationship between the number of falls and perceived fall self-efficacy among older adults in nursing homes (Chou et al., 2005). Another study found similar results; older patients who were experienced in falls and were post hip fracture had a significantly lower ABC score and falls self-efficacy score than the patients with no experience with falls (Whitehead et al., 2003). Similarly, other studies reported that patients with chronic stroke in a fall group had a significantly lower fall self-efficacy score (Belgen et al., 2006) and a trend toward lower ABC scores than the non-fall group (Pang & Eng, 2008).

The examination also found a negative and statistically significant relationship between number of falls and perceived general self-efficacy. The outcome indicated that participants with greater number of falls were less confident in their ability to handle stressful situations (e.g., lower perceived general self-efficacy). Few studies have evaluated this relationship. The one study that did study these relationships found similar results. Cavanagh and colleagues found a significant correlation between the number of falls (categorized as non-falls, one time, and multiple falls) and perceived general self-efficacy among older adults aged 55 years of age and older living in communities in the United Kingdom (Cavanagh et al., n.d.). Older adults who had no experience in falls reported that they had higher a mean score of general self-efficacy than those who had experienced a fall or more multiple falls (Cavanagh et al., n.d.). Given the limited number of researchers who have explored general self-efficacy concepts, more research is needed to determine if this relationship holds in more populations of older adults.

Mental Health Status and Perceived Self-Efficacy

Mental health status for this study was measured in three ways: level of depression, fear of falling (yes/no), and global mental health using the MCS of the SF-12. Depression (using the Thai Geriatric Depression Scale) was negatively and significantly related to both measures of perceived self-efficacy, but fear of falling was only related to perceived fall self-efficacy. Global mental health however was not significantly related to either measure of perceived self-efficacy. The linkages to the existing literature are discussed below.

Depression. Depression levels had negative and statistically significant relationships with perceived fall self-efficacy and perceived general self-efficacy. The finding supported hypothesis 1a that depression would be negatively correlated with perceived fall self-efficacy and perceived general self-efficacy. This finding implied that the higher the depression level of participants the lower the perceived fall self-efficacy (confidence in not losing balance with daily activities) and the lower the perceived general self-efficacy (confidence to handle stressful situations). The findings of the present study were congruent with the results of previous studies investigating the relationship between depression and perceived fall self-efficacy (Bishop et al., 2010; Chou et al., 2005; Gillespie & Friedman, 2007). The significant relationship between depression and perceived general self-efficacy of this study was also consistent with a previous study that found that perceived general self-efficacy had a negative correlation with depression symptoms among older adults aged 60 years of age and older (Fiori et al., 2006). Moreover, the present finding was supported by a study conducted in five countries (Costa Rica, Germany, Poland, Turkey, and the USA) that found high correlations between general self-efficacy and depression (Luszczynska et al., 2005). The findings are intuitive; if an individual is depressed, they likely have a lower ability to handle stressful situations.

Fear of falling. Fear of falling had a statistically significant negative relationship with perceived fall self-efficacy, but there was no statistically significant relationship with perceived general self-efficacy. Hypothesis 1a that fear of falling would be negatively correlated with perceived self-efficacy was only partially supported because the relationship between fear of falling and perceived general self-efficacy was not supported. The expected finding indicated that participants who had no fear of falling had higher perceived fall self-efficacy (high confidence that they could maintain their balance). Generally, if people have confidence to keep their balance during performance of activities, they possibly have no fear of falling. The present results were consistent with prior studies that found a significant negative correlation between fear of falling and perceived fall self-efficacy among older adults living in nursing homes (Chou et al., 2005) and long-term care (Gillespie & Friedman, 2007). Moreover, another study reported that a lower fear of falling were significantly associated with higher fall self-efficacy among community-dwelling older adults (Li et al., 2002). Similarly, patients with chronic obstructive pulmonary disease who had a fear of falling had a significantly lower mean total score of fall self-efficacy than the patients who had no fear of falling (Hellström et al., 2009).

The relationship between fear of falling and general self-efficacy was not statistically significant although the relationship was in the correct direction. The lack of the significant association of this study was contrary to the study by Kempen and colleagues (2009); these authors investigated the relationship between very high levels of fear of falling and several variables including general self-efficacy among older adults aged 70 years and older who reported at least a mild fear of falling and at least mild avoidance of activities because of fear of falling (Kempen et al., 2009). Their results showed that a very high fear of falling was significantly associated with lower general self-efficacy (Kempen et al., 2009). The differences

between Kempen's study and the present study may come from the inclusion criteria of the current study that did not assess multiple levels of fear of falling. In the present study, although 84.0% (*n* = 168; see Table 3) of participants reported they had fear of falling, over a half (57.7%, *n* = 97) of them had no experience with falls. Thus, a categorical measure of fear of falling (yes versus no) essentially merged all of the "yes" answers into one. The merger of those who had a fear of falling into a single dichotomous variable likely limited the ability to find a variation between the "severe" fear of fallers and those with a "mild" fear of falling. Moreover, only 28% (*n* = 47) of participants with fear of falling had a fall-related injury; most of the injuries were minor such as a sprain, hand/leg pain, and wound. Another reason may be a result of the participants' health perception. Most of the participants (76.50%, *n* = 153) of the present study reported their health as good to excellent, whereas approximately 69% (*n* = 375) of participants of the previous study described their health as fair to poor. Therefore, participants in the present study may had lower degrees of fear of falling than the participants in the previous; the lower level of fear of falling may have had little effect on general self-efficacy resulting in the effect of not reaching statistical significance.

Global mental health. The relationship between global mental health and perceived fall self-efficacy was negative and not statistically significant. The findings of this study did not support hypothesis 1c that global mental health would be related to perceived fall self-efficacy. The negative direction may be related to each scale's measurement outcomes that are based on different domains of interest. For example, the global mental health scale measures feelings and achievement of performing daily task based on emotions that are not related to physical health, whereas fall self-efficacy measures belief in the ability to maintain balance based on purely physical health domain. Therefore, participants who have lower scores on the global mental

health scale and limited impact on the achievement of daily tasks due to emotions may not have had any or limited impact on fall self-efficacy. It was likely that the participants were not burdened by emotional issues and see themselves as healthy. The finding was unexpected but partly similar to previous studies that found an inconsistent and unexpected relationship between self-efficacy (measured by two different scales) and the mental component summary (MCS) of SF-12 among patients with spinal cord injury (SCI). The results of the previous study found that patients' beliefs in their competence to complete a range of daily activities despite presenting pain (measured by the Pain Self-Efficacy Questionnaire, PSEQ) was positively and significantly related to MCS of SF-12 (Perry, Nicholas, Middleton, & Siddall, 2009). On the other hand, the previous study revealed the relationship between patients' confidence in their competence to complete daily tasks despite having a SCI (measured by the Moorong Self-Efficacy Scale, MSES) and MCS that was not statistically significant (Perry et al., 2009). The PSEQ focused confidence to complete activities during appearance of pain may affect emotion of performance to achieve daily task (measured by MCS), whereas the MSES emphasized confidence to perform functional activities that may be less related to feeling or emotion of performing activities (measured by MCS). Therefore, a difference in the conceptualization of fall self-efficacy in each study may be a reason for the inconsistency in findings. The finding of the present study were similar to Kato and colleagues' study that found that the MCS was not statistically related to fall self-efficacy; however, the correlated direction of the present study was in the opposite direction of the previous study (Kato et al., 2008). The relationship between global mental health and fall self-efficacy remains inconsistent; therefore, more investigation of the relationship between the two concepts using similar measures is advised (Activities-specific Balance Confidence scale and MCS). The most likely conclusion for the inconsistent findings is the varied measurement

tools for the concepts. It may be that the best measure of fall self-efficacy has yet to be determined.

A positive, non-statistically significant relationship was found between global mental health and perceived general self-efficacy. The finding of this study did not support hypothesis 1c that global mental health would be related to perceived general self-efficacy. The present finding was congruent with the results of a prior study investigating the correlation between MCS (as global mental health) and general self-efficacy among older adults, 12 months after discharged from several hospitals, who were enrolled in a rehabilitation intervention (Chan, 2008). The prior study reported that MCS was positively related to general self-efficacy, but it did not reach statistical significance. In contrast, the finding of the present study was inconsistent with the finding of Brink and colleagues' study (2012). The previous study revealed a positively strong relationship between the mental component score (MCS) of the SF-36 and general self-efficacy among patients with myocardial infarction (MI; Brink, Alsen, Herlitz, Kjellgren, & Cliffordson, 2012). Most participants in the present study reported that they were in good to excellent health and did not report having any severe diseases, whereas the participants of the prior study were patients with MI admitted to the coronary care unit. The different participants' health status may affect global mental health and the relationship to general self-efficacy. The inconsistent relationship between global mental health and general self-efficacy needs more research to confirm the relationship. In addition, the relationship may be moderated by the level of disease severity of the participants in the study. A moderated regression model or a structural equation modeling process may help to elucidate the relationships.

Gender and Perceived Self-Efficacy

A statistically significant relationship between gender and perceived fall self-efficacy was found, that supported hypothesis 1b. The finding indicated that male participants had higher perceived fall self-efficacy scores. The finding was congruent with the results of a prior study investigating the relationship between gender and balance self-efficacy among patients with stroke in hospitals and rehabilitation centers. The prior study using the Activities-specific Balance Confidence (ABC) scale to measure balance self-efficacy reported significantly greater balance self-efficacy among male patients as compared to female patients (Salbach et al., 2006). In the present study, although a mean age of men ($\overline{X}$ = 71.43, *SD* = 7.05) was higher than women ($\overline{X}$ = 69.74, *SD* = 6.09), men reported higher fall self-efficacy than women. Based on a literature review, falls and fear of falling were found to be significantly associated with fall self-efficacy (Chou et al., 2005). The significant positive relationship between male gender and fall self-efficacy in this study may be the result of the fact that fewer men fell (24.4%, *n* = 20) and fewer men had a fear of falling (26.8%, *n* = 45) which was significantly lower than the female participants (falls 75.6%, *n* = 62; fear of falling 73.2%, *n* = 123).

There was no statistically significant relationship between gender and perceived general self-efficacy. Hypothesis 1b that gender would be related to perceived general self-efficacy was not supported. The results showed that male gender was mildly related to general self-efficacy but not statistically significant. This relationship implied that general self-efficacy scores were slightly higher for male participants. Even though the finding of this study was not statistically significant, the finding was similar to a previous study conducted among patients undergoing hemodialysis (Bağ & Mollaoğlu, 2010). The previous study found significant gender differences with the general self-efficacy being higher scores in males (Bağ & Mollaoğlu, 2010). The

participants recruited into the previous study, however, were almost equally distributed between males (44.8%, n = 56) and females (55.2%, n = 69), whereas the participants of the present study were unevenly distributed, 63 (31.5%) males and 137 (68.5%) females. Therefore, the lower number of males compared to females in this study may have resulted in a statistically nonsignificant finding.

Physical Health Status and Perceived Self-Efficacy

Physical health status for this study was composed of functional ambulation and global physical health. Functional ambulation and global physical health had positive and significant relationships with perceived fall self-efficacy and perceived general self-efficacy. A discussion of the relationships and the links to the extant literature are discussed below.

Functional ambulation. Functional ambulation had a statistically significant positive correlation with perceived fall self-efficacy. The result supported hypothesis 1c that functional ambulation would be related to perceived fall self-efficacy. People who had better functional ambulation (faster walking speeds) likely have greater confidence in their ability to perform activities without loss of their balance (higher perceived fall self-efficacy). The finding of the current study were supported by several previous studies that reported that faster Timed Up and Go testing (Pang & Eng, 2008; Stretton et al., 2006), faster gait speeds and a 6 minute walk test (Gillespie & Friedman, 2007; Pang & Eng, 2008; Stretton et al., 2006), and faster stair climbing scores (Pang & Eng, 2008) were significantly associated with higher fall self-efficacy scores. Similarly, other prior studies reported that higher fall self-efficacy scores were significantly related to the Berg Balance Scale (Bishop et al., 2010; Gillespie & Friedman, 2007; Pang & Eng, 2008; Stretton et al., 2006).

Functional ambulation had a statistically significant positive correlation with perceived general self-efficacy. Hypothesis 1c, that functional ambulation would be related to perceived general self-efficacy, was supported from the results. Older adults who had better functional ambulation (faster walking speeds) likely have higher confidence to perform difficult tasks (perceived general self-efficacy scores). The finding was congruent with a prior study that reported that functional health using the Dartmouth Primary Care Cooperative Information Project/World Organization of National Colleges, Academies, and Academic Associations of General Practice/Family Physicians (COOP/WONCA) charts including six areas of functional status (overall health, daily activity, social activities, physical activities, pain, change in health, and feelings) was statistically related to general self-efficacy among community-dwelling old adults aged 55 years of age and older (Cavanagh et al., n.d.).

Global physical health. Global physical health had a positive significant relationship to perceived fall self-efficacy. The finding supported hypothesis 1c that global physical health would be related to perceived fall self-efficacy. People who had confidence in their ability to perform activities without loss of their balance (perceive fall self-efficacy) possibly had better functional physical health which may have been reflected in their higher global physical health scores. An earlier study reported similar findings; perceived fall self-efficacy was related to physical functioning measured by the SF-36 physical component summary among frail older adults (Stretton et al., 2006). In addition, another study found similar findings, which revealed that higher fall self-efficacy scores were significantly related to the level of activity and self-related health among older adults in nursing homes (Chou et al., 2005).

Global physical health had a statistically significant positive relationship with perceived general self-efficacy. The results had agreement with hypothesis 1c that stated that global

physical health would be related to perceived general self-efficacy. A person's perception of their ability to do difficult work or cope with stressful situations (general self-efficacy) may result from their perception that they have better physical health (global physical health). Therefore, people who had high global physical health were more likely to have increased perceived general self-efficacy. The finding was consistent with a previous study that found a positive correlation between physical component summary of SF-12 (PCS; as global physical health) and general self-efficacy among older adults discharged from hospitals (Chan, 2008) and older adults aged 55 and older living in communities (Cavanagh et al., n.d.). However, the correlation does not explain the directional path of the relationship. It may be that physical health increases general self-efficacy but the reverse could also be possible. Path analysis or structural equation modeling could clarify the exact direction of these relationships.

Prediction of Perceived Self-Efficacy using Basic Conditioning Factors

Prediction of perceived self-efficacy using the basic conditioning factors (BCFs), mostly demographic and physical health factors, was assessed with specific aim 2. Hypothesis 2a assessed whether the variables of age, gender, number of falls, number of comorbidities, depression, fear of falling, global mental health, functional ambulation, and global physical health could predict perceived fall self-efficacy and perceived general self-efficacy, in two separate analyses. Two regression analyses found that a higher number of falls, more comorbid conditions, higher depression scores and global mental health scores, and more limited functional ambulation predicted a lower fall self-efficacy and explained approximately 43% of the variance. Moreover, another model of BCFs predicting perceived general self-efficacy found that older age, an increased number of falls, and higher depression scores predicted a lower general self-efficacy and explained 29% of the variance in perceived general self-efficacy. Based on the two

models, a higher number of falls and higher depression scores were consistent predictors of perceived self-efficacy, both fall-specific and general.

Basic conditioning factors (BCFs; e.g., age, gender, health state, etc.) referred to as internal and external factors of individuals affect self-care agency (as self-efficacy), referred to as an individuals' ability to engage in performance for self-care (e.g., fall prevention behaviors; Orem, 2001). Therefore, the prediction of age, number of falls, comorbid conditions, depression, global mental health, and functional ambulation as BCFs on self-efficacy as self-care agency supported Orem's self-care theory. A previous study provided outcomes to support the finding of the present study. In the prior study, the lower age, higher depression, and lower Dynamic Gait Index (DGI) scores predicted lower fall-related efficacy (individual's confidence in performing activities without falling) before older adults were engaged in an intervention. The best model of the prediction found that age, depression, and DGI were statistically significant predictors of fall-related efficacy, and approximately 53% of a total variance in fall-related efficacy was explained by these predictors (Bishop et al., 2010). The predictors found in the prior study were similar to the predictors revealed in the current study except age was in the expected direction in the present study. The PI conducted an additional multiple regression analysis to determine if age, depression, and walking speed predict fall self-efficacy in the current study, the analysis found that approximately 36% of variance in fall self-efficacy was explained by these predictors, which was lower than in the earlier study (53%). Therefore, the predictors of the current study may be good predictors of fall self-efficacy, but the two samples may be varied enough that the current sample (possibly healthier and with fewer falls) require additional variables to explain fall self-efficacy scores. Future research will need to control for level of health status and the number of

comorbidities when attempting to predict fall self-efficacy. It may be that the best ways to improve fall self-efficacy may vary by the health status of the sample of older adults.

Correlation between Perceived Self-Efficacy and Fall Prevention Behaviors

Correlation between perceived fall self-efficacy and perceived general self-efficacy and fall prevention behaviors was assessed in specific aim 3. The analysis found a statistically significant negative relationship between perceived fall self-efficacy and fall prevention behaviors. Hypothesis 3a that perceived fall self-efficacy would be positively related to fall prevention behaviors was not supported from the data. The results demonstrate that participants who had lower fall self-efficacy scores (low confidence to perform activities without loss in balance) were more likely to have a higher fall prevention behavior score. The finding was in contrast to previous studies that reported a positive correlation between perceived self-efficacy in fall prevention and fall prevention behaviors (Kumsri, 2006; Ounlamai, 2010). In the previous studies, the scales used to measure fall prevention behaviors and self-efficacy in fall prevention were developed by the authors and conceptualized using the Health Belief Model. The theoretical constructs and/or the lack of validated measurements may explain the differences in the findings between the two studies. Moreover, the fall prevention behaviors scales measured specific fall prevention behaviors consisting of behaviors of fall prevention and health promotion (e.g., exercise, physical exam, and nutrition) and the self-efficacy in fall prevention scale evaluated how much ability and confidence older adults possess to perform those behaviors. These two scales may have been conceptually very similar.

The unexpected finding may be due to the differences in the conceptual basis for each measure. The measure for perceived fall self-efficacy in the current study focused on how much confidence older adults had with keeping their balance during performing specific activities that

were not specific to confidence for performing fall prevention behaviors. Moreover, the measure of fall prevention behaviors emphasized how often older adults performed specific fall prevention behaviors (e.g., observing stains/spillage on the floor) during the performance of basic tasks of daily living. It is possible that participants who had low confidence in performing several activities without loss in balance may possibly already be avoiding performing hazardous activities (e.g., turn around quickly, doing thing quickly, and standing on a chair) in daily lifestyle; therefore, a negative correlation between these two sets of activities appears to be logical. On the other hand, participants who had a high degree of the confidence in their balance may be less careful and not avoid performing those activities and be unconcerned with engaging in fall prevention behaviors during the performance of daily activities even if the activities are dangerous. These reasons are congruent with Orem's statement that, "When persons are well, self-care is not a major concern" (Orem, 2001, p. 266). The negative relationship was very low so it remains unclear if the lack of consistency within the empirical literature is a problem with conceptual measurement or another issue. Based on capabilities and dispositions foundational for self-care agency in Orem's theory (Orem, 2001), other dispositions may have been a more appropriate measure of self-care agency in a sample of older adults who describe themselves has having good or excellent health. Dispositions affecting "goals sought" such as self-awareness and self-concern that affect persons' performance in certain self-care behaviors may be more important than self-efficacy for engagement in self-care behaviors to prevent falls. Well older adults in the community may need to learn to be self aware and be provided with anticipatory guidance about potential falls which requires a different set of capabilities and dispositions according to Orem.

The correlation between perceived general self-efficacy and fall prevention behaviors was positively correlated; however, the relationship did not reach statistical significance. The finding did not support hypothesis 3a that perceived general self-efficacy would be positively related to fall prevention behaviors. The present finding implied that an increase in perceived general self-efficacy would be related to a higher level of fall prevention behaviors among the participants. In a prior study, a positive significant relationship between general self-efficacy and health promotion behaviors, including physical activity and nutrition behaviors, among adolescents was found (Luszczynska, Gibbons, Piko, & Tekozel, 2004). The rationale for the findings of the present study may be related to the FaB scale conceptualized from the sorts of behaviors and actions that older adults perform in their day-to-day life (Clemson et al., 2003). The concept of the FaB scale closely matches Orem's self-care concept mentioned previously that self-care is persons' operation of activities to maintain life, health, and well-being (Orem, 2001). The FaB scale measures simple behaviors to reduce risk factors of falls or prevent falls in daily lifestyle. Participants may not need to employ their self-care agency effort to engage in these behaviors for preventing falls because the behaviors were not complex and easy to do (e.g., doing things at a slower pace, using a walking stick, cleaning spectacles, etc.) even though they may have low general self-efficacy. Another reason for the low relationship and non statistically significant findings may be from different conceptual scales measuring general self-efficacy and fall prevention behaviors. The general self-efficacy scale is used to assess general sense of individual belief in his/her ability to perform difficult task or cope with stressful situation (Luszcynsk et al., 2005), whereas the FaB scale measures fall prevention behaviors during performance of basic tasks in day-to-day living as mentioned above. Bandura (1977) has recommended that the best measures of self-efficacy are task-specific. It may be that the balance

specific measure of self-efficacy could only apply to the balance specific items on the FaB. The correlation analysis between only 17 items related to balance of the FaB scale and the ABC scores found negatively significant relationship (r = -0.372, $p < 0.01$); the correlation is higher and stronger than the previous correlation (r = -0.159, $p < 0.05$) that was analyzed between the entire FaB and the ABC scores. Therefore, future research may need to measure specific fall self-efficacy as opposed to a measure limited to confidence in balance. Fall prevention behaviors measured and conceptualized here were very broad based activities.

Prediction of Fall Prevention Behaviors using Perceived Self-Efficacy

Based on specific aim 4, hypothesis 4a evaluated the statement that perceived fall self-efficacy and perceived general self-efficacy can predict fall prevention behaviors, controlling for BCFs (age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health). The examination without controlling for BCFs revealed that both perceived self-efficacy measures were significant predictors of fall prevention behaviors, but explained a very small variance in fall prevention behaviors (5%). When BCFs were controlled, the explained variance of fall prevention behaviors increased significantly, but both perceived self-efficacies fell out of the model and neither measure remained as a statistically significant predictor of fall prevention behaviors. This finding did not support hypothesis 4a. Based on Orem's self-care theory, BCFs affect self-care agency and self-care agency influences self-care behaviors (Orem, 2001). When controlling for BCFs, both perceived self-efficacies did not independently predict fall prevention behaviors because the prediction of perceived self-efficacy (as self-care agency) on fall prevention behaviors (self-care) were likely influenced by the BCFs. Therefore, this outcome seems to support Orem's self-care theory as mentioned above. The present outcome was not congruent with previous studies,

however, that found that perceived self-efficacy in fall prevention was a significant predictor for fall prevention behaviors among older adults (Kumsri, 2006). The reason for the inconsistency in the results from the present study and the previous study may be an effect of scales measuring perceived self-efficacy and fall prevention behaviors that were different in each study. In addition, the previous study employed the Health Belief Model to guide the investigation for predictions of perceived susceptibility, perceived severity, perceived benefit, perceived barriers, and perceived self-efficacy on fall prevention behaviors. The perceived self-efficacy scale was developed from Bandura's self-efficacy theory by the author and focused on older adults' perception in their ability and confidence to perform specific fall prevention behaviors. Moreover, the predictive model of the prior study did not include BCFs; the model included perceived susceptibility, perceived severity, perceived benefit, perceived barriers, and perceived self-efficacy. The different variables of both models may have affected the results. As noted above, it may be that the balance specific measure of self-efficacy only impacts the balance specific items on the FaB. There were no studies using general self-efficacy in a model to predict fall prevention behaviors so comparisons could not be made. Due to the inconsistency in outcomes and lack of a predictive model of general self-efficacy and fall prevention behaviors, future researchers will need to replicate this study to investigate the predictions.

Predictions of Fall Prevention Behaviors using Basic Conditioning Factors and Perceived Self-Efficacy

Predictions of fall prevention behaviors using BCFs (age, gender, number of falls, comorbidity, depression, fear of falling, global mental health, functional ambulation, and global physical health) and perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy) as independent variables was assessed with specific aim 5. The findings partially

supported hypothesis 5a and 5b that age, gender, number of falls, comorbidities, depression, fear of falling, global mental health, functional ambulation, global physical health, perceived fall self-efficacy, and perceived general self-efficacy would predict fall prevention behaviors, respectively. In a backward multiple regression analysis, the examination of hypothesis 5a and 5b found the similar outcomes. Approximately 30% of the total variation in fall prevention behaviors was explained by the basic conditioning factors of older age, female gender, more comorbid conditions, lower depression scores and functional ambulation, fear of falling, and higher global mental and physical health. All predictors were statistically significant to predict fall prevention behaviors except age which was not statistically significant.

The finding was inconsistent with a previous study investigating predictors of health-related lifestyle relating a habitual pattern of health promoting behaviors (Peralta-Catipon & Hwang, 2011). The previous study found that higher self-related health (overall health status), less number of illness and impairments, and male gender were statistically significant predictors of exercise and explained approximately 21.3% of a total variance in exercise (Peralta-Catipon & Hwang, 2011). Moreover, the previous study also revealed that lower number of illnesses and impairments and higher self-related health were statistically significant predictors of diet and approximately 25.4% of a total variance in diet explained by these factors (Peralta-Catipon & Hwang, 2011). The previous study used the Health Enhancement Lifestyle Profile (HELP) including 7 domains: 1) exercise, 2) diet, 3) productive and social activities, 4) leisure, 5) activities of daily living, 6) stress management and spiritual participation, and 7) other health promotion and risk behaviors to assess health-related lifestyle, which measured engagement in health-related activities (Peralta-Catipon & Hwang, 2011). The contrary outcomes of the present study and the prior study may be due to the effect of the different scales measuring behaviors.

The HELP focuses on health promoting behaviors, whereas the Falls Behavioural (FaB) Scale for the Older Person emphasized fall prevention behaviors. Fall prevention behaviors may be assessing risk avoidance in falls. Although risk avoidance is a component of Orem's self-care behaviors, it may be that different BCFs predict risk avoidance self-care as opposed to health promotion self-care. No studies using fall self-efficacy and general self-efficacy in a predictive model have been conducted in Thailand; therefore, the predictions of fall prevention behaviors using basic conditioning factors as well as general self-efficacy and fall self-efficacy need more exploration.

Limitations

No study is without limitations and this study is no exception. The limitations that require some discussion include the type of design, the statistical analysis choice, location of data collection and sampling strategy. This study used a cross-sectional design that captured participants' data at a single period of time. Therefore, the finding cannot provide adequate causations of the relationships between variables.

Based on the findings, the effects of the BCFs on perceived self-efficacy and fall prevention behaviors supported the Orem's self-care theory. The multiple regression analyses, however, were not able to provide information about how the variables may or may not be intercorrelated with one another, and only one regression model can be assessed at a time. Future research will need to employ more predictive modeling with cross sectional data such as structural equation modeling so the specific predictors and their intercorrelations can be determined. Structural equation modeling provides advantages such as it allows the researcher to use several indicators variables in a construct simultaneously and test a complex model of relationships and many hypotheses simultaneously (Werner & Schermelleh-Engel, 2009).

Data collection was performed in the different localities based on participants' convenience and participants' home. When participants performed the walking speed test, the researcher could not provide a similar area or surface for every participant. Therefore, they had to walk on different surfaces such as concrete, soil, and gravel. Walking on the different surfaces may have affected the walking speed of each person. The researcher however selected the smoothest surface available for the test to diminish the effect.

The sampling strategy for selecting participants into this study was a convenience sampling plan. This type of strategy has limitations with generalizability to the entire older adult population. Moreover, the participants were recruited from five sub-districts in the Saraburi province of Thailand; therefore, the findings are limited in generalizability to other similar communities in Thailand.

Recommendations and Implications

Nursing Practice and the Use of Orem's Self-Care Theory

The findings provided foundational knowledge of the relationship and predictions among demographic and personal factors as basic conditioning factors (BCFs), perceived self-efficacy, and fall prevention behaviors as self-care. Nurses and healthcare providers can use these findings as a beginning database and apply the data to planning fall prevention programs and increasing self-efficacy programs for older adults.

Education and practice of fall prevention behaviors are a significant method to reduce risk factors and incidence of falls in older population. Perceived self-efficacy as a self-care agency referring to the ability and limitation of people to engage in self-care behaviors (e.g., fall prevention behaviors) is an important factor in a person's competence to perform behaviors or activities to achieve fall prevention. However, the finding revealed that older adults who had

higher perceived fall self-efficacy possibly did not engage in behaviors to prevent falls. Therefore, the healthcare professionals may need to be more concerned with how to increase the awareness and provide anticipatory guidance to older adults who see themselves as in good health. Fall prevention programs should be developed for those older adults to enhance awareness and concern for preventing falls instead of waiting until the older adult has had multiple falls or multiple risk factors for falls.

Programs for fall prevention need to be targeted to selected patients. A one size fits all fall prevention program may not be efficacious. Perceived self-efficacy (fall self-efficacy and general self-efficacy) was likely low among older adults who had the following characteristics, higher age, had many falls, a high number of comorbid conditions and depression level, worse functional ambulation, and better global mental health. Adults who are older but have better levels of health should be encouraged to sustain any improvements in their perceived self-efficacy and health. These individuals may benefit from broad based consumer announcements about the risk of falls and health maintenance. Whereas, for older adults who have experiences with falls, a decrease in functional ambulation, and health problems/disease, nurses and healthcare providers may help them to improve physical health by developing health promoting programs such as exercise and self-management for controlling health problems/chronic disease. These selected patients may be better helped with ambulation and disease management. Moreover, healthcare professional should develop mental health programs or counseling clinics to support older adults who have depression. Programs provided by healthcare professionals that seek to improve older adults' physical and mental health may increase their perceived self-efficacy and ultimately decrease the risk of falls.

Fall prevention behaviors can be predicted by female gender, number of comorbidities, and physical and mental health. Fall prevention behaviors were most likely to be lower among older adults who had the following characteristics; male gender, low number of comorbid conditions, higher depression, no fear of falling, worse global mental and physical health, and better functional ambulation. Nurses should encourage older adults who are male with no fear of falling, better functional ambulation and a low number of comorbid conditions to still engage in fall prevention behaviors and increase their awareness to prevent falls. For older adults who have mental health problems, nurses can develop mental health programs or counseling clinics to reduce these problems.

Nurses may utilize the instruments including the Self-Administered Comorbidity Questionnaire (SCQ), the Thai Geriatric Depression Scale (TGDS), the General Self-Efficacy Scale (GSE), or the Activities-specific Balance Confidence (ABC) Scale and a mobility measure such as the walking speed test to screen older adults to identify those that have physical and mental health problems and low self-efficacy during nursing clinical practice. The screening results will provide primary data and help nurses to enroll older adults into a specific program that fits their specific need.

Nursing Research

This study provided knowledge of the relationship between basic conditioning factors, perceived self-efficacy, and fall prevention behaviors, as well as, the predictors of perceived self-efficacy and fall prevention behaviors. To expand the knowledge of fall prevention behaviors in the nursing discipline, further research needs to be conducted. For example, this study should be duplicated in other areas of Saraburi province, Thailand, to increase generalization. The same study variables should also be investigated in different target populations such as older adults in

elderly homes, older patients in the hospital, and older adults with selected health conditions to provide additional knowledge across different older adult groups with various disease levels. Although, other physical factors such as gait, balance, and muscle weakness were found to be significant physical factors contributing to falls among older adults, they were not investigated in the present study for predicting fall self-efficacy. The explained variances of fall self-efficacy using BCFs that were less than 50% (approximately 43%) may be because the prediction model of the present study did not include significant physical factors (e.g., gait, balance, and muscle weakness). Therefore, future research should also investigate how gait and balance and muscle weakness can predict fall self-efficacy. Moreover, other self-care agency capabilities and dispositions such as self-awareness and self-concern may be important to engage behaviors to prevent falls. Future research should investigate their relationship with fall prevention behaviors.

As mention above, the multiple regression analyses were not able to provide information about how the variables are intercorrelated with one another and only allowed the PI to test a single regression model. To expand our understanding of the relationships, further study is necessary to determine the mediating and moderating role of perceived self-efficacy and its function in the correlation between basic conditioning factors and fall prevention behaviors among older populations living in Thai communities. Although the study examined the relationships and predictors of those variables, it cannot confirm causations among the variables. A structural equation modeling process should be examined because this method investigates pattern of causal relationships among variables.

Conclusion

This study investigated the correlation among BCFs, perceived self-efficacy (perceived fall self-efficacy and perceived general self-efficacy as self-care agency), and fall prevention

behaviors (self-care) as well as predictors of perceived self-efficacy and fall prevention behaviors. The BCFs including age, depression, number of falls, functional ambulation, and global physical health were significantly associated with both perceived fall and general self-efficacy, while number of comorbidity, male gender, and fear of falling were significantly related to perceived fall self-efficacy. Number of falls, comorbidity, depression, global mental health, and functional ambulation were significant predictors of perceived fall self-efficacy, whereas age, number of falls, and depression were predictors of perceived general self-efficacy. Small variance of fall prevention can be predicted by perceived fall self-efficacy and general self-efficacy before controlling for BCFs; however, neither perceived self-efficacies remained as predictors of fall prevention behaviors when BCFs were controlled. The BCFs including gender, comorbidity, depression, fear of falling, functional ambulation, global physical health, and global mental health were significant predictors of fall prevention behaviors. While the study was able to clarify the basic conditioning factors that predict fall prevention behaviors, future research using Orem's self-care theory can help explain the most important self-care agency predictors of fall prevention behaviors. The research can add to nursing science and help the nursing profession perfect the best nursing actions to enhance fall prevention behaviors in Thai older adults.

APPENDIX A: ENGLISH VERSION AND THAI VERSION OF INSTRUMENTS AND MEASUREMENT

ID No…….

THAI MENTAL STATE EXAM (TMSE)

Introduction: The following are questions to test your thought and recognition. Do not worry about the answer. Please answer the following questions.

1. Orientation (6 scores)

Total scores	Questions	Answers	scores
1	What is the day of week? (e.g. Monday, Tuesday, Wednesday)		
1	What is the date?		
1	What is the month?		
1	What time is it? (e.g. morning, noon, afternoon, evening)		
1	Where are we? (the location that the participant and the interviewer are)		
1	What occupation of the person in the picture is?		

2. Registration (3 scores)

Total scores	Questions	Answers	scores
3	The interviewer names the three objects slowly, one second for each. (tree, car, hand). Then, the interviewer asks the participant to repeat. Score by the number the participant is able to recall. **Note:** After the interview scored, the interviewer tells the participant repeat the three objects until he/she remembers and also tells he/she that this question will be asked again.		

3. Attention (5 scores)

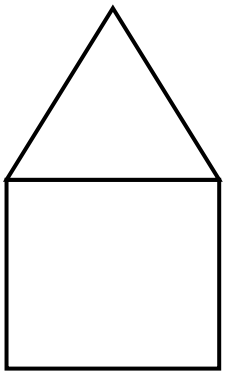
Total scores	Questions	Answers	scores
	Name backwards by days of a week. (can repeat once)		
1	Friday		
1	Thursday		
1	Wednesday		
1	Tuesday		
1	Monday		

4. Calculations (3 scores)

Total scores	Questions	Answers	scores
	Calculate backwards by 7s. Start with 100-7. Stop after 3 calculations. (given 1 score each correct answer. One second requires for each calculation) If the participant cannot answer the first calculation, the second calculation will be next calculation. 93-7 is the next calculation and 86-7 is the final calculation.		
1	100-7		
1	-7		
1	-7		

5. Language (10 scores)

Total scores	Questions	Answers	scores
1	The interviewer points at watch and asks the participant names the objet. Score one point for this correct answer.		
1	The interviewer points at cloth and asks the participant names the objet. Score one point for this correct answer.		
1	Repeat the statement of the interviewer say "grandpa takes grandchild to buy dessert at a market"		
1	Follow a 3-stage command: Take the paper in your right hand		
1	Fold it in half		
1	Give the paper to the interviewer		
1	Reading: Read and obey the following: Close your eyes.		
2	Copying: Copy this design.		
1	Banana and orange are similarity as fruit Cat and dog are similarity as ……. (animal)		



“Close your eye”

6. Recall (3 scores)

Total scores	Questions	Answers	scores
	Remember and repeat the three objects used in the question 2: (tree, car, hand)		
1	Tree		
1	Car		
1	Hand		

Train the Brain Forum Committee (1993)

ID No…….

Demographic Questionnaires

Introduction: Interviewers truly mark (√) in parenthesis ( ) in the front of the answer and fill out blank spaces of each question.

1. Gender

( ) Male ( ) Female

2. Age……..years

3. What is your religion?

( ) Buddhism ( ) Christian

( ) Muslims ( ) Other: indicate…….

4. Your marital status

( ) Couple ( ) Divorce

( ) Single ( ) Separate

( ) Widow

5. What is level of education you have completed?

( ) No education

( ) Did not finish primary school

( ) Primary education No…… Yes……. level……

( ) Lower secondary education: level…….

( ) Upper secondary education: level……..

( ) Vocational and technical education: level……

( ) Tertiary vocational education: level…….

( ) Diploma: level…….

( ) Bachelor's degree: level…….

( ) Other: indicate……

6. Can you read? ( ) Yes ( ) No

Can you write? ( ) yes ( ) No

7. Whose house do you live in?

( ) your own house ( ) Rented house

( ) Offspring/relative ( ) Other: indicate…….

8. What status are you in your family?

( ) Head of family member ( ) Family member/Relative

( ) Immediate family member ( ) Non family member

9. Who else lives with you in the same house? (able to answer more than 1 answer)

( ) Spouse.…….

( ) Offspring: indicate number……..

( ) Son in-law/Daughter in-law: indicate number……..

( ) Grandchild: indicate number.……

( ) Relative: indicate number.….……

( ) Non family member: indicated number…….

( ) living alone

( ) Other: indicate…….

10. What is your current occupation?

( ) No work

( ) Pensioned government official

( ) Trade: indicate…….

( ) Employee: indicate…….

( ) Agricultures: indicate…….

( ) Other: indicate……

11. Your approximate current income……baht/month

12. Where are the sources of your monthly income? (Able to answer more than 1 answer)

( ) Offspring…….baht/month

( ) Spouse...…….baht/month

( ) Relative……..…baht/month

( ) Pension……..…….baht/month

( ) Alimony for older adults…….baht/month

( ) Working: indicate……....income……baht/month

( ) Other: indicate……..baht/month

13. Have you ever fallen in the past 12 months?

( ) No ( ) Yes: How often did you fall? Indicate number of falls…….....time

Where did you fall(s)? ( ) Indoors: indicate……..

( ) Outdoors: indicate……

What health problems did you have after the fall(s)?

( ) No problems

( ) Have problems: indicate…….

14. Are you afraid of falling?

( ) No

( ) Yes

No……..

Sickness or combined disease (Translated Version)
(The Self-Administered Comorbidity Questionnaire)

Direction: Following items are names of disease or easily seen health problem. Please specify your health problem shown in column 1 for each item. If you do not have a problem with any disease, please skip to the next item. If you have any disease, please specify in column 2. For column 3, please specify that you use medicine or medical treatment for that problem or not. For column 4, please indicate that existing symptom or problem effects in doing any activity for you or not. If you have any unspecified sign or health problem, please write it down at a space provided at the bottom of this questionnaire.

1	2		3		4	
Problem (Personal disease)	Do you have this problem or not?		Do you treat this symptom/problem or not?		Does this symptom/ problem affect you in doing activity or not?	
	No (0)	Yes (1)→	No (0)	Yes (1)	No (0)	Yes (1)
Heart disease						
Hypertension						
Lung disease						
Diabetes						
Gastritis/Ulcer/Stomach disease						
Disease of kidney						
Disease of liver						
Anemia or other blood disease						
Cancer						
Depression						
Joint disease						
Backache						
Rheumatoid						
Other health problems: (specify)						

Sangha, O., Stucki, G., Liang, M. H., Fossel, A. H., & Katz, J. N. (2003).

Geriatric Depression Scale

Introduction: Choose the best answer for how you felt over the past week.

Questions	Answer
1. Are you basically satisfied with your life?	yes/no
2. Have you dropped many of you activities and interests?	yes/no
3. Do you feel that your life is empty?	yes/no
4. Do you often get bored?	yes/no
5. Are you hopeful about the future?	yes/no
6. Are you bothered by thoughts you can't get out of your head?	yes/no
7. Are you in good spirits most of the time?	yes/no
8. Are you afraid that something bad is going to happen to you?	yes/no
9. Do you feel happy most of the time?	yes/no
10. Do you often feel helpless?	yes/no
11. Do you often get restless and fidgety?	yes/no
12. Do you prefer to stay at home, rather than going out and doing new things?	yes/no
13. Do you frequently worry about the future?	yes/no
14. Do you feel you have more problems with memory than most?	yes/no
15. Do you think it is wonderful to be alive now?	yes/no
16. Do you often feel downhearted and blue?	yes/no
17. Do you feel pretty worthless the way you are now?	yes/no
18. Do you worry a lot about the past?	yes/no
19. Do you find life very exciting?	yes/no

Questions	Answer
20. Is it hard for you to get started on new projects?	yes/no
21. Do you feel full of energy?	yes/no
22. Do you feel that your situation is hopeless?	yes/no
23. Do you think that most people are better off than you are?	yes/no
24. Do you frequently get upset over little things?	yes/no
25. Do you frequently feel like crying?	yes/no
26. Do you have trouble concentrating?	yes/no
27. Do you enjoy getting up in the morning?	yes/no
28. Do you prefer to avoid social gatherings?	yes/no
29. Is it easy for you to make decisions?	yes/no
30. Is your mind as clear as it used to be?	yes/no

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Humang, V., Adey, M., & Leirer, V. O. (1983).

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.
Thank you for completing this survey!

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ 1	☐ 2	☐ 3
b Climbing several flights of stairs	☐ 1	☐ 2	☐ 3

3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Were limited in the kind of work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Did work or other activities less carefully than usual	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. **These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks…**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Have you felt calm and peaceful?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Did you have a lot of energy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Have you felt downhearted and depressed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

7. **During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?**

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Thank you for completing these questions!

No…….

Confidence's Questionnaire in Balance about Specific Activity Doing (Translated Version)
(The Activities-specific Balance Confidence (ABC) Scale)

Please specify how much self-confidence you have during performing a given activity by selecting confident scale in given numbers precisely.

0	10	20	30	40	50	60	70	80	90	100%
No confidence										Completely confidence

You have how much self-confidence without losing balance or losing stability when you have to:

1. Walk around the house _____%
2. Walk up and down stairs_____%
3. Lean forward and pick up thing from the floor in a storage _____%
4. Reach for a small thing from a shelf in an eye level _____%
5. Stand on toes or stand on tiptoe and pick up something at above head level _____%
6. Stand on a chair to reach for something _____%
7. Sweep floor _____%
8. Walk from a house out to a nearby street _____%
9. Get into or get out a car _____%
10. Walk from a parking lot to a shopping mall or grocery _____%
11. Walk up or down an incline _____%
12. Walk in a crowded shopping mall or an outdoor market while people walk rapidly pass by you _____%
13. Get crashed or bumped from someone else during walking in a shopping mall or a market _____%
14. Walk on the escalator and walk off the escalator while holding a escalator's holder _____%
15. Walk on the escalator and walk off the a escalator while holding stuffs without holding a escalator's holder _____%
16. Walk outside a house on a slippery ground _____%

 *Dept of Health Studies & Gerontology. University of Waterloo. Waterloo, Ontario, Canada N2L 3G1. * As of Sept/12 became School of Public Health & Health Systems. E-mail: amyers@uwaterloo.ca

The General Self-Efficacy Scale (GSE)

Item	Descriptions	Not at all true (1)	Hardly true (2)	Moderately (3)	Exactly true (4)
1.	I can always mange to solve difficult problems if I try hard enough.				
2.	If someone opposes me, I can find the means and ways to get what I want.				
3.	It is easy for me to stick to my aims and accomplish my goals.				
4.	I am confident that I could deal efficiently with unexpected events.				
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6.	I can solve most problems if I invest the necessary effort.				
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.				
8.	When I am confronted with a problem, I can usually find several solutions.				
9.	If I am in trouble, I can usually think of a solution.				
10.	I can usually handle whatever comes my way.				

Jerusalem, M., & Schwarzer, R. (n.d.).

No……..

Fall Behavior Questionnaire in Elderly (Translated Version)
(The falls Behavioural (FaB) for the Older Person)

Fall Behavior Questionnaire in Elderly consists of 30 statements, which describes various activities that you do in your daily life. Please read following statements carefully.

Please make a circle to select how frequency you perform the activity in your daily life for each question.
Example:

Never	Sometimes	Often	Always

If you are not in charged with any activity, please make a circle at "Not apply" (Example: If you do not have a phone).

Do you do the following activities in your daily life, don't you?	**Make a circle around your doing frequency**				
1. When stand up, I wait awhile for balance.	Never	Sometimes	Often	Always	
2. I do each activity slowly.	Never	Sometimes	Often	Always	
3. I talked to somebody, resulting in understanding activity doing that may protect fall.	Never	Sometimes	Often	Always	
4. I will stoop to collect thing if only if I do have stable holder.	Never	Sometimes	Often	Always	Not apply
5. I use a walking stick when I need.	Never	Sometimes	Often	Always	Not apply
6. When I feel sick, I perform daily activities with special cares.	Never	Sometimes	Often	Always	Not apply
7. I do each activity quickly.	Never	Sometimes	Often	Always	
8. I turn around/twist myself quickly.	Never	Sometimes	Often	Always	
Indoor Activities					
9. I use a chair or convenient implements for picking up a thing at a high level.	Never	Sometimes	Often	Always	Not apply
10. I hurry to pick up a phone call.	Never	Sometimes	Often	Always	Not apply
11. I ask for help when I need to change a light bulb.	Never	Sometimes	Often	Always	
12. I ask for help when I need to pick up thing at a very high level.	Never	Sometimes	Often	Always	
13. When I am sick, I am more careful in standing up and movement.	Never	Sometimes	Often	Always	Not apply

14. When stepping down from a stair or a low chair, I consider a step height and last-step and height of the chair from the floor.	Never	Sometimes	Often	Always	Not apply
Light and Vision					
15. I carefully observe stains/spillage on the floor.	Never	Sometimes	Often	Always	
16. I turn the light on when I wake in the night.	Never	Sometimes	Often	Always	
17. I improve illumination in the house.	Never	Sometimes	Often	Always	
18. I clean my eyeglasses.	Never	Sometimes	Often	Always	Not apply
19. When I wear adjustable-focus eyeglasses for far/closed distance or for closed/middle/far distance, I usually misstep or do not see different floor levels.	Never	Sometimes	Often	Always	Not apply
Shoes					
20. When I buy a pair of shoes, I look into its slippery contact or not.	Never	Sometimes	Often	Always	
Outdoor Activities					
21. When I walk outside of the house, I look forward for there is any obstacle or not.	Never	Sometimes	Often	Always	
22. I avoid inclined sidewalks.	Never	Sometimes	Often	Always	
23. I avoid going outside of the house during strong wind, slippery or wet road.	Never	Sometimes	Often	Always	
24. When I go outside of the house, I think how to move carefully.	Never	Sometimes	Often	Always	
25. I walk across the road at where there is a traffic light or a pedestrian's crossing.	Never	Sometimes	Often	Always	Not apply
26. I use a stair's holder when I walk up stair.	Never	Sometimes	Often	Always	Not apply
27. I avoid walking in a crowded people area.	Never	Sometimes	Often	Always	
28. I cut tree's branches at the paths to exit and entrance of the house.	Never	Sometimes	Often	Always	Not apply
29. I carry a bag containing a few stuffs inside during walking up stair.	Never	Sometimes	Often	Always	Not apply
Medicine					
30. I ask a pharmacist or a doctor for side effects of medicines that I consume.	Never	Sometimes	Often	Always	Not apply

Clemson, Cumming, & Heard (2003).

Thank you for answering Fall Behavior Questionnaire in Elderly

Walking Speed (4-meter)

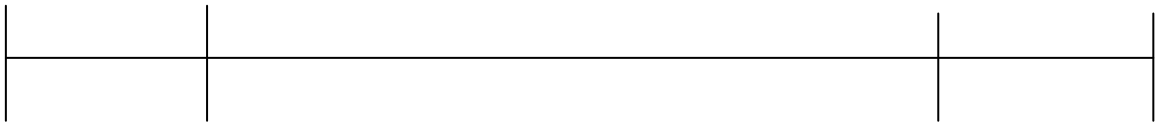
General information

The procedure of walking speed requests individuals walk in a straight path without assistance 8 meters. The intermediate 4 meters will be timed to eliminate the results of acceleration and deceleration.

Equipments: a stopwatch and a measuring tape.

Procedures:

1. An administer marks a forward 2-m, 6-m, and 8-m distance from a start mark.
2. Participants wear their regular footwear and use their regular walking aid. They are not allowed to have assistants to help.
3. Participants are requested to perform the following tasks.
    a. Participants stand behind the start mark.
    b. Participants are requested to comfortably walk from the start mark to the 8-m mark when an administrator says "go". The participants perform the same procedure twice.
4. An administrator starts and stops timing at participants' toes of leading foot crossing the mark at 2 and 6 meters, respectively.



Guralnik et al. (1994)
Guralnik et al. (2000)
Wolf, Catlin, Gage, Gurucharri, Robertson, & Stephen (1999)

เลขที่แบบทดสอบ.....

แบบทดสอบสภาพสมองไทย

THAI MENTAL STATE EXAM (TMSE)

1. Orientation (6 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
1	วันนี้ วันอะไรของสัปดาห์ (จันทร์ อังคาร พุธ พฤหัส ฯลฯ)		
1	วันนี้ วันที่เท่าไร		
1	เดือนนี้ เดือนอะไร		
1	ขณะนี้เป็นช่วง (ตอน) ไหนของวัน (เช้า เที่ยง บ่าย เย็น)		
1	ที่นี่ที่ไหน (บริเวณที่ตรวจ)		
1	คนที่เห็นในภาพนี้มีอาชีพอะไร		

2. Registration (3 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
3	ผู้ทดสอบบอกชื่อของ 3 อย่าง โดยพูดห่างกันครั้งละ 1 วินาที (ต้นไม้ รถยนต์ มือ) เพียงครั้งเดียว แล้วจึงให้ผู้ถูกทดสอบบอกให้ครบตามที่ผู้ทดสอบบอกในครั้งแรกให้ 1 คะแนน ในแต่ละคำตอบที่ตอบถูก * **หมายเหตุ** หลังจากให้คะแนนแล้วให้บอกซ้ำจนผู้ถูกทดสอบจำได้ทั้ง 3 อย่าง และบอกให้ผู้ถูกทดสอบทราบว่าสักครู่จะกลับมาถามใหม่		

3. Attention (5 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
	ให้บอกวันอาทิตย์-วันเสาร์ ย้อนหลังให้ครบสัปดาห์ (ให้ตอบซ้ำได้ 1 ครั้ง)		
1	ศุกร์		
1	พฤหัสบดี		
1	พุธ		
1	อังคาร		
1	จันทร์		

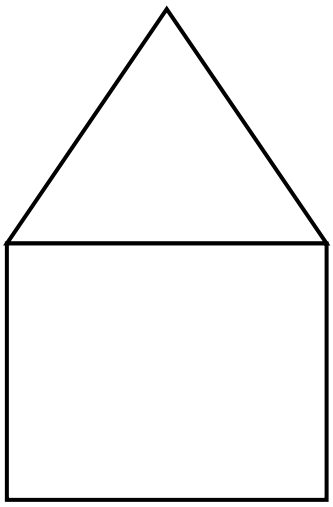
4. Calculation (3 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
	ให้คำนวณ 100-7 ไปเรื่อย ๆ 3 ครั้ง (ให้1 คะแนน ในแต่ละครั้งที่ตอบถูกใช้เวลาคิดในแต่ละช่วงคำตอบไม่เกิน 1 นาที หลังจากจบคำถาม) ถ้าผู้ถูกทดสอบไม่ตอบคำถามที่ 1 ให้ตั้งเลข 93-7 ลองทำในการคำนวณครั้งต่อไป และ 86-7 ในครั้งสุดท้ายตามลำดับ		
1	100-7		
1	-7		
1	-7		

5. Language (10 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
1	ผู้ทดสอบชี้ไปที่นาฬิกาข้อมือ แล้วถามผู้ถูกทดสอบว่าโดยทั่วไป “เราเรียกสิ่งนี้ว่าอะไร” (นาฬิกา)		
1	ผู้ทดสอบชี้ไปที่เสื้อของตนเองแล้วถามผู้ถูกทดสอบว่าโดยทั่วไป “เราเรียกสิ่งนี้ว่าอะไร” (เสื้อ, ผ้า)		
1	ผู้ทดสอบบอกผู้ถูกทดสอบว่า จงฟังประโยคต่อไปนี้ให้ดีแล้วจำไว้ จากนั้นให้พูดตาม “ยายพาหลานไปซื้อขนมที่ตลาด”		

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
	จงทำตามคำสั่งต่อไปนี้ (มี 3 ขั้นตอนคำสั่ง) ให้ผู้ทดสอบพูดต่อกันไปให้ครบประโยคทั้ง 3 ขั้นตอน ให้คะแนนขั้นตอนละ 1 คะแนน (ใช้กระดาษเปล่าแผ่นหลังสุดให้ผู้ถูกทดสอบทำ)		
1	หยิบกระดาษด้วยมือขวา		
1	พับกระดาษเป็นครึ่งแผ่น		
1	แล้งส่งกระดาษให้ผู้ตรวจ		
1	ให้ผู้ถูกทดสอบอ่านแล้วทำตาม “หลับตา” (มีแผ่นป้ายข้อความดังกล่าวให้อ่าน อยู่ในแบบทดสอบหน้าที่ 5)		
2	จงวาดภาพต่อไปนี้ให้เหมือนตัวอย่างมากที่สุด เท่าที่ท่านจะสามารถทำได้ (ให้ผู้ทดสอบดูตัวอย่างตลอดเวลาที่วาด)		
1	กล้วยกับส้มเหมือนกันคือเป็นผลไม้ แมวกับสุขนัขเหมือนกันคือ..... (เป็นสิ่งมีชีวิต)		



“หลับตา”

6. Recall (3 คะแนน)

คะแนนเต็ม	คำถาม	คำตอบ	คะแนนที่ได้
	สิ่งของ 3 อย่างที่บอกให้จำเมื่อสักครู่มีอะไรบ้าง		
1	ต้นไม้		
1	รถยนย์		
1	มือ		

ที่มา: Train the Brain Forum Committee. (1993).

แบบสัมภาษณ์เลขที่.....

แบบสัมภาษณ์ข้อมูลทั่วไป

คำชี้แจง: ให้ผู้สัมภาษณ์ทำเครื่องหมาย √ ลงใน ( ) หน้าข้อความคำตอบของแต่ละคำถาม และเติมข้อความลงในช่องว่างในแต่ละข้อคำถาม ตามความเป็นจริง

1. เพศ

( ) ชาย

( ) หญิง

2. อายุ.....ปี

3. ท่านนับถือศาสนาอะไร?

( ) พุทธ ( ) ศริสตร์

( ) อิสลาม ( ) อื่น ๆ ระบุ.....

4. สถานภาพสมรส

( ) คู่ ( ) หย่า

( ) โสด ( ) แยกกันอยู่

( ) หม้าย

5. ท่านจบการศึกษาระดับใด?

( ) ไม่ได้รับการศึกษา

( ) ไม่สำเร็จการศึกษาระดับประถม

( ) ประถมศึกษา ปีที่.....

( ) มัธยมศึกษาตอนต้น ระดับ.....

( ) มัธยมศึกษาตอนปลาย ระดับ.....

( ) อาชีวะศึกษา ระดับ.....

( ) อนุปริญญาตรี ระดับ.....

( ) ปริญญาตรี สาขา.....

( ) อื่น ๆ .....

6. ท่านสามารถอ่านออกไข่ไหม? ( ) ใช่ ( ) ไม่ใช่

ท่านสามารถเขียนได้ใช่ไหม? ( ) ใช่ ( ) ไม่ใช่

7. บ้านที่ท่านอยู่อาศัยเป็นบ้านของใคร?

( ) บ้านตัวเอง

( ) บ้านลูก/ญาติ

( ) บ้านเช่า

( ) อื่น ๆ ระบุ.....

8. ท่านมีสถานภาพทางครอบครัวเป็นอะไร?

( ) หัวหน้าครอบครัว

( ) สมาชิกของครอบครัว

( ) ญาติ

( ) ผู้อาศัย

9. บุคคลที่อาศัยอยู่ในครอบครัวเดียวกับท่านมีใครบ้าง? (ตอบได้มากกว่า 1 คำตอบ)

( ) คู่สมรส……...คน

( ) บุตร.....คน

( ) บุตรเขย/สะใภ้.....คน

( ) หลาน.....คน

( ) ญาติ.....คน

( ) ผู้อาศัย.....คน

( ) อยู่คนเดียว

( ) อื่น ๆ (ระบุ).....

10. ปัจจุบันท่านประกอบอาชีพอะไร? (ตอบได้มากกว่า 1 ข้อ)

( ) ไม่ได้ประกอบอาชีพ (เช่น อยู่บ้านเฉย ๆ หรือ ทำงานบ้าน)

( ) ข้าราชการบำนาญ

( ) ค้าขาย ระบุ.....

( ) รับจ้าง ระบุ.....

( ) เกษรกรรม ระบุ.....

( ) อื่น ๆ ระบุ.....

11. ปัจจุบันท่านมีรายได้เดือนละประมาณ.....บาท

12. ท่านมีรายได้จากที่ใดบ้างในแต่ละเดือน? (ตอบได้มากกว่า 1 ข้อ)

( ) บุตรหลาน จำนวน.....บาท/เดือน

( ) คู่สมรส.....บาท/เดือน

( ) ญาติพี่น้อง.....บาท/เดือน

( ) เงินบำนาญ.....บาท/เดือน

( ) เงินค่าเลี้ยงดูผู้สูงอายุ.....บาท/เดือน

( ) ทำงานด้วยตนเอง ระบุ.....จำนวน.....บาท/เดือน

( ) อื่น ๆ ระบุ.....บาท/เดือน

13. ท่านเคยล้มภายใน 12 เดือนที่ผ่านมาหรือไม่?

( ) ไม่เคยล้ม

( ) เคยล้ม จำนวนครั้งที่ล้ม.....ครั้ง

สถานที่ล้ม ( ) ในบ้าน ระบุ.....

( ) นอกบ้าน ระบุ.....

ท่านมีปัญหาสุขภาพหลังจากการล้มหรือไม่

( ) ไม่มี

( ) มี ระบุ.....

14. ท่านกลัวการล้มหรือไม่?

( ) ไม่กลัว

( ) กลัว

เลขที่.....

แบบสอบถามอาการเจ็บป่วยหรือโรคร่วม

คำแนะนำ:

รายการต่อไปนี้เป็นรายชื่อโรคหรือปัญหาสุขภาพที่พบบ่อย กรุณาระบุปัญหาสุขภาพของท่าน ตามที่ปรากฏ ในตารางช่องที่ 1 ทีละรายการ ถ้าท่านไม่มีปัญหาสุขภาพเกี่ยวกับโรคดังกล่าวให้ข้ามไปพิจารณาข้อต่อไป หากท่านมีโรค/ปัญหาสุขภาพนั้น ๆ ให้ระบุในตารางช่องที่ 2 ในช่องที่ 3 ให้ท่านระบุว่าท่านได้รับยาหรือการรักษาอาการหรือปัญหานั้นหรือไม่ และในช่องที่ 4 ให้ระบุว่า อาการ/ปัญหาที่ท่านเผชิญอยู่นั้นมีผลกระทบต่อการทำกิจกรรมต่าง ๆ ของท่านหรือไม่ หากท่านมีอาการ/ปัญหาสุขภาพนอกเหนือจากรายการที่กำหนดให้เขียนเพิ่มเติมที่ช่องว่างทางด้านล่างของแบบสอบถามนี้

1	2		3		4	
ปัญหา (โรคประจำตัว)	ท่านมีปัญหานี้หรือไม่?		ท่านรักษาอาการ/ปัญหานี้อยู่หรือไม่?		อาการ/ปัญหามีผลต่อกิจกรรมของท่านหรือไม่?	
	ไม่มี (0)	มี (1) ➡	ไม่มี (0)	มี (1)	ไม่มี (0)	มี (1)
โรคหัวใจ						
ความดันโลหิตสูง						
โรคปอด						
เบาหวาน						
โรคกระเพาะหรือแผลในกระเพาะอาหาร						
โรคไต						
โรคตับ						
โลหิตจางหรือโรคเลือดชนิดอื่น						
มะเร็ง						
โรคซึมเศร้า						
ปวดข้อ/โรคข้อเสื่อม						
ปวดหลัง						

1	2		3		4	
ปัญหา (โรคประจำตัว)	ท่านมีปัญหานี้หรือไม่?		ท่านรักษาอาการ/ปัญหานี้อยู่หรือไม่?		อาการ/ปัญหามีผลต่อกิจกรรมของท่านหรือไม่?	
	ไม่มี (0)	มี (1) ➡	ไม่มี (0)	มี (1)	ไม่มี (0)	มี (1)
โรคข้ออักเสบ (รูมาตอยด์)						
ปัญหาสุขภาพอื่น: (ระบุ)						

ที่มา: แบบสอบถามอาการเจ็บป่วยหรือโรคร่วม (Self-Administered Comorbidity Questionnaire: SCQ) ของ Sangha, Stucki, Liang, Fossel, & Katz (2003)

เลขที่แบบวัด.....

แบบวัดความเศร้าในผู้สูงอายุไทย

(Thai Geriatric Depression Scale-TGDS)

โปรดอ่านข้อความในแต่ละข้ออย่างละเอียด และประเมิน ความรู้สึกของท่านในช่วงเวลาหนึ่งสัปดาห์ที่ผ่านมา

- ให้ขีด / ลงในช่องที่ตรงกับ “ใช่” ถ้าข้อความในข้อนั้นตรงกับความรู้สึกของท่าน
- ให้ขีด / ลงในช่องที่ตรงกับ “ไม่ใช่” ถ้าข้อความในข้อนั้นไม่ตรงกับความรู้สึกของท่าน

ข้อความ	ใช่	ไม่ใช่
1. คุณพอใจกับชีวิตความเป็นอยู่ตอนนี้		
2. คุณไม่อยากทำในสิ่งที่เคยสนใจหรือเคยทำเป็นประจำ		
3. คุณรู้สึกชีวิตของคุณช่วงนี้ว่างเปล่าไม่รู้จะทำอะไร		
4. คุณรู้สึกเบื่อหน่ายบ่อย ๆ		
5. คุณหวังว่าจะมีสิ่งที่ดี เกิดขึ้นในวันหน้า		
6. คุณมีเรื่องกังวลอยู่ตลอดเวลา และเลิกคิดไม่ได้		
7. ส่วนใหญ่แล้วคุณรู้สึกอารมณ์ดี		
8. คุณรู้สึกกลัวว่าจะมีเรื่องไม่ดีเกิดขึ้นกับคุณ		
9. ส่วนใหญ่คุณรู้สึกมีความสุข		
10. บ่อยครั้งที่คุณรู้สึกไม่มีที่พึ่ง		
11. คุณรู้สึกกระวนกระวาย กระสับกระส่ายบ่อย ๆ		
12. คุณชอบอยู่กับบ้านมากกว่าที่จะออกนอกบ้าน		
13. บ่อยครั้งที่คุณรู้สึกวิตกกังวลเกี่ยวกับชีวิตข้างหน้า		
14. คุณคิดว่าความจำของคุณไม่ดีเท่าคนอื่น		
15. การที่มีชีวิตอยู่ถึงปัจจุบันนี้ เป็นเรื่องน่ายินดีหรือไม่		
16. คุณรู้สึกหมดกำลังใจ หรือเศร้าใจบ่อย ๆ		
17. คุณรู้สึกว่าชีวิตคุณค่อนข้างไม่มีคุณค่า		

ข้อความ	ใช่	ไม่ใช่
18. คุณรู้สึกกังวลมากกับชีวิตที่ผ่านมา		
19. คุณรู้สึกว่าชีวิตนี้ยังมีเรื่องน่าสนุกอีกมาก		
20. คุณรู้สึกลำบากที่จะเริ่มต้นทำอะไรใหม่ ๆ		
21. คุณรู้สึกกระตือรือร้น		
22. คุณรู้สึกสิ้นหวัง		
23. คุณคิดว่าคนอื่นดีกว่าคุณ		
24. คุณอารมณ์เสียง่ายดับเรื่องเล็ก ๆ น้อย ๆ อยู่เสมอ		
25. คุณรู้สึกอยากร้องไห้บ่อย ๆ		
26. คุณมีความตั้งใจในการทำสิ่งหนึ่งสิ่งใดได้ไม่นาน		
27. คุณรู้สึกสดชื่นในเวลาตื่นนอนตอนเช้า		
28. คุณไม่อยากพบปะพูดคุยกับคนอื่น		
29. คุณตัดสินใจอะไรได้เร็ว		
30. คุณมีจิตใจ สบาย แจ่มใสเหมือนก่อน		

ที่มา: Train the Brain Forum Committee. (1994).

สุขภาพและความผาสุกของคุณ

แบบสอบถามนี้ถามความคิดเห็นของคุณเกี่ยวกับสุขภาพของคุณ ข้อมูลนี้จะช่วยในการบันทึกว่าคุณรู้สึกอย่างไร และคุณสามารถทำกิจกรรมต่างๆ ตามปกติของคุณได้ดีแค่ไหน *ขอบคุณที่ให้ความร่วมมือในการตอบแบบสอบถามนี้*

ในแต่ละคำถามต่อไปนี้ โปรดทำเครื่องหมาย ☒ ลงในช่องเพียงช่องเดียวที่ตรงกับคำตอบของคุณมากที่สุด

1. โดยทั่วไป คุณจะบอกว่าสุขภาพของคุณ:

ดีที่สุด	ดีมาก	ดี	พอใช้	แย่
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. คำถามต่อไปนี้เป็นคำถามเกี่ยวกับ กิจกรรมที่คุณอาจจะทำในช่วงวันปกติทั่วๆ ไป <u>สุขภาพของคุณในตอนนี้ทำให้คุณถูกจำกัด</u>ในการทำกิจกรรมเหล่านี้หรือไม่ ถ้าใช่ ถูกจำกัดมากน้อยแค่ไหน

	ใช่ ถูกจำกัดมาก	ใช่ ถูกจำกัดเล็กน้อย	ไม่ใช่ ไม่ถูกจำกัดเลย
a <u>กิจกรรมที่ใช้แรงปานกลาง</u> เช่น การย้ายโต๊ะ การกวาดพื้น การทำสวน การปั่นจักรยาน หรือการว่ายน้ำ	☐ 1	☐ 2	☐ 3
b การเดินขึ้นบันไดขึ้นดึก <u>2-3</u> ชั้น	☐ 1	☐ 2	☐ 3

3. ในช่วง 4 สัปดาห์ที่ผ่านมา บ่อยแค่ไหน ที่คุณมีปัญหาต่างๆ ต่อไปนี้ ในการทำงาน หรือทำกิจวัตรประจำวันอื่นๆ อันเนื่องมาจากสุขภาพทางกายของคุณ

	ตลอดเวลา	เป็นส่วนใหญ่	เป็นบางครั้ง	นานๆครั้ง	ไม่เคยเลย
a ทำงานหรือกิจวัตรประจำวันอื่นๆ สำเร็จได้น้อยกว่าที่คุณต้องการ	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b ถูกจำกัดชนิดของงานหรือกิจกรรมที่คุณสามารถทำได้	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

4. ในช่วง 4 สัปดาห์ที่ผ่านมา บ่อยแค่ไหน ที่คุณมีปัญหาต่างๆ ต่อไปนี้ ในการทำงาน หรือทำกิจวัตรประจำวันอื่นๆ ของคุณ อันเนื่องมาจากปัญหาด้านอารมณ์ (เช่น รู้สึกซึมเศร้า หรือ วิตกกังวล)

	ตลอดเวลา	เป็นส่วนใหญ่	เป็นบางครั้ง	นานๆครั้ง	ไม่เคยเลย
a ทำงานหรือกิจวัตรประจำวันอื่นๆ สำเร็จได้น้อยกว่าที่คุณต้องการ	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b ทำงานหรือกิจกรรมอื่นๆ ด้วยความระมัดระวังน้อยกว่าปกติ	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. ในช่วง 4 สัปดาห์ที่ผ่านมา ความเจ็บปวดมีผลรบกวนการทำงานตามปกติของคุณ (ทั้งงานนอกบ้านและงานบ้าน) มากน้อยแค่ไหน

ไม่เลย	เล็กน้อย	ปานกลาง	ค่อนข้างมาก	มากที่สุด
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. คำถามต่อไปนี้จะถามเกี่ยวกับว่าคุณรู้สึกอย่างไร และคุณเป็นอย่างไร ในช่วง 4 สัปดาห์ที่ผ่านมา แต่ละคำถามต่อไปนี้ โปรดเลือกเพียงคำตอบเดียว ที่ใกล้เคียงกับความรู้สึกของคุณมากที่สุด ในช่วง 4 สัปดาห์ที่ผ่านมา บ่อยแค่ไหน ที่...

	ตลอดเวลา	เป็นส่วนใหญ่	เป็นบางครั้ง	นาน ๆ ครั้ง	ไม่เคยเลย
a คุณรู้สึกใจเย็นและสงบ	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b คุณรู้สึกเต็มไปด้วยพลัง	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c คุณรู้สึกท้อแท้และซึมเศร้า	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

7. ในช่วง 4 สัปดาห์ที่ผ่านมา บ่อยแค่ไหน ที่สุขภาพทางกายหรือปัญหาด้านอารมณ์ของคุณ มีผลรบกวนกิจกรรมทางสังคมของคุณ (เช่น การไปเยี่ยมเพื่อน หรือ ญาติมิตร เป็นต้น)

ตลอดเวลา	เป็นส่วนใหญ่	เป็นบางครั้ง	นาน ๆ ครั้ง	ไม่เคยเลย
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

ขอบคุณที่ให้ความร่วมมือในการตอบคำถาม

เลขที่.....

แบบประเมินความมั่นใจในการทรงตัวเกี่ยวกับการทำกิจกรรมที่เฉพาะเจาะจง

กรุณาระบุระดับความมั่นใจของตนเองในการทำกิจกรรมแต่ละข้อที่กำหนดให้ โดยการเลือกตอบระดับความมั่นใจให้ตรงกับตัวเลขต่อไปนี้:

0%	10	20	30	40	50	60	70	80	90	100%
ไม่มีความมั่นใจ										มีความมั่นใจอย่างเต็มที่

คุณมีความมั่นใจมากน้อยเพียงใดที่คุณสามารถรักษาความสมดุลและการคงไว้ซึ่งความมั่นคงของตัวคุณเมื่อคุณต้อง

1. เดินรอบ ๆ บ้าน _____ %
2. เดินขึ้นหรือลงบันได _____ %
3. โน้มตัวและหยิบสิ่งของที่อยู่ข้างหน้าจากพื้น หน้าห้อง _____ %
4. เอื้อมหยิบสิ่งของที่มีขนาดเล็กจากชั้นวางของที่อยู่ในระดับสายตา _____ %
5. ยืนบนปลายนิ้วเท้าของคุณหรือเขย่งเท้าและเอื้อมหยิบสิ่งของบางอย่างที่อยู่เหนือศีรษะของคุณ _____ %
6. ยืนบนเก้าอี้และเอื้อมหยิบสิ่งของบางอย่าง _____ %
7. กวาดพื้น _____ %
8. เดินออกนอกบ้านไปที่ถนนใกล้บ้าน _____ %
9. ขึ้นรถหรือลงรถ _____ %
10. เดินจากที่จอดรถไปยังห้างสรรพสินค้าหรือร้านขายของในตลาด _____ %
11. เดินขึ้นหรือเดินลงบนทางลาดเอียง _____ %
12. เดินในห้างสรรพสินค้าหรือในตลาดที่มีคนหนาแน่นพลุกพล่านและมีคนเดินผ่านคุณอย่างรวดเร็ว _____ %
13. ถูกชนหรือโดนกระแทกจากคนอื่นขณะที่คุณเดินในห้างสรรพสินค้าหรือตลาด _____ %

14. ก้าวขึ้นบนบันไดเลื่อนและก้าวออกจากบันไดเลื่อนขณะที่คุณกำลังเกาะราวบันไดเลื่อน _____ %
15. ก้าวขึ้นบนบันไดเลื่อนและก้าวออกจากบันไดเลื่อนขณะที่คุณกำลังถือสิ่งของและคุณไม่ได้เกาะราวบันไดเลื่อน _____ %
16. เดินนอกบ้านบนพื้นที่ลื่น _____ %

ที่มา: แบบประเมินความเชื่อมันในการทรงตัวเกี่ยวกับการทำกิจกรรมที่เฉพาะเจาะจง (Activities-Specific Balance Confidence (ABC) Scale) ©Anita M. Myers. *Dept of Health Studies & Gerontology. University of Waterloo. Waterloo, Ontario, Canada N2L 3G1. * As of Sept/12 became School of Public Health & Health Systems. E-mail: amyers@uwaterloo.ca

เลขที่แบบสอบถาม.....

แบบสอบถาม การรับรู้ในความสามารถตนเอง

คำชี้แจง: กรุณาตอบคำถามให้ตรงตามความรู้สึกของท่าน โดยผู้สัมภาษณ์ใส่เครื่องหมาย √ ลงในช่องว่างให้ตรงกับคำตอบของผู้ถูกสัมภาษณ์ ซึ่งมีเกณฑ์ดังนี้

จริงมากที่สุด หมายถึง ข้อความในประโยคนั้นจริงมากที่สุดตามความรู้สึกของผู้ถูกสัมภาษณ์
จริงพอสมควร หมายถึง ข้อความในประโยคนั้นจริงพอสมควรตามความรู้สึกของผู้ถูกสัมภาษณ์
จริงเล็กน้อย หมายถึง ข้อความในประโยคนั้นจริงเล็กน้อยตามความรู้สึกของผู้ถูกสัมภาษณ์
ไม่เป็นความจริง หมายถึง ข้อความในประโยคนั้นไม่เป็นความจริงตามความรู้สึกของผู้ถูกสัมภาษณ์

ข้อความ	จริงมากที่สุด	จริงพอสมควร	จริงเล็กน้อย	ไม่เป็นความจริง
1. ฉันสามารถแก้ปัญหายาก ๆ ได้เสมอ				
2. ฉันสามาถจัดการกับสิ่งที่ต้องการได้ถึงแม้ผู้อื่นจะไม่เห็นด้วย				
3. ฉันสามารถทำสิ่งที่ฉันต้องการได้เสมอ				
4. ฉันสามารถเผชิญกับเหตุการณ์ที่คาดไม่ถึงได้เป็นอย่างดี				
5. ฉันแก้ไขเหตุการณ์ที่คาดไม่ถึงอยู่ได้เสมอ				
6. ฉันสามารถแก้ปัญหาส่วนใหญ่ได้หากฉันใช้ความพยายาม				
7. ฉันสามารถเผชิญปัญหาโดยไม่มีท่าทีรุกรี้รุกรน				
8. เมื่อฉันเผชิญปัญหา ฉันจะหาทางแก้ปัญหาไว้หลาย ๆ ทาง				
9. เมื่อมีอุปสรรคฉันสามารถคิดวิธีการแก้ปัญหาได้เสมอ				
10. ฉันสามารถจัดการสิ่งต่าง ๆ ได้เป็นประจำไม่ว่าปัญหานั้นจะมาในรูปแบบไหน				

ที่มา: เวทินี สุขมาก, อัจฉรี ศิริสุนทร, และประภาพร มีนา. (2545).

เลขที่.....

แบบสอบถามพฤติกรรมการล้มในผู้สูงอายุ

แบบสอบถามพฤติกรรมการล้มในผู้สูงอายุ ประกอบด้วย 30 ข้อความ ที่อธิบายกิจกรมต่าง ๆ ที่ ท่านกระทำในชีวิตประจำวัน กรุณาอ่านข้อความต่อไปนี้อย่างละเอียด

ในแต่ละข้อให้วงกลมล้อมรอบคำตอบว่าท่านได้ทำกิจกกรรมนั้น ๆ มากน้อยเพียงใดในชีวิตประจำวัน

ตัวอย่าง:

ไม่เคยทำ	บางครั้ง	(บ่อยครั้ง)	ตลอดเวลา

หากกิจกรรมใดที่ท่านไม่เกี่ยวข้อง ให้วงกลมที่ “ไม่เกี่ยวข้อง” (ตัวอย่าง: หากท่านไม่มีโทรศัพท์ใช้)

ท่านได้ทำกิจกรรมต่อไปนี้ในชีวิตประจำวันหรือไม่	**วงกลมรอบลักษณะการทำกิจกรรม**				
1. เมื่อลุกขึ้นยืนข้าพเจ้าหยุดพักเพื่อทรงตัว	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
2. ข้าพเจ้าทำกิจกรรมต่าง ๆ อย่างช้า ๆ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
3. ข้าพเจ้าพูดคุยกับผู้อื่น ทำให้รู้ถึงการทำกิจกรรมที่อาจช่วยป้องกันการล้มได้	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
4. ข้าพเจ้าจะก้มลงเก็บของก็ต่อเมื่อข้าพเจ้ามีที่เกาะที่มั่นคง	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
5. ข้าพเจ้าใช้ไม้เท้าหรือเครื่องช่วยค้ำยันเมื่อข้าพเจ้าต้องการ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
6. เมื่อข้าพเจ้ารู้สึกไม่สบาย ข้าพเจ้าจะระวังเป็นพิเศษเวลาทำกิจวัตรประจำวัน	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
7. ข้าพเจ้ารีบร้อนเวลาทำกิจกรรมต่าง ๆ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
8. ข้าพเจ้าหมุนตัว/เอี้ยวตัวอย่างรวดเร็ว	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	

ท่านได้ทำกิจกรรมต่อไปนี้ในชีวิตประจำวันหรือไม่	วงกลมรอบลักษณะการทำกิจกรรม				
สิ่งที่ท่านกระทำภายในบ้าน					
9. ข้าพเจ้าใช้เก้าอี้หรืออุปกรณ์ที่สะดวก เพื่อปีนหยิบของในที่สูง	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
10. ข้าพเจ้ารีบร้อนในการรับโทรศัพท์	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
11. ข้าพเจ้าขอความช่วยเหลือเมื่อต้องการเปลี่ยนหลอดไฟ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
12. ข้าพเจ้าขอความช่วยเหลือเมื่อต้องการหยิบของในที่สูงมาก ๆ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
13. เมื่อข้าพเจ้าป่วย ข้าพเจ้าเพิ่มความระมัดระวังในการลุกจากเก้าอี้และการเคลื่อนไหว	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
14. เมื่อก้าวลงบันไดหรือเก้าอี้เตี้ย ๆ ข้าพเจ้าคำนึงถึงความสูงของขั้นบันไดในแต่ละขั้นและบันไดขั้นสุดท้าย หรือความสูงของเก้าอี้จากพื้น	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
แสงสว่างและการเห็น					
15. ข้าพเจ้าคอยสังเกตรอยเปื้อน/หกบนพื้น	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
16. ข้าพเจ้าเปิดไฟเมื่อต้องตื่นกลางดึก	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
17. ข้าพเจ้าปรับปรุงบ้านเพื่อให้มีแสงสว่างดีขึ้น	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
18. ข้าพเจ้าทำความสะอาดแว่นตา	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
19. เมื่อใส่แว่นสายตาที่มีเลนส์ปรับระยะมองไกล/ใกล้ หรือเลนส์ปรับระยะมองไกล/กึ่งกลาง/ใกล้ ข้าพเจ้ามักจะก้าวพลาดหรือไม่เห็นพื้นต่างระดับ	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
รองเท้า					
20. เมื่อซื้อรองเท้าข้าพเจ้าสำรวจพื้นรองเท้าว่าลื่นหรือไม่	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	

ท่านได้ทำกิจกรรมต่อไปนี้ในชีวิตประจำวันหรือไม่	วงกลมรอบลักษณะการทำกิจกรรม				
สิ่งที่กระทำนอกบ้าน					
21. เมื่อเดินนอกบ้านข้าพเจ้ามองไปข้างหน้าเพื่อดูว่ามีสิ่งกีดขวางหรือไม่	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
22. ข้าพเจ้าหลีกเลี่ยงเส้นทางที่สูงชัน	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
23. ข้าพเจ้าหลีกเลี่ยงในการออกนอกบ้านเมื่อมีลมแรง ถนนลื่นหรือเปียก	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
24. เมื่อข้าพเจ้าออกนอกบ้าน ข้าพเจ้าคิดว่าจะเคลื่อนไหวอย่างระมัดระวังอย่างไร	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
25. ข้าพเจ้าข้ามถนนบริเวณที่มีสัญญาณไฟ หรือทางคนข้าม/ทางม้าลาย	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
26. ข้าพเจ้าเกาะราวบันไดเมื่อเดินขึ้นบันได	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
27. ข้าพเจ้าหลีกเลี่ยงการเดินในสถานที่ที่มีผู้คนเบียดเสียด	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	
28. ข้าพเจ้าตัดแต่งกิ่งไม้บริเวณทางเดินเข้า-ออกของบ้าน	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
29. ข้าพเจ้าถือถุงของทีละน้อยขณะเดินขึ้นบันได	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง
ยา					
30. ข้าพเจ้าสอบถามเภสัชกรหรือแพทย์เกี่ยวกับผลข้างเคียงของยาที่ข้าพเจ้าใช้อยู่	ไม่เคยทำ	บางครั้ง	บ่อยครั้ง	ตลอดเวลา	ไม่เกี่ยวข้อง

ที่มา: แบบสอบถามพฤติกรรมการล้มในผู้สูงอายุ (Falls Fehavioural (FaB) Scale for the Older Person) ของ Clemson, Cumming, & Heard (2003)

ขอบคุณที่ท่านตอบแบบสอบถามพฤติกรรมการล้มในผู้สูงอายุ

เลขที่.....

ความเร็วในการเดิน (4 เมตร)

ข้อแนะนำ

วิธีการปฏิบัติของการทดสอบความเร็วในการเดิน ให้ผู้ถูกทดสอบเดินทางตรงโดยปราศจากการช่วยเหลือเป็นระยะทาง 8 เมตร ระยะทางที่อยู่ตรงกลาง 4 เมตร จะถูกจับเวลาเพื่อลดผลที่อาจจะเกิดจากการเริ่มต้นของการเดินและการชลอในการเดินเมื่อถึงปลายทาง

อุปกรณ์: นาฬิกาจับเวลา และสายวัด

การดำเนินการ

1. ผู้ทดสอบวัดระยะทางไปข้างหน้าและทำเครื่องหมายไว้ที่ระยะทาง 2 เมตร 6 เมตร และ 8 เมตร จากจุดเริ่มต้น
2. ผู้ถูกทดสอบสวมรองเท้าที่ใช้สวมอยู่ทุกวัน และใช้เครื่องช่วยเดินได้ตามปกติ แต่ผู้ถูกทดสอบจะไม่มีผู้ช่วยขณะทดสอบ
3. ผู้ถูกทดสอบถูกขอร้องให้กระทำกิจกรรมดังต่อไปนี้
    1) ผู้ถูกทดสอบยืนหลังเส้นที่เป็นจุดเริ่มต้น
    2) เมื่อผู้ทดสอบพูดคำว่า “ไป” ผู้ถูกทดสอบเดินอย่างสะดวกจากจุดเริ่มต้นไปยังจุดที่ทำเครื่องหมายที่ระยะทาง 8 เมตร ซึ่งผู้ถูกทดสอบจะถูกขอร้องให้เดินสองครั้ง
4. ผู้ทดสอบเริ่มจับเวลาเมื่อเท้าที่ก้าวนำมาก่อนก่าวผ่านเครื่องหมายที่ระยะทาง 2 เมตร และจะหยุดจับเวลาเมื่อเท้าที่นำมาก่อนก้าวผ่านเครื่องหมายที่ระยะทาง 6 เมตร

Guralnik et al. (1994)

Guralnik et al. (2000)

Wolf, Catlin, Gage, Gurucharri, Robertson, & Stephen (1999)

APPENDIX B: HIC APPROVAL AND PERMISSION LETTER FOR DATA COLLECTION

WAYNE STATE UNIVERSITY

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

NOTICE OF EXPEDITED APPROVAL

To: Kanyarat Ubolwan
College of Nursing

From: Dr. Scott Millis
Chairperson, Behavioral Institutional Review Board (B3)

Date: June 08, 2012

RE: IRB #: 048812B3E

Protocol Title: An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Funding Source: Sponsor: SIGMA THETA TAU INTERNATIONAL, INCORPORATED

Protocol #: 1205010873

Expiration Date: June 07, 2013

Risk Level / Category: Research not involving greater than minimal risk

The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 06/08/2012 through 06/07/2013. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (received in the IRB Office 6/5/12)
- Protocol (received in the IRB Office 4/20/12)
- Receipt of letter of support from Saraburi Provincial Public Health Office (dated 4/12/12)
- Receipt of Export Control Review indicating that there are no export control issues (dated 4/13/12)
- Receipt of approval from The Ethical Review Committee for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi (approval period 5/31/12 to 5/31/13)
- The request for a waiver of the requirement for written documentation of informed consent has been granted for focus groups according to 45 CFR 46.117(1)(2). Justification for this request has been provided by the PI in the Protocol Summary Form. The waiver satisfies the following criteria: (i) The only record linking the participant and the research would be the consent document, (ii) the principal risk would be potential harm resulting from a breach of confidentiality, (iii) each participant will be asked whether he or she wants documentation linking the participant with the research, and the participant's wishes will govern, (iv) the consent process is appropriate, (v) when used requested by the participants consent documentation will be appropriate, (vi) the research is not subject to FDA regulations, and (vii) an information sheet disclosing the required and appropriate additional elements of consent disclosure will be provided to participants not requesting documentation of consent.
- Research Information Sheet for Focus Groups - English and Thai Versions (dated 6/5/12)
- Research Informed Consent for Interviews - English and Thai Versions (dated 6/5/12)
- Data collection tools

° Federal regulations require that all research be reviewed at least annually. You *may* receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval ***before*** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.

° All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.

° Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://www.irb.wayne.edu//policies-human-research.php).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the IRB Administration Office must be contacted immediately.
2. Forms should be downloaded from the IRB website at **each** use.

*Based on the Expedited Review List, revised November 1998

WAYNE STATE UNIVERSITY

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87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

NOTICE OF EXPEDITED AMENDMENT APPROVAL

To: Kanyarat Ubolwan
College of Nursing

From: Dr. Scott Millis
Chairperson, Behavioral Institutional Review Board (B3)

Date: June 29, 2012

RE: IRB #: 048812B3E

Protocol Title: An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Funding Source: Sponsor: SIGMA THETA TAU INTERNATIONAL, INCORPORATED

Protocol #: 1205010873

Expiration Date: June 07, 2013

Risk Level / Category: Research not involving greater than minimal risk

The above-referenced protocol amendment, as itemized below, was reviewed by the Chairperson/designee of the Wayne State University Institutional Review Board (B3) and is APPROVED effective immediately.

- Consent Form (dated 6/25/12) – Research Informed Consent (English & Thai Versions) updated to delete the statement "You and your relatives have to agree that you do not have the right to sue the PI, Wayne State University, Saraburi Nursing College, and persons who are involved in this research as well as any organization supporting this research for any compensation in the present or in the future" from the Research-Related Injury section per the request of the Ethical Review Committee (ERC) for Research in Human Subjects of Saraburi Nursing College (SNC).
- Information Sheet (dated 6/25/12) - Research Information Sheet (English & Thai Versions) updated to delete the statement "You and your relatives have to agree that you do not have the right to sue the PI, Wayne State University, Saraburi Nursing College, and persons who are involved in this research as well as any organization supporting this research for any compensation in the present or in the future" from the Research-Related Injury section per the request of the Ethical Review Committee (ERC) for Research in Human Subjects of Saraburi Nursing College (SNC).

An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Research Informed Consent

Title of Study: An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Principal Investigator (PI): Kanyarat Ubolwan
College of Nursing, Wayne State University, Detroit, MI, USA
087-408-4890

Funding Source: Sigma Theta Tau International Lambda Chapter

Purpose

You are being asked to be in a research study that focuses on the relationship between personal risk factors and fall prevention behaviors because you are a Thai older adult who may have personal risk factors that could influence your behaviors to engage in fall prevention. This study is being conducted in the community including the Pakpreiw, Soa Hai, Suan Dok Mai, Tha Chang, and Ton Tan sub-districts in the Saraburi province of Thailand. The estimated number of study participants to be enrolled is about 200 for individual interviews. **Please read this form and ask any questions you may have before agreeing to be in the study.**

In this research study, the purpose is to learn more about how several personal factors such as age, number of falls, health status, and confidence level affects some fall prevention behaviors of community-dwelling Thai Older Adults.

Study Procedures

If you agree to take part in this research study, the PI will meet you once at your home or a convenient place to interview you for approximately 1 hour. The PI will ask you questions based on 7 questionnaires that include your personal information (e.g. age, income, and fear of falling), health problems and treatments, belief in self-confidence during performance of daily basic tasks and belief in general self-confidence, perception of your mental and physical health status, and fall prevention behaviors. Moreover, you will also be asked to perform two walking maneuvers of about 8-m to evaluate your ability to walk unassisted. Pictures may be taken of the interview and walking speed test for purposes of presentation.

Benefits

The possible benefits to you for taking part in this research study are increased understanding of your health status that leads you to increase fall prevention behaviors. The obtained information from you may help nurses or healthcare professionals to better understand personal factors that influence fall prevention behaviors. Moreover, your information may help healthcare professionals develop fall prevention strategies or programs to reduce risk factors for falls and fall incidence for an older population in the future.

Risks

By taking part in this study, you may experience the following risks: exhaustion, anxiousness or inconvenience, loss of confidentiality during the interview, as well as, a fall during the walking speed test. Therefore, the PI will prevent these risks in the following ways. The PI will take a break of approximately 5 minutes when the interview has passed approximately 30 minutes. During the interview, if you feel exhausted, you will be allowed to take a break until you feel better. If you feel anxious, the PI will ask and answer your questions. If you still feel anxious with the interview, you can withdraw from this study at any

time based on your need. To prevent falls, the PI will perform a walking speed test on a floor that is smooth, not easy to slip, and no obstacles present leading to a stumble. The PI will allow you to survey the distance and practice walking. During the walking speed test, you walk in a normal speed the same as you walk in your everyday life, and the PI will closely observe you. If you stumble or are unsteady, the PI will suddenly support you to prevent falls. Moreover, the PI will keep your data in a safe place and it will remain confidential.

Study Costs
Participation in this study will be at no cost to you.

Compensation
For taking part in this research study, you will be paid for your time and inconvenience. You will receive Thai cash of 100 bahts after you answer all questionnaires.

Research related injuries
If you have injuries due to this research participation, you will receive basic care from the PI. If your injuries should need to be treated by a healthcare provider or physician in the hospital based on the PI's decision, you will be treated under careful consideration of healthcare providers or physicians. Treatment expenses must be your responsibility based on your health insurance. The PI will visit you and help you to coordinate and refer you to an organization at your convenience so you can receive the correct treatment.

Confidentiality
All information collected about you during the course of this study will be kept confidential to the extent permitted by law. You will be identified in the research records by a code name or number. Your name and data with codes will be kept in separate files and kept in a locked area. The data will be destroyed within 5 years. Information that identifies you personally will not be released without your written permission. However, the study sponsor, the Institutional Review Board (IRB) at Wayne State University, or U.S. federal agencies with appropriate regulatory oversight [e.g., Food and Drug Administration (FDA), Office for Human Research Protections (OHRP), Office of Civil Rights (OCR), etc.) may review your records.

When the results of this research and photographs are published or discussed in conferences, no information will be included that would reveal your identity.

Voluntary Participation/Withdrawal
Taking part in this study is voluntary. You have the right to choose not to take part in this study. You are free to only answer questions that you want to answer. You are free to withdraw from participation in this study at any time. Your decisions will not change any present or future relationship with Wayne State University and Saraburi Nursing College, or other services you are entitled to receive.

The PI may stop your participation in this study without your consent. The PI will make the decision and let you know if it is not possible for you to continue. The decision that is made is to protect your health and safety, or because you did not follow the instructions to take part in the study.

Questions
If you have any questions about this study now or in the future, you may contact Miss Kanyarat Ubolwan at the following phone number 087-408-4890. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at 1-(313) 577-1628. If

An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call 1-(313) 577-1628 to ask questions or voice concerns or complaints. In addition, you can also contact the secretary of the Ethical Review Committee for Research in Human Subject of Saraburi Nursing College at 18/64 Tedsaban 4 Road Pakpreiw, Muang Saraburi, 18000, phone number (036) 211948 extend 3202 Fax (036) 317206

Consent to Participate in a Research Study

To voluntarily agree to take part in this study, you must sign on the line below. If you choose to take part in this study, you may withdraw at any time. You are not giving up any of your legal rights by signing this form. Your signature below indicates that you have read, or had read to you, this entire consent form, including the risks and benefits, and have had all of your questions answered. You will be given a copy of this consent form.

Signature of participant	Date
Printed name of participant	Time
Signature of witness**	Date
Printed of witness**	Time
Signature of person obtaining consent	Date
Printed name of person obtaining consent	Time

**Use when participant has had this consent form read to them (i.e., illiterate, legally blind, translated into foreign language).

APPROVAL PERIOD

JUN 29 '12 JUN 07 '13

WAYNE STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Signature of translator	Date
Printed name of translator	Time

เอกสารแสดงความยินยอม โดยได้รับการบอกกล่าว

ชื่องานวิจัย: การศึกษาความสัมพันธ์ระหว่างปัจจัยด้านประชากร ปัจจัยเสี่ยง การรับรู้ความสามารถของตนเอง และพฤติกรรมการป้องกันการหกล้มของผู้สูงอายุไทยที่อาศัยอยู่ในชุมชน

ชื่อผู้วิจัย: นางสาวกันยารัตน์ อุบลวรรณ
วิทยาลัยพยาบาล มหาวิทยาลัยเวนสเตท เมืองดีทร้อย รัฐมิชิแกน สหรัฐอเมริกา
(087)-408-4890

ทุนสนับสนุนงานวิจัย: ซิกมา เทตา ทอ อินเตอร์เนชั่นเนล แลมดา แชปเตอร์

วัตถุประสงค์: ท่านเป็นผู้ที่ถูกขอความร่วมมือให้เข้าร่วมในงานวิจัยนี้ เพื่อศึกษาเกี่ยวกับความสัมพันธ์ระหว่างปัจจัยเสี่ยงส่วนบุคคล และพฤติกรรมการป้องกันการหกล้ม เพราะว่าท่านเป็นผู้สูงอายุไทยซึ่งอาจมีปัจจัยเสี่ยงด้านบุคคลที่มีอิทธิพลต่อพฤติกรรมการป้องกันการหกล้ม งานวิจัยนี้จะถูกดำเนินการในชุมชนของตำบลปากเพรียว อำเภอเมืองตำบลเสาไห้ ตำบลสวนดอกไม้ ตำบลท่าช้าง และตำบลต้นตาล อำเภอเสาไห้ในจังหวัดสระบุรีของประเทศไทย งานวิจัยนี้ต้องการผู้เข้าร่วมเพื่อรับการสัมภาษณ์จำนวน 200 คน **ก่อนตัดสินใจข้าร่วมงานวิจัยนี้ กรุณาอ่านเอกสารนี้อย่างละเอียดและถามคำถามหากท่านมีข้อสงสัย**

วัตถุประสงค์ของงานวิจัยนี้เพื่อศึกษาเกี่ยวกับปัจจัยส่วนบุคคล เช่น อายุ จำนวนครั้งในการล้ม ภาวะสุขภาพ และระดับความเชื่อมั่นในความสามารถของตนเองมีผลต่อพฤติกรรมการป้องกันการล้มของผู้สูงอายุไทยที่อาศัยอยู่ในชุมชนอย่างไร

วิธีการดำเนินวิจัย: หากท่านตกลงเข้าร่วมงานวิจัยนี้ ผู้วิจัยจะมาพบท่าน 1 ครั้ง ที่บ้านหรือสถานที่ที่ท่านสะดวกสำหรับการสัมภาษณ์ ในการสัมภาษณ์จะใช้เวลาประมาณ 1 ชั่วโมง ผู้วิจัยจะสอบถามท่านโดยใช้แบบสอบถาม จำนวน 7 ชุด ซึ่งเป็นคำถามเกี่ยวกับข้อมูลส่วนตัว (เช่น อายุ รายได้ และความกลัวการล้ม) ปัญหาสุขภาพและการรักษา ความเชื่อมั่นในความสามาถของตนเองในขณะทำกิจกรรมพื้นฐานและความเชื่อมั่นในความสามารถของตนเองโดยทั่วไป การรับรู้ต่อภาวะสุขภาพร่างกายและจิตใจ และพฤติกรรมการป้องกันการหกล้ม นอกจากนี้ท่านจะถูกขอร้องให้เดินทางตรงระยะ 8 เมตร จำนวน 2 รอบ เพื่อทดสอบความสามารถ ของการเดินโดยไม่มีผู้ช่วยเหลือ ในขณะสัมภาษณ์และทดสอบการเดินอาจมีการถ่ายรูปเพื่อใช้ในการนำเสนอ

ประโยชน์: ประโยชน์โดยตรงที่ท่านจะได้รับจากการเข้าร่วมงานวิจัยนี้คือ ความเข้าใจภาวะสุขภาพของท่านเพิ่มขึ้น ที่อาจจะนำท่านไปสู่การมีพฤติกรรมการป้องกันการล้มเพิ่มมากขึ้น ข้อมูลที่ได้จากท่านอาจช่วยให้พยาบาลหรือเจ้าหน้าที่ทางด้านสุขภาพมีความเข้าใจปัจจัยส่วนบุคคลที่สัมพันธ์กับพฤติกรรมการป้องกันการล้มได้ดีขึ้น นอกจากนี้ข้อมูลของท่านอาจช่วยเจ้าหน้าที่ทางด้านสุขภาพพัฒนาโปรแกรมหรือกลยุทธ์เพื่อลดปัจจัยเสี่ยงต่อการล้มและอุบัติการณ์การล้มในกลุ่มประชากรผู้สูงอายุในอนาคต

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ชื่อผู้ร่วมวิจัย

ความเสี่ยง: การเข้าร่วมงานวิจัยนี้อาจจะเกิดความเสี่ยงต่อท่านได้ เช่น ความเหนื่อยล้า ความวิตกกังวลหรือความไม่สบายใจ ข้อมูลบางอย่างถูกเปิดเผยในระหว่างการสัมภาษณ์ และการหกล้มขณะทดสอบการเดิน ดังนั้นผู้วิจัยจะป้องกันความเสี่ยงเหล่านี้โดยผู้วิจัยจะหยุดพักการสัมภาษณ์ประมาณ 5 นาที หลังจากเริ่มสัมภาษณ์ไปแล้วประมาณครึ่งชั่วโมง หากท่านเกิดความเหนื่อยล้า ผู้วิจัยจะพักการสัมภาษณ์จนท่านหายเหนื่อย หากท่านรู้สึกวิตกกังวล ผู้วิจัยจะถามและตอบคำถามต่าง ๆ หากท่านยังมีความวิตกกังวลในการให้สัมภาษณ์ ท่านสามารถถอนตัวออกจากการเข้าร่วมงานวิจัยได้ตลอดเวลาตามที่ท่านต้องการ การป้องกันการล้ม ผู้วิจัยจะให้ท่านเดินบนพื้นที่เรียบ ไม่ลื่น และไม่มีสิ่งกีดขวางที่จะก่อให้เกิดการหกล้มได้ ผู้วิจัยจะให้ท่านสำรวจเส้นทางการเดินและทดลองเดิน ในขณะทดสอบการเดินให้ท่านเดินตามปกติเช่นเดียวกับการเดินในชีวิตประจำวัน ผู้วิจัยจะคอยสังเกตท่านอย่างใกล้ชิด ถ้าท่านสะดุดหรือเซ ผู้วิจัยจะเข้าช่วยประคองทันทีเพื่อป้องกันไม่ให้ท่านล้ม นอกจากนี้ ผู้วิจัยจะเก็บข้อมูลของท่านไว้ในที่ที่ปลอดภัยและรักษาเป็นความลับ

ค่าใช้จ่าย: การเข้าร่วมงานวิจัยนี้ ท่านไม่ต้องเสียค่าใช้จ่ายใด ๆ

ค่าตอบแทน: การเข้าร่วมงานวิจัยนี้ ท่านจะได้รับค่าตอบแทนสำหรับความร่วมมือในงานวิจัยนี้ เป็นเงินสด จำนวน 100 บาท เมื่อสิ้นสุดการสัมภาษณ์

การบาดเจ็บและการรักษา: หากท่านได้รับบาดเจ็บเนื่องจากการเข้าร่วมงานวิจัยนี้ ท่านจะได้รับการดูแลเบื้องต้นจากผู้วิจัย หากผู้วิจัยเห็นควรนำส่งสถานพยาบาลท่านจะได้รับการรักษาตามดุลพินิจของเจ้าหน้าที่ทางด้านสุขภาพหรือแพทย์ผู้ทำการรักษา ส่วนค่ารักษาพยาบาล ท่านจะต้องเป็นผู้รับผิดชอบเองทั้งหมดตามสิทธิ์ค่ารักษาที่ท่านมีอยู่ ผู้วิจัยจะติดตามเยี่ยมท่านและจะช่วยประสานงานและส่งต่อท่านไปยังสถานพยาบาลที่ท่านสะดวก เพื่อให้ท่านได้รับการรักษาที่ถูกต้อง

การรักษาความลับ: ข้อมูลของท่านทั้งหมดจะถูกเก็บเป็นความลับตามกรอบของกฎหมาย ในบันทึกงานวิจัยท่านจะถูกระบุชื่อโดยรหัสชื่อหรือหมายเลข ชื่อของท่านและข้อมูลที่ใส่รหัสจะถูกเก็บในแฟ้มแยกออกจากกันในตู้ใส่กุญแจ ข้อมูลเหล่านี้จะถูกทำลายภายในระยะเวลา 5 ปี ข้อมูลที่เชื่อมโยงถึงท่านจะไม่ถูกเผยแพร่โดยปราศจากการได้รับอนุญาต อย่างไรก็ตาม ผู้สนับสนุนงานวิจัยนี้ คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยเวนสเตท หรือกลุ่มหน่วยงานของรัฐบาลสหรัฐอเมริกา (เช่น สำนักงานกรรมการอาหารและยา สำนักงานการคุ้มครองการวิจัยเกี่ยวกับมนุษย์ สำนักงานสิทธิของพลเมือง เป็นต้น) อาจตรวจสอบข้อมูลของท่านที่ถูกบันทึกไว้

การตีพิมพ์หรือการเสนอผลงานวิจัยข้อมูลและรูปภาพจะถูกนำเสนอเป็นภาพรวมซึ่งไม่สามารถเชื่อมโยงถึงตัวท่านได้

การอาสาสมัครและการถอนตัว: ในการเข้าร่วมงานวิจัยนี้เป็นไปด้วยความสมัครใจ ท่านมีสิทธิเลือกที่จะไม่เข้าร่วมงานวิจัยนี้ ท่านมีอิสระในการตอบคำถามเท่าที่ท่านต้องการตอบและถอนตัวออกจากงานวิจัยเมื่อใดก็ได้ การตัดสินใจของท่านจะไม่มีผลต่อสัมพันธภาพกับมหาวิทยาลัยเวนสเตท และวิทยาลัยพยาบาลบรมราชชนนี สระบุรี หรือสถานบริการสุขภาพอื่น ๆ ที่ท่านได้เข้ารับบริการ ทั้งในปัจจุบันและอนาคต

ชื่อผู้ร่วมวิจัย

ผู้วิจัยอาจจะยุติการเข้าร่วมงานวิจัยนี้ของท่านโดยไม่ต้องได้รับการยินยอมจากท่าน ผู้วิจัยจะทำการตัดสินใจและบอกให้ท่านรู้หากการเข้าร่วมงานวิจัยของท่านไม่สามารถที่จะดำเนินการต่อได้ การตัดสินใจนี้เพื่อป้องกันสุขภาพและความปลอดภัยของท่าน หรือเพราะท่านไม่สามารถปฏิบัติตามคำแนะนำในการเข้าร่วมงานวิจัยได้

คำถาม:หากท่านมีคำถามใด ๆ ที่เกี่ยวกับงานวิจัยนี้ทั้งในปัจจุบันและในอนาคต ท่านอาจติดต่อสอบถาม นางสาวกันยารัตน์ อุบลวรรณ ได้ที่โทรศัพท์หมายเลข 087-408-4890 หากท่านมีคำถามหรือความกังวลเกี่ยวกับสิทธิของท่านในฐานะผู้ร่วมวิจัย ท่านสามารถติดต่อประธานคณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ ทางโทรศัพท์หมายเลข 1-(313)577-1628 หากท่านไม่สามารถติดต่อเจ้าหน้าที่งานวิจัยได้ หรือต้องการพูดกับคนอื่น ๆ ที่ไม่ใช่เจ้าหน้าที่งานวิจัย เพื่อสอบถามสิ่งที่สงสัย ท่านอาจโทรหมายเลข 1-(313)-577-1628 นอกจากนี้ ท่านสามารถสอบถามได้ที่เลขานุการคณะกรรมการพิจารณาจริยธรรมวิจัยในมนุษย์ วิทยาลัยพยาบาลบรมราชชนนี สระบุรี ที่อยู่ 18/64 ถ. เทศบาล 4 ต. ปากเพรียว อ. เมือง จ. สระบุรี 18000 เบอร์โทรศัพท์ (036) 211948 ต่อ 3202 / โทรสาร (036) 317206

การยินยอมเพื่อเข้าร่วมในงานวิจัย: เพื่อเป็นการยืนยันความยินยอมเข้าร่วมในงานวิจัยโดยสมัครใจ ให้ท่านลงลายมือชื่อบนเส้นข้างล่างนี้ เมื่อท่านเข้าร่วมในงานวิจัยนี้แล้ว ท่านสามารถที่จะถอนตัวออกจากการศึกษานี้ได้ตลอดเวลา ลายมือชื่อนี้ไม่ได้หมายถึงการมอบสิทธิ์ใด ๆ ของท่านตามกฎหมาย แต่ลายมือชื่อของท่านนี้เป็นการระบุว่าท่านได้อ่านและได้รับฟังคำอธิบายแบบฟอร์มยินยอมนี้โดยครบถ้วนในเรื่องความเสี่ยง ประโยชน์ และคำถามทั้งหมดของท่านได้รับการตอบอย่างชัดเจน ท่านจะได้รับสำเนาของแบบฟอร์มยินยอมนี้

ลายเซ็นต์ของผู้เข้าร่วมงานวิจัย	วันที่
ชื่อผู้เข้าร่วมงานวิจัย เขียนตัวบรรจง	เวลา
ลายเซ็นต์พยาน**	วันที่
ชื่อพยาน เขียนตัวบรรจง **	เวลา
ลายเซ็นต์ผู้วิจัย	วันที่
ชื่อผู้วิจัย เขียนตัวบรรจง	เวลา

การเสนอให้พิจารณา/การปรับปรุง วันที่: [25 มิ.ย. 2555]
หมายเลขเอกสาร: [1205010873-2]

ชื่อผู้ร่วมวิจัย

** ใช้เมื่อแบบฟอร์มใบยินยอมนี้ถูกอ่านให้ผู้เข้าร่วมวิจัยฟัง (เช่น ไม่สามารถอ่านและเขียนหนังสือได้ ตาบอด ถูกแปลเป็นภาษาต่างประเทศ)

ลายเซ็นต์ผู้แปล _____ วันที่ _____

ชื่อผู้แปล เขียนตัวบรรจง _____ เวลา _____

ชื่อผู้ร่วมวิจัย _____

An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Research Information Sheet

Title of Study: An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Principal Investigator (PI): Kanyarat Ubolwan
College of Nursing, Wayne State University, Detroit, MI, USA
087-408-4890

Funding Source: Sigma Theta Tau International Lambda Chapter

Purpose

You are being asked to be in a research study that focuses on the relationship between personal risk factors and fall prevention behaviors because you are a Thai older adult who may have personal risk factors that could influence your behaviors to engage in fall prevention. This study is being conducted in the community, including the Pakpreiw, Soa Hai, Suan Dok Mai, Tha Chang, and Ton Tan sub-districts in the Saraburi province of Thailand.

Study Procedures

If you agree to take part in this study, you will be asked to be a member of a focus group about a topic with 7-10 other older adults. The focus group consists of the following steps. The PI will meet you once for a focus group at the location selected by the PI. The PI will request your permission to record the discussion on a tape recorder during the focus group. The PI will ask you to fill out a general information questionnaire. Then the PI will distribute three questionnaires, request you fill them out, and then allow you to modify items or give any suggestion on the questionnaires. After you complete the questionnaires, the PI will ask you 3-5 questions per each questionnaire that involve the wording, clarity and opinions about the questionnaires. Pictures may be taken of the focus group for purposes of presentation. The focus group will take about one and a half hours.

Benefits

The possible benefits to you for taking part in this research are that the focus group may give you awareness of your health status and further your awareness to prevent falls. The obtained information may help nurses or healthcare professionals to better understand personal factors that influence fall prevention behaviors. Moreover, your information may help healthcare professionals develop fall prevention strategies or programs to reduce risk factors for falls and fall incidence for an older population in the future.

Risks

By taking part in this study, you may be tired, anxious or feel inconvenienced by the process. Moreover, your information may result in a possible loss of confidentiality during the focus group. To prevent these risks, the researcher will take a break of approximately 10-15 minutes when the focus group has passed approximately 40 minutes. During focus group, if you feel exhausted, you will be allowed to take a break until you feel better. If you feel anxious, the PI will ask and answer your questions. If you still feel anxious with participation in the focus group, you can withdraw from this study at any time based on your need. Moreover, the PI will inform you that your data will be kept confidential and request that you please keep the information you hear in the group confidential and do not tell any other person about the members' information.

An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults

Costs
There will be no costs to you for participation in this research study.

Compensation
You as the research volunteer will receive a gift that is equivalent to 90 bahts, approximately 30 bahts for travelling fare, and beverages and snacks. You will receive a gift and travelling fare after the focus group is completed.

Research related injuries
If you have injuries due to this research participation, you will receive basic care from the researcher. If your injuries should need to be treated by a healthcare provider or physician in the hospital based on the PI's decision, you will be treated under careful consideration of healthcare providers or physicians. Treatment expenses must be your responsibility based on your health insurance. The PI will visit you and help you to coordinate and refer you to an organization at your convenience so you can receive the correct treatment.

Confidentiality
Your data will be kept confidential. The taped record of your discussion will be transcribed by the researcher and a code name or number will be used protect any linkage to you. The data will be kept in files and in a locked area. Only the PI can access this data. In case of publication, the data or any photographs will be published or presented as overall data and photographs without identification of any individual person. All data including the audiotape and photographs will be destroyed within 5 years.

Voluntary Participation /Withdrawal
Taking part in this research is voluntary. You are free to not answer any questions or withdraw at any time. Your decision will not change any present or future relationship with Wayne State University and Saraburi Nursing College.

Questions
If you have any questions about this study now or in the future, you may contact Miss Kanyarat Ubolwan at the following phone number 087-408-4890. If you have questions or concerns about your rights as a research participant, the Chair of the Human Investigation Committee can be contacted at 1-(313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call 1-(313) 577-1628 to ask questions or voice concerns or complaints. In addition, you can also contact the secretary of the Ethical Review Committee for Research in Human Subjects of Saraburi Nursing College at 18/64 Tedsaban 4 Road Pakpreiw, Muang Saraburi, 18000, phone number (036) 211948 extend 3202 Fax (036) 317206.

Participation
By completing the questionnaire and focus group participation you are agreeing to participate in this study.

เอกสารชี้แจงข้อมูลสำหรับงานวิจัย

ชื่องานวิจัย: การศึกษาความสัมพันธ์ระหว่างปัจจัยด้านประชากร ปัจจัยเสี่ยง การรับรู้ความสามารถของตนเอง และพฤติกรรมการป้องกันการหกล้มของผู้สูงอายุไทยที่อาศัยอยู่ในชุมชน

ชื่อผู้วิจัย: นางสาวกันยารัตน์ อุบลวรรณ
วิทยาลัยพยาบาล มหาวิทยาลัยเวนสเตท เมืองดีทร้อย รัฐมิชิแกน สหรัฐอเมริกา
(087)-408-4890

ทุนสนับสนุนงานวิจัย: ซิกมา เทตา ทอ อินเตอร์เนชั่นเนล แลมดา แชบเตอร์

วัตถุประสงค์: ท่านคือบุคคลที่ถูกขอความร่วมมือให้เข้าร่วมงานวิจัย เพื่อศึกษาความสัมพันธ์ระหว่างปัจจัยเสี่ยงส่วนบุคคล และพฤติกรรมการป้องกันการหกล้ม เพราะว่าท่านเป็นผู้สูงอายุไทยที่อาจมีปัจจัยเสี่ยงส่วนบุคคลที่มีผลต่อพฤติกรรมการป้องกันการหกล้ม งานวิจัยนี้จะถูกดำเนินการในชุมชนของตำบลปากเพรียว ตำบลเสาไห้ ตำบลสวนดอกไม้ ตำบลท่าช้าง และตำบลต้นตาล ในจังหวัดสระบุรีของประเทศไทย

วิธีการดำเนินการวิจัย: ถ้าท่านยินดีเข้าร่วมในงานวิจัย ท่านจะถูกขอร้องให้เข้าเป็นสมาชิกกลุ่มและร่วมสนทนากลุ่ม กลุ่มละประมาณ 7-10 คน โดยมีขั้นตอนต่อไปนี้ ผู้วิจัยจะพบท่าน ณ สถานที่ที่ผู้วิจัยเป็นผู้เลือกในการสนทนากลุ่ม จำนวน 1 ครั้ง ผู้วิจัยจะขออนุญาตบันทึกเสียงของท่านในช่วงสนทนากลุ่ม ผู้วิจัยจะแจกแบบสัมภาษณ์ข้อมูลทั่วไปและให้ท่านตอบ จากนั้นผู้วิจัยจะแจกแบบสอบถามจำนวน 3 ชุด ให้ท่านตอบ ท่านสามารถแก้ไขหรือเขียนคำแนะนำต่าง ๆ ลงในแบบสอบถามทั้ง 3 ชุดได้ หลังจากที่ท่านตอบแบบสอบถามเสร็จผู้วิจัยจะถามคำถาม 3-5 คำถามเกี่ยวกับการใช้คำ ความชัดเจน และข้อคิดเห็นเกี่ยวกับแบบสอบถามแต่ละชุด การทำสนทนากลุ่มอาจมีการถ่ายรูปเพื่อใช้ในการนำเสนอ การสนทนากลุ่มจะใช้เวลาประมาณ 1 ชั่วโมง 30 นาที

ประโยชน์: ประโยชน์ทางตรงที่ท่านอาจจะได้รับจากการเข้าร่วมงานวิจัยนี้คือ การสนทนากลุ่มอาจทำให้ท่านได้ตระหนักถึงภาวะสุขภาพของตนเองและการป้องกันการล้ม ข้อมูลที่ได้จากท่านอาจช่วยให้พยาบาลหรือเจ้าหน้าที่ทางด้านสุขภาพมีความเข้าใจปัจจัยส่วนบุคคลที่มีผลต่อพฤติกรรมการป้องกันการหกล้มของผู้สูงอายุได้ดีขึ้น นอกจากนี้ข้อมูลของท่านอาจช่วยเจ้าหน้าที่ด้านสุขภาพพัฒนาโปรแกรมหรือกลยุทธ์เพื่อลดปัจจัยเสี่ยงต่อการหกล้มและอุบัติการณ์การหกล้มในกลุ่มประชากรผู้สูงอายุในอนาคต

ความเสี่ยง: การเข้าร่วมงานวิจัยนี้อาจทำให้ท่านเกิดความเหนื่อยล้า ความวิตกกังวล หรือความรู้สึกไม่สบายใจในการสนทนากลุ่ม นอกจากนี้ข้อมูลบางอย่างของท่านอาจถูกเปิดเผยขณะการสนทนากลุ่ม ดังนั้นในการป้องกันความเสี่ยงเหล่านี้ ผู้วิจัยจะหยุดพักการสนทนากลุ่มประมาณ 10-15 นาที หลังจากเริ่มสนทนากลุ่มแล้วประมาณ 40 นาที หากท่านเหนื่อยล้าระหว่างการสนทนากลุ่ม ผู้วิจัยจะให้ท่านพักการสนทนากลุ่มจนกว่าท่านจะหายเหนื่อย ถ้าท่านรู้สึกวิตกกังวลกับ

การเข้าร่วมสนทนากลุ่ม ผู้วิจัยจะสอบถามและตอบคำถามต่าง ๆ ถ้าท่านใดยังมีความวิตกกังวลในการเข้ากลุ่มท่านสามารถถอนตัวออกจากการเข้าร่วมงานวิจัยได้ตลอดเวลาตามที่ท่านต้องการ นอกจากนี้ผู้วิจัยจะขอแจ้งให้ท่านทราบว่าข้อมูลของท่านจะถูกเก็บเป็นความลับ ข้อมูลต่าง ๆ ของสมาชิกในกลุ่มที่ท่านได้รับทราบจากการสนทนากลุ่ม ผู้วิจัยขอร้องให้ท่านเก็บเป็นความลับอย่าได้บอกกล่าวให้บุคคลภายนอกได้รับทราบ

ค่าใช้จ่าย: ท่านไม่ต้องเสียค่าใช้จ่ายในการเข้าร่วมงานวิจัยนี้

ค่าตอบแทน: ในฐานะที่ท่านอาสาสมัครเข้าร่วมงานวิจัย ท่านจะได้รับค่าตอบแทนเป็นของขวัญราคาประมาณ 90 บาท ค่าเดินทางคนละ 30 บาท และอาหารว่าง 1 มื้อ โดยของขวัญและค่าเดินทาง ท่านจะได้รับเมื่อสิ้นสุดการสนทนากลุ่ม

การบาดเจ็บที่เกี่ยวข้องกับงานวิจัย: หากท่านได้รับบาดเจ็บเนื่องจากการเข้าร่วมงานวิจัยนี้ ท่านจะได้รับการดูแลเบื้องต้นจากผู้วิจัย หากผู้วิจัยเห็นควรนำส่งสถานพยาบาลท่านจะได้รับการรักษาตามดุลพินิจของเจ้าหน้าที่ทางด้านสุขภาพหรือแพทย์ผู้ทำการรักษา ส่วนค่ารักษาพยาบาลท่านจะต้องเป็นผู้รับผิดชอบเองทั้งหมดตามสิทธิ์ค่ารักษาที่ท่านมีอยู่ ผู้วิจัยจะติดตามเยี่ยมท่านและจะช่วยประสานงานและส่งต่อท่านไปยังสถานพยาบาลที่ท่านสะดวก เพื่อให้ท่านได้รับการรักษาที่ถูกต้อง

การรักษาความลับ: ข้อมูลของท่านจะถูกเก็บเป็นความลับ ผู้วิจัยจะเป็นผู้ถอดเทปบันทึกเสียง ข้อความจะถูกใส่รหัสเป็นชื่อหรือหมายเลขเพื่อป้องกันการเชื่อมโยงถึงตัวท่าน ข้อมูลจะถูกเก็บในแฟ้มในตู้ใส่กุญแจ ผู้วิจัยเท่านั้นที่สามารถสืบค้นข้อมูลเหล่านี้ได้ การตีพิมพ์หรือการเสนอผลงานวิจัย ข้อมูลหรือรูปภาพจะถูกนำเสนอเป็นภาพรวมซึ่งไม่สามารถบ่งชี้ตัวบุคคล ข้อมูลและเทปบันทึกเสียงจะถูกทำลายภายในระยะเวลา 5 ปี

การอาสาสมัครหรือการถอนตัวออกจากงานวิจัย: ในการเข้าร่วมงานวิจัยครั้งนี้เป็นไปด้วยความสมัครใจ ท่านมีอิสระที่จะไม่ตอบคำถามใด ๆ หรือถอนตัวออกจากงานวิจัยเมื่อใดก็ได้ การตัดสินใจของท่านจะไม่มีผลต่อสัมพันธภาพกับมหาวิทยาลัยเวนสเตท และวิทยาลัยพยาบาลบรมราชชนนี สระบุรี ทั้งในปัจจุบันและอนาคต

คำถาม: หากท่านมีข้อสงสัยประการใดเกี่ยวกับงานวิจัยนี้ทั้งในปัจจุบันและอนาคต ท่านสามารถติดต่อสอบถามผู้วิจัย นางสาวกันยารัตน์ อุบลวรรณ ได้ทางโทรศัพท์หมายเลข 087-408-4890 หากท่านมีปัญหาสงสัยเกี่ยวกับสิทธิของท่านในฐานะผู้เข้าร่วมงานวิจัย ท่านสามารถติดต่อประธานคณะกรรมการพิจารณาจริยธรรมวิจัยในมนุษย์ ทางโทรศัพท์หมายเลข 1-(313)577-1628 หากท่านไม่สามารถติดต่อเจ้าหน้าที่งานวิจัยได้ หรือถ้าท่านต้องการพูดกับคนอื่น ๆ มากกว่าเจ้าหน้าที่งานวิจัย ท่านอาจโทรหมายเลข 1-(313)-577-1628 เพื่อสอบถามสิ่งที่สงสัย นอกจากนี้ ท่านสามารถสอบถามได้ที่เลขานุการคณะกรรมการพิจารณาจริยธรรมวิจัยในมนุษย์ วิทยาลัยพยาบาลบรมราชชนนี สระบุรี ที่อยู่ 18/64 ถ. เทศบาล 4 ต. ปากเพรียว อ. เมือง จ. สระบุรี 18000 เบอร์โทรศัพท์ (036) 211948 ต่อ 3202 / โทรสาร (036) 317206

การเข้าร่วมงานวิจัย: ท่านยินดีเข้าร่วมงานวิจัยนี้โดยการตอบแบบสอบถามและการเข้าร่วมสนทนากลุ่ม

การเสนอให้พิจารณา/การปรับปรุง วันที่: [25 มิ.ย. 2555]
หมายเลขเอกสาร: [1205010873-2]

APPROVAL PERIOD

JUN 29 '12 JUN 07 '13

WAYNE STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

WAYNE STATE UNIVERSITY

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

NOTICE OF EXPEDITED AMENDMENT APPROVAL

To: Kanyarat Ubolwan
College of Nursing

From: Dr. Scott Millis
Chairperson, Behavioral Institutional Review Board (B3)

Date: July 27, 2012

RE:

IRB #:	048812B3E
Protocol Title:	An Exploration of the Relationships among Demographics, Risk Factors, Perceived Self-Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults
Funding Source:	Sponsor: SIGMA THETA TAU INTERNATIONAL, INCORPORATED
Protocol #:	1205010873
Expiration Date:	June 07, 2013
Risk Level / Category:	Research not involving greater than minimal risk

The above-referenced protocol amendment, as itemized below, was reviewed by the Chairperson/designee of the Wayne State University Institutional Review Board (B3) and is APPROVED effective immediately.

- Protocol – Changes to data collection methods and/or instruments which include language changes to improve the clarity of the Self-Administered Comorbidity Questionnaire and the Falls Behavioural (FaB) for Older Person based on suggestions received during Phase I of the study. These changes do not affect risks to participants.

Document No. 1- 019/ 2012

The Ethical Review Committee for Research in Human Subjects
Boromarajonani College of Nursing, Saraburi
Praboromarajchanok, Institute for Health Workforce Development Ministry of Public Health, Thailand

Title of Project: An Exploration of Relationship among Demographics, Risk Factor, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwell Thai Older Adults

Reference Number: 06/ 2012

Principle Investigator: Miss Kunyarat Ubolwan

Place of Proposed Study: The community in Saraburi Province

Document Review/ Approval:

- Research proposal (Thai version on May 25, 2012)
- Consent form and Information sheet (Thai version on May 25, 2012)
- Instrument (Thai version on May 2, 2012)

We also confirm that we are an ethics committee constituted in agreement and in accordance with the ICH-GCP.

The Ethical Review Committee for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi, Praboromarajchanok, Institute for Health Workforce Development, Ministry of Public Health, Thailand had reviewed Thai research proposal. In ethical concern, the committee has reviewed and approved the research proposal as mentioned above, therefore the research proposal in Thai version will be mainly conducted. The research proposal must be approved by continuation review for the duration of *one year* until expired.

Bang-on Phaonoi ..... Secretary
(Miss Bang-on Phaonoi, RN, APN, M.N.S.)

Kultida Panidchakul ..... Chairman
(Kultida Panidchakul R.N., Ph.D.)

Date of Meeting....May 21, 2012...
Date of Approval....May 31, 2012...
Date of Expire....May 31, 2013...

Document No. 1- 019/ 2012

The Ethical Review Committee for Research in Human Subjects
Boromarajonani College of Nursing, Saraburi
Praboromarajchanok, Institute for Health Workforce Development Ministry of Public Health, Thailand

.....

Title of Project: An Exploration of Relationship among Demographics, Risk Factor, Perceived Self Efficacy and Fall Prevention Behaviors in Community-Dwell Thai Older Adults

Reference Number: 06/ 2012

Principle Investigator: Miss Kunyarat Ubolwan

Place of Proposed Study: The community in Saraburi Province

Document Review/ Approval:

- Consent form and Information sheet (Thai version June 28, 2012)

We also confirm that we are an ethics committee constituted in agreement and in accordance with the ICH-GCP.

The Ethical Review Committee for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi, Praboromarajchanok, Institute for Health Workforce Development, Ministry of Public Health, Thailand had reviewed Consent form and Information sheet in Thai version. The research proposal must be approved by continuation review for the duration of *one year* until expired.

Bang-on Phaonoi
.....
Secretary
(Miss Bang-on Phaonoi, RN, APN, M.N.S.)

Kultida Panidchakul
.....
Chairman
(Kultida Panidchakul R.N., Ph.D.)

Date of Meeting June 22, 2012.
Date of Approval June 28, 2012
Date of Expire May 31, 2013

Document No. 1- 019/ 2012

The Ethical Review Committee for Research in Human Subjects
Boromarajjonani College of Nursing, Saraburi
Praboromarajchanok, Institute for Health Workforce Development Ministry of Public Health, Thailand

Title of Project: An Exploration of Relationship among Demographics, Risk Factor, Perceived Self-Efficacy and Fall Prevention Behaviors in Community-Dwell Thai Older Adults

Reference Number: **06/ 2012**

Principle Investigator: Miss Kunyarat Ubolwan

Place of Proposed Study: The community in Saraburi Province

Document Review/ Approval:

- Self-Administered Comorbidity Questionnair
- Fall Behavioural (FaB) for Older Person

The Ethical Review Committee for Research in Human Subjects of Boromarajonani College of Nursing, Saraburi, Praboromarajchanok, Institute for Health Workforce Development, Ministry of Public Health, Thailand had reviewed those instruments in Thai version according to request form on July 23, 2012.

The ethics committee suggested that changing languages to improve the clarity of both instruments, the Self-Administered Comorbidity Questionnair and the Fall Behavioural (FaB) for Older Person, have not affected risks to participants.

Bang-on Phaonoi ..... Secretary
(Miss Bang-on Phaonoi, RN, APN, M.N.S.)

Kultida Panidchakul ..... Chairman
(Kultida Panidchakul R.N., Ph.D.)

Date of Approval....July 27, 2012...
Date of Expire....May 31, 2013...

Saraburi Provincial Public Health Office
56 Tedsaban 3 Rd. Pakpreiw,
Muang Saraburi, Saraburi, 18000 Thailand

April 12, 2012

Dr. Ramona Benkert
Dr. Jean Davis
College of Nursing, Wayne State University
5557 Cass Avenue, Cohn Building,
Suite 370
Detroit, MI 48202 (USA)

Dear Dr. Ramona Benkert and Dr. Jean Davis

Regarding your request for Miss Kanyarat Ubolwan to collect data with older adults for her dissertation research, this letter is to notify you that Miss Kanyarat Ubolwan was approved to collect data among older adults living in the communities of Saraburi province. This will include the following sub-districts: Pakpreiw, Sao Hai, Suan Dok Mai, Ton Tan, and Tha Chang. In addition, she was approved to have rosters of older adults living in the above mentioned communities.

If she needs any additional help or future information during data collection, she can contact the local officers directly.

Sincerely,

Witaya Supornpun, MD
Medical Chief of Saraburi Provincial Public Health Office

ที่ สบ ๐๐๒๗.๐๐๓/๓/ว. ๑๑๗๕

สำนักงานสาธารณสุขจังหวัดสระบุรี
๕๖ ถนนเทศบาล ๓ อ.เมืองสระบุรี
จ.สระบุรี ๑๘๐๐๐

๒๗ มิถุนายน ๒๕๕๕

เรื่อง ขอความร่วมมือสนับสนุนการเก็บข้อมูลวิจัย

เรียน ผู้อำนวยการโรงพยาบาลสระบุรี, เสาไห้เฉลิมพระเกียรติ ๘๐ พรรษา , สาธารณสุขอำเภอเสาไห้

ด้วยสำนักงานสาธารณสุขจังหวัดสระบุรี ได้รับการประสานงานขอความร่วมมือเก็บข้อมูลวิจัย ของนางสาวกันยารัตน์ อุบลวรรณ อาจารย์วิทยาลัยพยาบาลบรมราชชนนี สระบุรี ซึ่งเป็นนักศึกษาระดับปริญญาเอก ที่College of Nursing, Wayne State University, Detroit,USA. กำลังทำปริญญานิพนธ์ เรื่อง An Exploration of the Relationshipsa mongD emographics,R isk Factors Perceived Self - Efficacy, and Fall Prevention Behaviors in Community-Dwelling Thai Older Adults" ซึ่งจะดำเนินการเก็บข้อมูลในกลุ่มผู้สูงอายุ ด้วยการสัมภาษณ์และสนทนากลุ่ม ในพื้นที่ ตำบลปากเพรียว ตำบลเสาไห้ ตำบลท่าช้าง ตำบลสวนดอกไม้ และตำบลต้นตาล ซึ่งอยู่ในพื้นที่ของท่าน ซึ่งได้ผ่านการเห็นชอบจากคณะกรรมการจริยธรรมวิจัยในมนุษย์เรียบร้อยแล้ว

ในการนี้สำนักงานสาธารณสุขจังหวัดสระบุรี ขอความร่วมมือหน่วยงานที่เกี่ยวข้องให้การสนับสนุนและอำนวยความสะดวกแก่ผู้วิจัย ในการเก็บข้อมูลตามความเหมาะสมของพื้นที่ต่อไป

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสิทธิ์ชัย มั่งจิตร)
ผู้อำนวยการโรงพยาบาลแก่งคอย
รักษาการในตำแหน่งนายแพทย์เชี่ยวชาญ (ด้านเวชกรรมป้องกัน)
ปฏิบัติราชการแทน นายแพทย์สาธารณสุขจังหวัดสระบุรี

กลุ่มงานพัฒนาบุคลากรและพัฒนาคุณภาพบริการ
โทร๐ ๓๖๒๒ ๓๑๑๘ ต่อ ๑๑๓/โทรสาร๐ ๓๖๒๑ ๒๐๘๔ , ๐ ๓๖๒๑ ๒๐๓๘
ผู้ประสานงานดร.มะลิ วิมาโน ๐๘ ๖๘๘๔ ๑๖๗๕

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ABSTRACT

AN EXPLORATION OF THE RELATIONSHIPS AMONG DEMOGRAPHICS, RISK FACTORS, PERCEIVED SELF-EFFICACY, AND FALL PREVENTION BEHAVIORS IN COMMUNITY-DWELLING THAI OLDER ADULTS

by

KANYARAT UBOLWAN

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Advisor: Dr. Ramona A. Benkert

Major: Nursing

Degree: Doctor of Philosophy

Background: Worldwide, falls among older adults lead to significant physical, psychological, and social problems. Studies have described fall prevalence, risk factors, and the impact of falls in Thailand. Although fall prevention requires significant self-care abilities, insufficient knowledge exists about how to prevent falls in Thai community settings or the predictors of fall prevention behaviors among Thai Older adults.

Purpose: Orem's Self-Care Theory was used: 1) to examine the relationships among the basic conditioning factors (BCFs) of age, gender, falls, comorbidity, mental and physical health status, self-care agency (i.e., self-efficacy), and fall prevention self-care behaviors and 2) to determine the predictors of self-efficacy and fall prevention behaviors.

Methods: Using a cross-sectional design, a convenience sample of 200 older adults living in the Saraburi province of Thailand was recruited. Eight reliable and valid Thai-translated instruments were completed through face-to-face interviews. Moreover, older adults were requested to perform walking speed test. Descriptive, correlational, and multiple regression analyses were performed.

Results: Age, number of falls, and depression were negatively correlated with fall and general self-efficacy (FSE and GSE; $p < 0.01$), whereas walk-speed and the SF-12 physical component score were positively correlated with FSE and GSE ($p < 0.01$). Multiple regression analyses revealed that a higher number of falls, more comorbidities, higher depression and global mental health scores, and slower walk-speeds predicted 43% ($F_{(5, 194)} = 29.67$, $p < 0.0001$) of the variance in FSE, whereas older age, an increased number of falls, and higher depression scores predicted 29% ($F_{(4, 195)} = 20.14$, $p < 0.0001$) of the variance in GSE. Controlling for BCFs, neither FSE nor GSE predicted fall prevention behaviors. Only the BCFs of female gender, lower depression and walk-speed, and higher number of comorbidities, fear of falling and SF-12 physical and mental component scores predicted 30% ($p < 0.0001$) of the variance in fall prevention behaviors.

Conclusion: Fall prevention behaviors among Thai older adults are multifaceted and are predicted by several variables. Unexpectedly, neither of the self-care agency variables predicted fall prevention behaviors. The results provide new knowledge about the predictors of fall prevention behaviors and may be used to develop effective programs for selected community-dwelling older adults in Thailand (e.g., older women with lower walk speed, more comorbidities, etc.). Future research is needed to evaluate the link between other self-care agency predictors of fall prevention behaviors.

AUTOBIOGRAPHICAL STATEMENT

Kanyarat Ubolwan

EDUCATION

Wayne State University, Detroit, MI	PhD.	2013	Nursing
Ohio University, Athens, OH	MSN	2008	Nurse Administrator
Mahidol University, Bangkok, Thailand	MSN	1997	Adult Nursing
Boromarajonani College of Nursing, Saraburi, Thailand	BS	1992	Nursing Science

LICENSURE & CERTIFICATION

1992-Current Nursing and Midwifery License, Thailand Nursing Council

March-June 1993 Certificate in Clinical Teaching (training nurse students), Praboromarajchanok Institute for Health Workforce Development

PROFESSIONAL EXPERIENCE:

1992- Current An instructor at Boromarajonani College of Nursing, Saraburi, Thailand

1993-2003 A part time nurse at Saraburi Hospital in the department of the medical children nursing, Saraburi, Thailand

PROFESSIONAL MEMBERSHIPS:

1992 – Present Thailand Nursing Association

1992 – Present Thailand Nursing Council

SCHOLARSHIPS/AWARDS

2006-2012 Scholarship from the Royal Thai Government to obtain a master's degree and PhD in nursing in a foreign country

2012-2013 Thomas C. Rumble University Graduate Fellowship from Graduate School at Wayne State University

2012-2013 John Helfman Nursing Scholarship Faville Scholars, College of Nursing Wayne State University

Helen Newberry Joy Endowed Scholarship, College of Nursing Wayne State University

Ann Kirk Warren Endowed Scholarship, College of Nursing Wayne State University

2012 Research grant from Sigma Theta Tau International Lambda Chapter

PUBLICATIONS

Ubolwan, K., & Muangkaew, R. (2006). The relationship between personal factors, health promoting behaviors and cognitive level among the elderly in the provinces of public health service region 2. *Journal of Gerontology and Geriatric Medicine, 7*(2), 2-11.