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Understanding and Preventing Falls: Perspectives of First Responders and Older Adults

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Understanding and Preventing Falls: Perspectives of First Responders and Older Adults

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Abstract

OBJECTIVE. The objectives of this study were to identify characteristics of older adult fallers in a local community in Marin County, California, examine the perceptions of older adults who contacted a local fire district after a fall, examine the perceptions of first responders from a local fire district regarding falls and fall prevention, explore the degree of depression in older adult fallers, and identify strategies to prevent falls in older adults.

METHODS. This research study was an exploratory and retrospective descriptive study that utilized a mixed-method design. The researchers coded narratives from Patient Care Report (PCRs) provided by the fire district and also quantitatively analyzed PCRs to identify characteristics of older adult fallers. Researchers also qualitatively analyzed data gathered from focus groups with older adults and first responders and from phone interviews with community-dwelling older adults to understand their experiences regarding falls and fall prevention.

RESULTS. Findings revealed that the majority of fallers were female, at an average age of 81 years old, living at home and alone during the fall. Older adult participants associated falls with negative emotions and expressed a strong desire to maintain their independence despite experiencing falls and fall injuries. First responder participants experienced challenges when communicating with older adult fallers due to cognitive and psychosocial factors. The lack of coordination of services with care facility staff also posed a challenge for first responder participants.

CONCLUSION. As the older adult population increases, more older adults will fall and require emergency care from first responders. A collaboration between first responders and occupational therapists to develop and implement effective fall prevention programs for the community can potentially reduce falls and fall-related injuries and costs and improve the health and well-being of older adults.

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Introduction

Falls are a major health concern in older adults (United States Department of Health and Human Services [HHS], Healthy People 2020, 2013; Centers for Disease Control and Prevention [CDC], 2013). According to the Centers for Disease Control and Prevention (2013), falls dramatically increase with age. One out of three older adults age 65 years and older experience a fall each year (CDC, 2013). Fall rates will continue to increase, as older adults are currently one of the fastest growing age groups in the U.S., with the first Baby Boomers having reached 65 in 2011 (HHS, Healthy People 2020, 2013).

Research suggests that both intrinsic and extrinsic factors contribute to falls (Delbaere et al., 2010; Erkal, 2010; Painter, Elliot, & Hudson, 2009). Intrinsic factors are those that stem from the individual, such as vision loss, decreased balance, and polypharmacy (Kallstrand-Ericson & Hildingh, 2009; Landi et al., 2005; Muir, Berg, Chesworth, Klar, & Speechley, 2010). Sixty percent of older adults will manage at least one chronic condition, such as arthritis, diabetes mellitus, congestive heart failure, or dementia, by 2030 (HHS, Healthy People 2020, 2013). Because many older adults tend to experience an increase in health problems as a result of various medical conditions and the effects of normal aging, they are at a higher risk for falls compared to other age groups (CDC, 2013). Extrinsic factors are related to the context and environment, such as throw rugs, improper footwear, poor lighting, and improper use of assistive devices (Lord, Menz, & Sherrington, 2006; Stevens, Thomas, Teh, & Greenspan, 2009). Falls in older adults can be attributed to the interaction between the individual, the environment or context, and the tasks and activities performed by the individual (Erkal, 2010).

There are a number of consequences when older adults fall. They may suffer from fractures, head injuries, lacerations, increased hospital admissions, and even early death as a result of falling (CDC, 2013). Injuries that result from falls prevent older adults from participating in daily activities, such as cooking, cleaning, and even going for walks (HHS, 2013). Consequently, many older adults develop sedentary behaviors, which contribute to their loss of independence and a decreased quality of life (CDC, 2013; HHS, Healthy People 2020, 2013). Fear of falling may also occur after a fall incident and limit participation in meaningful activities, including leisure and social participation (CDC, 2013). Social isolation, loneliness, and the loss of independence can easily trigger depression in older adults, increasing the risk of additional health problems and even suicide (United States National Library of Medicine, 2012). Falls in older adults not only affect individuals but also society at large. A fall-related injury is one of the 20 most expensive medical conditions seen in community-dwelling older adults (CDC, 2013). Costs to treat falls will continue to increase as fall rates in older adults continue to grow (CDC, 2013).

Multifactorial interventions, especially those that incorporate a cognitive-behavioral approach, appear to be the most effective in decreasing falls in community-dwelling older adults, (Chang et al., 2004; Clemson et al., 2004; Day et al., 2002; Zijlstra et al., 2009). Moreover, studies demonstrated that multifactorial interventions involving occupational therapists who provide older adults with specific recommendations on home modifications and education on the proper use of assistive devices are highly successful in minimizing falls (Clemson et al., 2004; Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008; Gillespie et al., 2012; Leland, Elliott, O'Malley, & Murphy, 2012).

Because occupational therapists are skilled in assessing a variety of factors that contribute to falls in older adults, especially in the context of daily activities, they can play a vital role in developing and implementing effective interventions and programs to reduce falls and fall-related injuries in older adults (American Occupational Therapy Association [AOTA], 2012).

According to the CDC (2013), emergency departments treated 2.4 million non-fatal fall injuries in older adults in 2011, suggesting that first responders, including firefighters and emergency medical services (EMS) providers, are faced with numerous fall-related calls on a regular basis. Between 1997 and 2000, older adults were four times more likely to use EMS compared to younger patients, and they made up 38% of EMS patients (Shah et al., 2007). Past studies have demonstrated the feasibility of EMS providers to conduct screenings and assessments and provide referrals following a fall incident (Kue, Ramstrom, Weisberg, & Restuccia, 2009; Shah et al., 2006; Shah et al., 2010). However, EMS providers may lack adequate education and training on geriatric-specific issues, especially communication strategies and psychosocial factors (Peterson, Fairbanks, Hettinger, & Shah, 2009). With the appropriate guidance and training, first responders can potentially play a vital role in community fall prevention efforts to reduce falls and fall risks.

A partnership between first responders and healthcare professionals may connect older adults who are at-risk for falls with the appropriate services and interventions. Studies that examined the effectiveness of interdisciplinary approaches, involving first responders and healthcare professionals, such as occupational therapists and social workers, revealed positive outcomes (Cacciatore, Carlson, Michaelis, Klimek, & Steffan,

2011; Elliot et al., 2012). Additionally, previous studies have indicated the effectiveness of targeting fall prevention programs at older adult fallers who present to emergency departments (Close et al., 1999; Davison, Bond, Dawson, Steen, & Kenny, 2005). Collaboration between first responders and occupational therapists to identify fall risk factors and provide multifactorial interventions to older adults may reduce falls and fall-related injuries, minimize fall-related costs, and ultimately increase older adults' health and quality of life.

In order to gain a deeper understanding of falls in older adults and common fall risk factors, this study examined the characteristics of older adult fallers and circumstances of falls occurring within a local community. The study also examined the experiences of older adult fallers and explored the presence of depressive symptoms during the time of falls. Because there is little research on the role of first responders in fall prevention, the study also examined the perceptions and experiences of first responders regarding falls in older adults. Lastly, the study explored strategies that could be used to enhance future fall prevention programs based on the needs and perspectives of older adults and first responders. The findings of this study will hopefully contribute to future efforts to reduce fall rates, fall-related injuries and, enhance the health and well being of older adults.

Literature Review

Aging in America

National, state, and local statistics. The population of older adults is growing rapidly in the United States (CDC, 2013). The Baby Boomer generation born between 1948 and 1965 is reaching 65 years of age and over (CDC, 2013). In 2009, 39.6 million

people in the U.S. were 65 years and older (Administration on Aging, 2012). The number of individuals over 65 is expected to grow 19% by 2030, increasing to 72.1 million (Administration on Aging, 2012). Since the early generation of Baby Boomers born in the late 1940s is currently over 65 years of age, the number of people aged 85 and older is expected to triple over the next 40 years (Administration on Aging, 2012).

In California, the elderly population is growing at a faster rate than the total population and is considered one of fastest growing in the nation (California Department of Aging, 2012). The California Department of Aging (2012) reported that from 1990 to 2020, the population of adults (65 years and over) will increase by 112%, and the oldest old population (85 years and over) will increase by 143%. Thirty-eight out of 58 counties in California will have an elderly population rate increase of more than 150% (California Department of Aging, 2012).

In Marin County, the older population is also growing. In 2010, the number of people aged 60 years and older was 75,900, and it is expected to increase to 90,300 by 2015 (Martin, 2012). The average age in Marin County is 44.5 years, and it is estimated that 16.7% of the total population is over 65 years of age (Martin, 2012). In the city of Novato, approximately 13% of the population is 65 years and older (American Towns, 2012).

Characteristics of aging. As people age, physical and functional changes occur, such as decreased balance, strength, vision, and delayed cognition. Many aging changes are perceived as a decline or deterioration of physical and psychological characteristics. As individuals age, they often have expectations and beliefs that they will develop problems in their health and physical functioning (Sargent-Cox, Anstey, & Luszcz,

2012). Physical deterioration after age 65 can affect older adults' performance in activities. Sargent-Cox et al. (2012) reported that older adults who have a poor self-perception of aging experience a faster decline in physical functioning.

Some physical changes that adults experience as they age include decreased muscle strength, weaker bones, and decreased vision. Trappe (2009) found that as muscles start to lose mass, the function of the skeletal muscles will decline, which occurs typically with aging. Muscle strength decline can functionally affect the lower extremities and have secondary consequences, such as falls, hip fractures, and gait disorders. Cawthon et al. (2011) reported that muscle strength decline is associated with poor physical performance and disability. Muscle strength declines more rapidly than muscle mass (Goodpaster et al., 2006). The National Osteoporosis Foundation (2009) stated that approximately 34 million Americans age 50 and older have low bone mass. Klatz and Goldman (2009) found that people age 50 and older in America tend to have a higher risk of developing vitamin D deficiency, which can potentially cause bones to become thin, brittle, and soft.

Other physical changes that occur as age increases are decreased balance and ambulation. Reaction time, muscle strength, and ankle flexibility are decreased in older men, affecting their balance and mobility (Nolan et al., 2010). Aging affects reaction time in complex situations that require attention, such as walking on uneven surfaces or stairs. Also by age 65, individuals have slower nerve conduction, causing their reflexes to slow to 92% of the average rate (Chandak & Makwana, 2012). Because aging is a natural process, individuals will experience physiological, sensory, and cognitive

changes, which may impact their ability to fully participate in functional tasks and activities.

Health consequences of aging. Older adults may experience a variety of health consequences as they age. A decreased level of participation in activities of daily living (ADLs) and instrumental activities of daily living (IADLs) can be affected by different aging characteristics. Aging individuals often experience physical and cognitive changes, which may continue to progress and lead to a fall, causing disruptions in independence and quality of life (Von Bonsdorff & Rantanen, 2011).

Vision impairment and difficulties with balance and mobility are two primary health consequences of aging in older adults that increase risks for falls. Older adults with vision impairments have higher rates of difficulty performing activities such as walking, getting into and out of a bed or a chair, managing medications, and preparing meals when compared to those with hearing impairments (Crews & Campbell, 2004). Older adults with vision problems have 1.8 times higher risk for falls and 1.7 times higher risk for having a hip fracture than those with no vision impairments (Crews & Campbell, 2004). Equilibrium, which requires the integration of visual, proprioceptive, and vestibular systems, has been shown to decline as a result of aging, trauma, and disease (Nolan et al., 2010). Decrease in vision and muscle strength can affect balance and ambulation, which can lead to falls in the elderly population (Nolan et al., 2010).

Falling

Falls are considered the leading cause of preventable injury, functional disability and mortality among older adults and are a public health issue that not only affects individuals, but also results in high costs to families and public services (Fortinsky,

Panzer, Wakefield, & Into, 2009; Roe, Howell, Riniotis, Beech, Crome, & Ong, 2009). A fall is defined as "an event which results in a person coming to a rest inadvertently on the ground or floor or other lower level" (World Health Organization, 2012). Research has shown that there is no single factor that causes falls among community-dwelling older adult. Rather, there are multiple, interrelated factors that contribute to the risk of falling based on the number of predisposing and precipitating risk factors related to the individual along with the influence of the environment or context (Delbaere et al., 2010; Erkal, 2010; Painter, Elliot & Hudson, 2009). As older adults age, they are more prone to falling based on intrinsic and extrinsic factors. Intrinsic factors are those that are within the individual and include age-related physical changes such as vision, balance, and the taking of multiple medications (polypharmacy). Extrinsic factors, which are external to the individual, include environmental hazards, assistive devices, and the time of day and location of where falls may occur.

Intrinsic fall risk factors. As a person ages, many of the body's systems begin to slow down and deteriorate which affects the older adult's ability to function properly and effectively. This places the individual at a higher risk for falls. Research has shown that visual loss or impairment and decreased balance, along with decreased muscle strength and postural instability, are changes that contribute to the risk of falls in older adults (Kallstrand-Ericson & Hildingh, 2009; Muir et al., 2010).

Visual loss or impairment can be caused by aging itself or due to age-related medical conditions such as diabetic retinopathy or neuropathy, macular degeneration, and glaucoma (Kallstrand-Ericson & Hildingh, 2009). Vision is essential in everyday life in order to perform ADLs, IADLs, and leisure activities. Participation in such activities is

restricted in older adults if they have vision loss or impairment. If older adults cannot see their surroundings or where they are walking, they are at higher risk of sustaining a fall. Kallstrand-Ericson and Hildingh (2009) conducted a retrospective study to investigate falls among participants age 65 and above to determine whether visual impairment contributed to falls. Of the 175 participants in the study, 68 experienced a fall, and 60% of those fall cases were classified as people having a visual impairment. Results also showed that 54% of falls occurred when the older adult was alone. Crew and Campbell (2004) reported that older adults with visual impairments were approximately two times more likely to fall in the past 12 months than those without visual impairments, three times more likely to have difficulties walking, three times more likely to have difficulties managing medications, and two times more likely to report being depressed.

As adults age, they may have decreased balance due to physiological changes. Muscle strength deteriorates with age, causing an inability to maintain posture and coordination. Older adults are also more prone to have postural instability because they have a slower reaction time and a decreased ability to adjust the body's position. Muir et al. (2010) used the Berg Balance Scale and other balance assessments as a way to evaluate the contribution of balance to fall risks. The researchers found that 85% of the 210 community-dwelling older adults in their study had impairments in one-leg stance, 88% had impairments in both one-leg stance and tandem stance, and 64% had impairments in one-leg stance, tandem stance, and unsteady gait (Muir et al., 2010). Results demonstrated that all impairments, besides tandem stance, were associated with an increased fall risk in older adults (Muir et al., 2010).

Adults often develop multiple health problems as they age, which requires them to take multiple medications (polypharmacy) to manage their conditions. With polypharmacy, interactions between drugs can create neurological side effects such as dizziness and delirium. Medications often used by older adults include psychotropic medications, such as benzodiazepines, antidepressants, antipsychotic agents, nonbenzodiazepines and sedative-hypnotics (Landi et al., 2005). Findings from an observational study by Landi et al. (2005) showed that current use of antipsychotic agents or benzodiazepines was associated with an increase in risk of falls among 2854 community-dwelling older adults. Benzodiazepines were identified as one of the most prevalent fall risk factors due to common adverse effects such as ataxia, drowsiness, dizziness, and postural disturbances (Landi et al., 2005). Research shows that certain medications used to treat or manage medical conditions can increase the risk of falls in older adults.

Extrinsic fall risk factors. Environmental hazards are common causes of falls both indoors and outdoors among older adults. Hazards within the home include poor lighting, slippery floors, unstable furniture, absence of assistive devices (e.g., grab bars), loose rugs, and obstructed walkways. Environmental hazards outside the home include uneven pavements, moss on walkways, unidentified walkways, poor lighting, lack of ramps in place of stairs, and poor weather conditions (Erkal, 2010; Lord et al., 2006). Lord et al. (2006) examined studies on home hazards and the efficacy of home modifications to reduce falls. Findings showed that environmental hazards are contributing factors to falls among older people, but the interaction between the older adult and the environment must be taken into consideration as well. Similarly, Erkal

(2010) found that falls are the result of the interaction between the older adult, the environment, and the behavior of the older adult and that it is beneficial to take individual perspectives and attitudes into consideration when providing home/hazard modifications. Erkal (2010) analyzed home safety and safe behaviors in fall accidents among elderly individuals age 65 and above and found that making environmental modifications can contribute to the reduction of falls among older adults. Lord et al. (2006) found that home hazard modifications are effective when targeted at older adults with limited mobility and a history of falls. However, environmental modifications are not effective if older adults are not willing to make the recommended changes or if they are unwilling to use assistive devices, such as a walker or grab bars, appropriately.

Assistive devices for ambulation, such as a walker or cane, are usually prescribed to individuals to improve balance in an attempt to prevent falls. However, the improper use of assistive devices and an incorrect assessment of one's need for a device are also associated with an increased fall risk (Stevens et al., 2009). Stevens et al. (2009) reported an estimated number of 47,312 fall injuries among older adults associated with canes or walkers were treated annually in U.S. emergency departments. Among the falls reported, approximately 87.3% of the injuries were associated with walkers, 12.3% with canes, and 0.4% with both. Older adults who use ambulatory devices have a higher chance of falling because the walker or cane may hit various objects, such as pieces of furniture and uneven surfaces (Stevens et al., 2009). The misuse of assistive devices can also increase the risk of falls in older adults (Stevens et al., 2009). Assistive devices can be beneficial for older adults when they are taught the proper techniques to safely use the device.

Negative views on the use of assistive devices can also contribute to falls among older adults. In a qualitative study by Aminzadeh and Edwards (1998), a few individuals out of the 30 community-dwelling older adult study participants mentioned they did not want to use assistive devices due to feelings of embarrassment, social stigma, perception of not having the need to use assistive devices, or denial. For example, one participant stated that "seniors don't use canes, because they are afraid that people may say they are too old and handicapped," while another participant mentioned that seniors do not want to admit that assistive devices can help them (Aminzadeh & Edwards, 1998, p. 300).

Falls among older adults can occur at any time of the day and any place. Painter et al. (2009) reported that most falls happen midday, and only 20% of falls are between 9 PM and 7 AM. About 50-60% of falls that occur in the home happen in the kitchen, bedroom, living room, or bathroom. About 24% of falls occur outside the home (Painter et al., 2009). Roe et al. (2009) conducted a qualitative study with 27 older adults who recently had a fall and found that the majority of falls occurred indoors, with half of the falls occurring in the morning. Older adults typically fall during the morning and afternoon when most ADLs are performed. Activities performed in the morning and afternoon can include walking from one room to another, bathing, toileting, and reaching for an object. Falls that happen at night usually occur when older adults get ready for bed or get up in the middle of the night to use the bathroom.

Consequences of falls. Falls can impact older adults residing within the community and can be the cause of fatal and nonfatal injuries, hospitalizations, changes in lifestyle, health status, and death. In 2005, falls in people aged 65 and older resulted in 1.8 million visits to U.S. hospital emergency departments (Stevens et al., 2009). Older

adults are more vulnerable to acquiring injuries from falls due to age-related physiological changes to the body. The most common injuries among those who fall include head injuries, abrasions, bruises, wrist fractures, and hip fractures (Painter et al., 2009). Injuries can result in the loss of independence and functional abilities, especially when an older adult sustains a hip fracture or head injury. Research has shown that most older adults who sustain a hip fracture are at a higher risk for mortality, disability, and a lower quality of life (Stevens et al., 2009). In 2005, about 15,800 deaths resulted from falls in older adults age 65 and above, making fall injuries the 6th leading cause of death among older adults in the U.S. (Stevens et al., 2009).

Older adults who have sustained a fall often experience a change to their lifestyle and health status. For some older adults, a change in their health status was a consequence of a fall, while for others, a change in health status is the reason for their fall. Injuries from falls restrict older adults from performing ADLs and IADLs. A qualitative study on older adults' experiences of a recent fall by Roe et al. (2009) described how a 65 year old woman who was independent, tripped and fell while going to a shop. Due to her fall, she sustained a hip fracture and was hospitalized. Another participant who loved dancing and going out during the holidays with friends no longer participated in such activities after falling. Falls often contribute to a decline in health status, loss of independence, and decreased quality of life among older adults (Roe. et al, 2009).

Falls negatively impact the health status and lifestyle of individuals who have fallen, but it also places a financial burden on medical and health care services. Services to treat injuries related to falls can amount to billions of dollars. Stevens, Corso,

Finkelstein, and Miller (2006) found that in 2000, an estimated $179 million was spent on 10,300 fatal fall injuries and $19 billion was spent on 2.6 million nonfatal fall injuries. The CDC (2013) reported that in 2000, average medical costs for fall injuries in people 65 years of age and older were between $9,113 and $13,507. Since annual costs of treatment for falls exceed billions of dollars, fall injury is one of the 20 most expensive medical conditions in community-dwelling older adults (CDC, 2013).

After experiencing a fall, some older adults may acquire a fear of falling. Fear of falling is defined as "an exaggerated concern of falling that leads to excess restriction of activities" (Lach, 2005). Fear of falling has been shown to increase with age, and is associated with depression, poor health status, and decreased quality of life (Lach, 2005). Lach (2005) explored fear of falling in a longitudinal study of falls to determine the prevalence of and development of fear of falling among community-dwelling older adults age 65 and above. Results showed that fear of falling was associated with falls and falls with injuries. Participants with fair to poor health were 1.72 times more likely to develop fear of falling, and participants who felt unsteady were 1.88 more times likely to report fear of falling. Fear of falling can cause negative health consequences among older adults. Individuals who have a fear of falling tend to restrict their participation in certain activities to reduce the risk of falling which in turn can lead to greater disability and loss of independence, putting the older adult at a higher risk for falls (Zijlstra et al., 2007).

Falls and depression. Several studies have focused on the mental health of older adults who fall. Of these studies, some have reported an association between depressive symptoms and risk for falls (Painter et al., 2012). Depression is one of the most common mental health disorders and is prevalent in about 13% to 23% of community-dwelling

older adults (Eggermont, Penninx, Jones, & Leveille, 2012; Painter et al., 2012). Eggermont et al., (2012) found that older adults with depressive symptoms had higher rates of falls based on their scores on the 20-item Hopkins Revision of the Center for Epidemiologic Studies Depression Scale (CESDR). Results from this study also revealed that older adults with more depressive symptoms were mostly women, less physically active, used more medications, had a history of heart disease, poor cognitive function, slower gait speed, and poor balance. These two studies suggest that occupational therapists and other health professionals should consider depression as part of the screening process for community-dwelling older adults who have fallen.

Interventions to Decrease Falls

General interventions. Interventions that utilize multifactorial approaches appear to be the most effective in reducing falls in older adults. According to one study, a combination of group-based exercise, home hazard management, and vision improvement significantly reduced the annual fall rate of community-dwelling older adults by 14% and had the strongest effect compared to each intervention alone or paired interventions (Day et al., 2002). A systematic review and meta-analysis study also supported the use of multifactorial approaches in preventing falls (Chang et al., 2004). After a thorough review of 40 trials, the researchers suggested that multifactorial fall risk assessment and management programs were the most effective in reducing fall risks and monthly rate of falling (Chang et al., 2004). As there are a number of factors that contribute to falls, the use of multifactorial interventions, a holistic approach, may be the most effective in reducing falls in the elderly population.

In order to create a fall prevention intervention that is effective and well received by older adults, it is crucial to consider their beliefs, ideas, and perceptions in relation to falls. Calhoun et al. (2011) suggested that one difference between joiners and nonjoiners in fall risk assessment and management programs was their perception of need for the program. In addition to addressing older adults' beliefs, it is also important to educate them about fall prevention programs in relation to their independence and level of functioning, which were highly valued by the majority of the older individuals in this particular study (Calhoun et al., 2011). Older adults' attitudes, beliefs, and values in relation to fall prevention programs can highly influence their adherence to the intervention.

Considering the importance of older adults' beliefs and thinking patterns regarding fall prevention, it is beneficial for providers to integrate a cognitive-behavioral approach when delivering multifactorial fall prevention interventions. Fall prevention programs that use Cognitive Behavioral Therapy (CBT) as a guiding principle address older adults' thoughts, behaviors, and emotional responses in relation to falls and fall prevention strategies through collaborative problem-solving ("About CBT", n. d.). A study by Clemson et al. (2004) examined the effectiveness of the Stepping On program, a multifaceted community-based fall prevention program that utilized a cognitive behavioral approach in a small group environment. Findings of the study revealed a 31% reduction in falls in at-risk older adults living at home (Clemson et al., 2004). The Stepping On program provided participants with the opportunity to problem-solve and gain personal control through times of reflection and sharing as well as regular participation in community mobility practice sessions (Clemson et al., 2004). Another

study demonstrated that a multicomponent cognitive behavioral intervention, aimed to instill adaptive and realistic views on fall prevention in community-dwelling older adults, had positive effects on the fear of falling and associated activity avoidance (Zijlstra et al., 2009). Research demonstrates that multifactorial fall prevention interventions with a cognitive behavioral approach are effective in reducing falls (Clemson et al., 2004; Zijlstra et al., 2009). Older adults' beliefs and thought processes regarding falls and fall prevention techniques are vital factors in determining the success of fall prevention programs (Clemson et al., 2004; Zijlstra et al., 2009).

The role of occupational therapy in fall prevention. The primary goal of occupational therapy is to support individuals in their health, well-being, and participation in life (AOTA, 2008). Occupational therapists help individuals of all ages participate in tasks and activities that they want to or need to accomplish using a holistic, client-centered, and occupation-based approach (AOTA, 2008). When working with an older adult who is at risk for falling, occupational therapists develop individualized goals and provide education and environmental supports to decrease fall risk and promote healthy aging (AOTA, 2012). Occupational therapy interventions for fall prevention focus on multiple areas, such as home modifications, physical activity or exercise, medication management, the use of assistive devices, functional mobility, and safety awareness (AOTA, 2012). Furthermore, occupational therapy practitioners can provide consultative services to community centers, assisted living facilities, and nursing homes regarding fall prevention to help reduce falls on a larger scale (AOTA, 2012).

Occupational therapists have the knowledge and skills to provide multifactorial fall prevention interventions that are effective in reducing falls in older adults (Chase,

Mann, Wasek, & Arbesman, 2012; Clemson et al., 2004; Gillespie et al., 2012). A systematic review of occupational therapy interventions demonstrated that education, exercise, home evaluations and modifications, vision and medication management, and the use of assistive technology were effective in decreasing falls and the fear of falling, increasing balance and strength, and minimizing difficulties in ADLs and IADLs in community-dwelling older adults (Chase et al., 2012). The study revealed only a moderate effect when physical activity or home modification interventions were provided alone. Another study by Clemson et al. (2004) demonstrated the effectiveness of the Stepping On program, a multifactorial community-based fall prevention program, which was led by an occupational therapist who was experienced in group work and geriatric care. The 7-week program produced changes in fall self-efficacy and safe community behaviors in areas including lower-limb balance and strength, vision, medication, and home and community safety (Clemson et al., 2004). The small and interactive group setting of the Stepping On program led older adults to form a personal investment in all aspects of the program leading to reduced falls (Clemson et al., 2004). Because occupational therapists have expertise in assessing the interaction between the client, the context, and the occupation or task, they can provide client-centered interventions that address multiple fall risk factors in older adults (AOTA, 2008).

In addition to multifactorial interventions, occupational therapy interventions that focus on environmental factors are also effective (Clemson et al., 2008; Cumming et al., 1999). A meta-analysis by Clemson et al. (2008) found that high-intensity environmental interventions, which emphasize comprehensive evaluations, appropriate assessment tools, formal observations of the fit between the person and environment, and adequate follow-

up, were highly effective, whereas interventions that were non-high-intensive were not effective. The significance of occupational therapy in fall prevention is supported and reinforced by the finding that the high-intensity interventions were conducted by occupational therapists (Clemson et al., 2008). Cumming et al. (1999) found that home visits provided by an occupational therapist resulted in a 36% decrease in the proportion of at-risk individuals who were falling. The occupational therapist in the study conducted one-hour home assessments and provided participants with specific home modification recommendations, with the removal of floor mats, use of non-slip mats in the bath tub, proper footwear, and behavior changes within the home being the most common. Research suggests that professionals such as occupational therapists who have the ability to assess the person and environment are equipped to design and conduct interventions that are effective in reducing the number of older adult fallers (Cumming et al., 1999). The specialized skills and clinical reasoning of occupational therapists, including the ability to make detailed observations of the environment and consider clients' goals and level of functioning, are vital components in the creation and implementation of effective fall prevention programs (Clemson et al., 2008; Cumming et al., 1999).

Occupational therapy's emphasis on clients' personal beliefs, learning styles, and motivational factors contributes to the effectiveness of fall prevention programs. The importance of older adults' preferences and beliefs is supported by a study, which demonstrated that the one significant predictor that differentiated adherers from non-adherers to fall prevention recommendations was the belief that home modifications can prevent falls (Cumming et al., 2001). Occupational therapists can utilize this finding by helping older adults understand the benefits of fall prevention strategies that are unique to

each individual's roles, routines, and interests. A study by Schepens, Panzer, & Goldbery (2011) revealed that a multimedia based fall prevention education program which emphasized authenticity and motivation was effective in generating greater knowledge about fall threats and prevention behaviors in community-dwelling older adults. The program demonstrated authenticity in one group by focusing on realistic ideas and problems encountered by each older adult participant (Schepens et al., 2011). It also encouraged motivation in another group through personalized content and strategies that were important and meaningful to the participants (Schepens et al., 2011). The motivation group produced an increased number of prevention behaviors compared to the other groups, suggesting that motivation is a key factor in reducing fall risks in older adults (Schepens et al., 2011). Research demonstrates the positive effects of occupational therapy treatment, which emphasizes older adults' motivation and interests, in reducing falls and fall risks (Cumming et al., 2001; Schepens et al., 2011).

The role of first responders in fall prevention. Older adults are four times as likely to use EMS services than younger people, and they constitute 38% of EMS patients (Shah et al., 2007). Considering that first responders, including fire, police, and emergency medical personnel, frequently come into contact with older adults, they can potentially play a crucial role in fall prevention efforts. A few studies have demonstrated the feasibility of EMS providers conducting fall risk screenings for community-dwelling older adults during emergency responses (Shah et al., 2006; Shah et al., 2010). One EMS-based program successfully screened 1,231 of 1,444 older adult participants (85%) and identified needs in three specific domains: falls (45%), medication management (69%), and depression (20%) (Shah et al., 2010). Out of all the participants that received

a screening, 91% had identified needs in at least one of the three domains (Shah et al., 2010). In another study by Shah et al. (2006), emergency medical technicians (EMTs) were able to screen 258 older adult participants for falls (81%), environmental hazards (87%), influenza (76%), and pneumococcal infections (79%). By identifying specific fall risks in older adults immediately after a fall, first responders can contribute directly to the health and well being of community-dwelling older adults by preventing injuries, the loss of independence, and even early death.

Although it is feasible for first responders to successfully screen for fall risks, it is unclear what approach is most effective after a screening to prevent falls in older adults. Shah et al. (2006) suggested that providing educational materials for older adults during EMS care may be ineffective, as evidenced by participants' poor recollection of even receiving the materials. Because emergency responses tend to be hectic, overwhelming, and anxiety provoking, older adults may not be ready to absorb information regarding fall prevention strategies during a call. Another strategy of providing referrals to older adults after a fall incident also appeared to be ineffective in connecting individuals with the appropriate care to prevent future falls. Despite having referrals faxed to participants' primary care physicians after a fall, their fall-related needs were not adequately addressed during follow-up (Shah et al., 2006). Another study by Russell et al. (2010) found that a referral-based multifactorial fall prevention intervention did not reduce the number of falls and fall injuries in older adult participants, although adherence to recommendations was higher for certain services, including occupational therapy.

Studies suggest that the lack of coordination of services after referrals are provided may contribute to the ineffectiveness of referral-based programs (Russell et al.,

2010; Shah et al., 2006). However, one study that utilized a more intensive approach by involving a case manager who provided home visits and direct referrals to service agencies did not result in higher service acceptance rates (Shah et al., 2010). Four hundred sixty-four (73%) participants refused the home visit primarily due to a lack of interest and denial of problems, and 172 (27%) accepted the home visit (Shah et al., 2010). Older adults' perceived need for fall prevention interventions is a key factor to consider when providing services, supporting the effectiveness of cognitive-behavioral approaches when implementing fall prevention programs. Additionally, findings indicate that the use of referrals and education materials may lack client-centeredness and the appropriate timing, intensity, and involvement to achieve positive results. A collaboration between first responders and occupational therapists may potentially bridge this gap by first identifying factors that prevent older adults from seeking support and then generating specific strategies to address these barriers using a more direct and client-centered approach.

Although first responders provide emergency care to older adults on a regular basis, they receive minimal geriatric-specific education (US Department of Transportation/National Highway Traffic Safety Administration Emergency Medical Services [NHTSA EMS], 1995). The National Standard Curriculum for paramedic training contains only brief sections on geriatric care primarily within the topic area of physiology across the lifespan (NHTSA EMS, 1998). In addition, the National Standard Curriculum for first responder and EMT-Basic training do not emphasize specific care for older adults (NHTSA EMS, 1994; NHTSA EMS, 1995). Furthermore, one qualitative study reported that EMS providers perceived a lack of adequate training and education on

the care of older adults, specifically in regards to communication and psychosocial issues (Peterson et al., 2009). According to the EMS providers, communication barriers stemmed from older adults' complex medical history, their mental status, their lack of cooperation, and a general distrust of care facility staff (Peterson et al., 2009). EMS providers revealed that proper training in medical and psychosocial topics, including the assessment of falls, communication with skilled nursing and care facility staff, and end-of-life issues, would improve the quality of care provided to older adults (Peterson et al., 2009). Considering that a large number of EMS patients are older adults, education and training geared towards first responders on specific geriatric care can potentially enhance their professional skills in providing effective services to reduce falls in older adults.

One study by Shah, Rajasekaran, Sheahan, Wimbush, & Karuza (2008) demonstrated the effectiveness of an EMS training program titled the Geriatrics Education for Emergency Medical Services (GEMS). The GEMS training program increased first responders' comfort levels in the areas of communication, medical care, assessment of abuse or neglect, and the risk of falling three months after completion of the one-day course (Shah et al., 2008). First responders' role in reducing falls, fall injuries, and fall-related costs has great potential for growth and improvement, especially through further training on geriatric-specific issues and a nontraditional approach of partnering with occupational therapists who are skilled in the area of fall prevention for older adults.

Healthcare professionals and first responders. The emerging role of health care professionals in emergency settings improves the quality of care for all individuals, including older adults. Because first responders are not officially trained and equipped to

address the psychological aspects of trauma, the inclusion of health care services can enhance individuals' receptiveness to appropriate interventions (Cacciatore et al., 2011; Peterson et al., 2009). Cacciatore et al. (2011) described the unique role of social workers as part of the crisis response team in providing psychological management to the public. In addition to stabilizing an individual, social workers help the person decrease distress and attain functionality and normalcy, which is also a primary goal of occupational therapy (Cacciatore et al., 2011). Occupational therapy practitioners can play a unique and important role in disaster preparedness, response, and recovery by facilitating engagement in occupations to promote healthy coping during emergency situations (AOTA, 2006). Psychosocial consequences and occupational disruptions often occur in victims' daily activities, habits and routines, and social participation as a result of trauma (Rosenfeld, 1988). By addressing individuals' physical, mental, and social needs in relation to an emergency situation, occupational therapists can provide a wide range of services to help individuals regain their confidence, identity, and independence following a disaster or emergency (AOTA, 2006). Supplementary services such as occupational therapy within first response teams can address the psychological and functional impacts that often accompany trauma and emergency situations, including fall incidents in older adults (AOTA, 2006; Cacciatore et al., 2011). Furthermore, partnerships between occupational therapists and first responders can help prevent future emergency situations, such as falls, through the development and implementation of effective programs that promote individuals' health and well being (AOTA, 2006).

Considering that falls in older adults can often lead to impaired functioning, the inclusion of occupational therapy services in first response teams can enhance fall

prevention efforts in identifying and reducing falls, fall risks, and fall-related injuries and costs (Eggermont et al., 2012). Elliot et al. (2012) examined the feasibility of an interdisciplinary community-based fall risk screening, involving health care professionals such as occupational therapists and emergency medical technicians, and explored the outcome behaviors of older adults who participated in the screening. The study found that almost half of participants were at risk for falls, and approximately 73% of participants who anticipated making activity or environmental changes actually initiated changes to decrease fall risk, suggesting the positive effects of a collaboration between healthcare professionals and first responders (Elliot et al., 2012).

Occupational therapy services that identify and address environmental hazards, psychosocial factors, assistive devices, and safety can strengthen emergency departments' efforts in promoting fall prevention in community-dwelling older adults. Close et al. (1999) conducted a randomized controlled trial that examined the effects of a comprehensive medical and occupational therapy assessment on older adults who presented to an accident and emergency department after a fall. While the medical assessment focused on visual acuity, balance, and cognition, the occupational therapy assessment emphasized functional independence, environmental modifications, psychological consequences of falls, the use of proper assistive devices, and safety (Close et al., 1999). A 12-month follow-up revealed that risk of falling, recurrence of falls, and odds of being admitted to a hospital decreased significantly for those in the intervention group (n=184) compared to the control group (n=213) (Close et al., 1999). There was also a higher proportion of older adults who were able to leave their homes independently in the intervention group, demonstrating the benefits of both medical and occupational

therapy services in improving function (Close et al., 1999). Another study by Davison et al. (2005) examined the use of multifactorial fall prevention interventions consisting of medical care, physiotherapy, and occupational therapy. Older adults who received a detailed assessment and intervention (n=159) related to falls, medications, vision, gait and balance, and environmental hazards demonstrated a 36% reduction in falls, a decreased duration of hospital admission, and an increased falls self-efficacy compared to participants who received usual care in emergency departments (n=154) (Davison et al., 2005). Evidence suggests that providing follow-up occupational therapy services to older adults who receive emergency services as a result of a fall is effective in reducing falls and increasing older adults' overall independence (Close et al., 1999; Davison et al., 2005).

A multifactorial approach in providing direct fall prevention services, such as occupational therapy, is highly effective in reducing falls in older adults who receive emergency services (Close et al., 1999; Davison et al., 2005). The patients' specific needs, type of services, and delivery of services are vital factors to consider in order to develop and implement a successful fall prevention program. Additionally, interventions aimed at providing direct services to reduce falls and fall risks appear to be more effective than simply providing education and referrals (Gates, Lamb, Fisher, Cooke, & Carter, 2008; Gillespie et al., 2012). Occupational therapists, who have the ability to address the multifaceted nature of falls in older adults, can be a valuable addition to emergency teams in providing direct services to older adult fallers in the community. Additionally, considering older adults' high adherence rate to occupational therapy recommendations, older adult fallers who require emergency services may be more

receptive to receiving occupation-centered fall prevention services (Russell et al., 2010). Overall, there is strong evidence to support the benefits and effective outcomes of a close collaboration between occupational therapists and first responders in preventing falls together to improve the health of the community.

Statement of Purpose

The number of fall incidents will increase as the older adult population continues to grow. Falls can lead to a decreased quality of life and increased hospital admissions and injury-related deaths. Occupational therapists have the knowledge and skills to help prevent falls in older adults, while first responders come into consistent contact with older adult fallers. A collaboration between occupational therapists and first responders to promote fall prevention in older adults may reduce falls, fall risks, and fall-related injuries and costs and ultimately improve the health and well being of older adults in communities and care facilities. Because limited studies have examined the perspectives of older adults and first responders regarding falls and fall prevention services, especially in regards to a potential partnership between first responders and occupational therapists, it is important to identify the needs, concerns, and preferences of both older adult fallers and emergency care providers in order to enhance fall prevention efforts.

The purpose of this exploratory and retrospective descriptive study was to identify common fall risk factors in older adults who had contacted the fire department after a fall, to examine the perceptions of older adults who had previously fallen, to examine the perceptions of first responders regarding falls and fall prevention, to explore the presence of depressive symptoms in older adult fallers, and identify strategies to prevent future falls in older adults.

This research study was undertaken in partnership with a local fire district at their invitation to answer the following questions:

1. What are the characteristics of older adult fallers?
2. What are the experiences of older adults who had recently fallen?
3. What are the experiences of first responders regarding fall-related calls in older adults?
4. What is the degree of depression in older adults who had recently fallen?
5. What steps can be taken to reduce falls and fall risk in older adults?

Theoretical Framework

Description of Theory

The Ecology of Human Performance (EHP) model was used for this study (Dunn, Brown, & McGuigan, 1994). The primary focus of EHP is to examine the interaction between a person, task, and context along with the performance outcome (Kramer, Hinojosa, & Royeen, 2003). Occupational therapists and professionals from other disciplines, including educators and rehabilitation specialists, often use EHP to guide their practice (Cole & Tufano, 2008). A foundational concept behind EHP is that the performance of an individual is determined by the interaction between the person and the context while participating in certain tasks (Dunn et al., 1994; Kramer et al., 2003). The researchers used the EHP model to guide this study by examining the influence of the person, context, and tasks on the performance of both older adults and first responders regarding falls.

The EHP model considers four primary constructs to understand human behavior and performance: the person, the task, the context, and the performance range (Dunn et

al., 1994). According to the EHP model, each person has unique experiences, interests, characteristics and motivation levels that contribute to performance (Dunn, 2007; Dunn et al., 1994). The cognitive, sensorimotor, and psychosocial skills of individuals also vary depending on the contexts in which they are embedded (Dunn et al., 1994).

Tasks, the second construct of the EHP model, include various sets of behaviors performed by the individual to participate in occupations and accomplish meaningful goals (Dunn et al., 1994). Each task has specific demands that are required of the person in order to achieve success (Dunn et al., 1994). Each person's skills and experiences and the contextual factors that are present will determine which tasks the individual selects. Because tasks develop meaning through past experiences and interactions with the context, successful participation in a task contributes to an increased quality of life (Cole & Tufano, 2008).

As defined by the EHP model, context has social, cultural, physical, and temporal components (Dunn et al, 1994). The social context includes norms, role expectations, and social routines with family, friends, co-workers, clubs, churches, and even health care systems (Dunn et al., 1994). Cultural contexts refer to customs, beliefs, activity patterns, and behavioral standards (Dunn et al., 1994; Cole & Tufano, 2008). A person's physical environment includes tangible and inanimate objects such as tools, buildings, and the natural world (Dunn et al., 1994). The temporal environment consists of chronological age, developmental stage, time of day, and duration of time (Cole & Tufano, 2008). Contextual factors, including social, cultural, physical, and temporal components, can either support or hinder a person's performance (Dunn et al., 1994).

Therefore, considering the context of any given task will provide a more accurate assessment of a person's performance in that particular task (Dunn et al., 1994).

The fourth and final construct of the EHP model is the performance range (Dunn, 2007; Dunn et al., 1994). Performance range refers to the total number of tasks available to the person when the context is taken into consideration (Dunn, 2007). The interaction between a person's abilities, experiences, and interests in the social, cultural, physical, and temporal contexts determine optimal occupational performance range (Dunn, 2007; Dunn et al., 1994). In Figure 1, the figure represents the person; the circle enclosing the person is the context; the darker shaded oval is a wedge of the context that is cut out in order to show the person; the small circles with "Ts" inside refer to tasks that are available to the person; and the shadow around the "Ts" signifies the performance range (Dunn, 2007). According to Dunn et al. (1994), a person with limited skills and abilities and a limited context can both impact performance range by reducing the number of tasks available to the person. For example, if an older adult who has poor vision and balance is maneuvering within a home that has dim lighting and loose rugs, performance in ADLs, IADLs, and leisure may be affected. On the other hand, when an individual's person variables are supported by a favorable context, the performance range is widened, allowing the person to execute a greater number of tasks. For example, an older adult who is motivated to be safe and healthy would more likely adapt to environmental modifications and utilize assistive devices. As a result, the older adult is less likely to experience falls, leading to a higher level of participation in meaningful activities including leisure and social participation as demonstrated in Figure 1 (Dunn, 2007; Dunn et al., 1994).

Figure 1. Ecology of Human Performance Model: Typical Performance Range

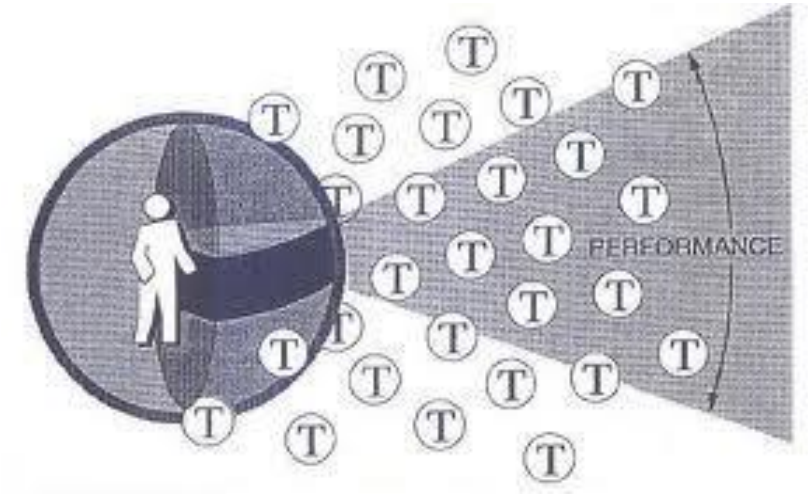

Figure 1: A schemata that demonstrates the relationship between the person, context, task, and performance range. The wider the performance range, the more tasks are available to the person. From "The Ecology of Human Performance: A Framework for Considering the Effect of Context," by W. Dunn, C. Brown, and A. McGuigan, 1994, *The American Journal of Occupational Therapy, 48*, p. 600.

The EHP model uses five intervention strategies that emphasize the person, the context, the task, or the connection of all three (Cole & Tufano, 2008). The first intervention is to *establish* or *restore* skills by teaching new skills or restoring lost skills (Kramer et al., 2003). The second intervention is to *alter,* or select the best context that will allow the person to successfully perform tasks with his or her current skills (Cole & Tufano, 2008). The third intervention is to *adapt* or *modify* the context to enable successful task completion (Cole & Tufano, 2008). The fourth intervention strategy is to *prevent* performance problems in the person and minimize risks to avoid negative outcomes (Kramer et al., 2003). The fifth intervention is to *create* strategies that can maximize performance in different tasks within the context (Kramer et al., 2003).

Relevance of Ecology of Human Performance Framework to Research

The EHP model was foundational to this research study because its primary constructs guided the researchers in identifying common fall risk factors in older adults. There are different physical and temporal factors in older adults' contexts that can lead to falls. Aspects of the physical context, including stairs, rugs, uneven pavements, obstructed walkways, and assistive devices, can cause older adults to fall leading to a decreased performance range. Older adults' skills, abilities, and experiences may also increase the risk for falls due to changes in cognition, sensorimotor, and psychosocial domains. For instance, physical deterioration, decreased balance, poor safety awareness, and mental health conditions such as depression, could contribute to falls in older adults, reducing their participation in meaningful tasks or occupations. The way older adults interact with their context will affect their performance range in determining how well they will be able to reduce their fall risk.

The EHP model also guided the researchers' understanding of first responders' role in fall prevention. Several person variables influence first responders' ability to prevent falls and promote health in older adults. This includes their knowledge and experiences in caring for older adults, their interest in older adults and fall prevention, and their psychosocial and communication skills. Tasks of first responders include responding to emergency calls related to falls, working collaboratively with coworkers and healthcare professionals, and providing effective care and services that could prevent future falls (Peterson et al., 2009; Shah et al., 2006). According to the EHP model, the context in which first responders perform their tasks could either support or hinder performance (Dunn, 2007). Contextual elements that could affect first responders'

participation in preventing falls include chronological age, time of day services are provided, tools and resources available, support from other first responders, and customs and beliefs that are ingrained in the work settings of first responders.

The purpose of this study was to explore various factors contributing to falls in community-dwelling older adults and understand falls from the perspective of older adults and first responders. The researchers used key concepts of the EHP model, including person variables, context, task, and performance, to guide the direction of the study. Older adults' person variables, including medical and psychosocial status and experiences, were examined to see if they interacted with home and community contexts in influencing fall risks. Additionally, first responders' skills and experiences in addressing fall incidents involving older adults were examined along with their work context in order to better understand their experiences. Examining the person, task, and contextual elements of both older adults and first responders helped increase understanding of the experiences of both groups and identify various factors that may either contribute to or reduce fall risk in older adults.

Definitions

For the purpose of this research these terms will be used, and are defined as follows:

Fall: "An unexpected event in which the participant comes to rest on the ground, floor, or lower level" (Lamb, Jorstad-Stein, Hauer, and Becker, 2005).

Near fall: "Term used to refer to an individual breaks an impending fall by leaning on or sliding down on an object or another person." (Novato Fire Protection District, 2013, p.6).

First responder: "A person employed in the public sector–EMT, fire fighter, police, volunteer EMS–whose duties include provision of immediate medical care in the event of an emergency" (McGraw-Hill Concise Dictionary of Modern Medicine, 2002).

Older adult: "Term used to refer to individuals in the later years of the life span. Arbitrarily set [to being] at 65 years old in American society for the purpose of age-related entitlements" (Jacobs & Jacobs, 2004, p.160).

Methodology

Design

This research study was an exploratory and retrospective descriptive study. The researchers adopted a mixed-method design using both qualitative and quantitative data to examine the characteristics of older adults fallers, the experiences of older adults who have fallen, the experiences of first responders from the Novato Fire District (NFD) regarding fall-related calls in older adults, degree of depression in older adults who have fallen, and next steps to prevent falls. Qualitative data was collected through focus groups and phone interviews with older adults who had fallen and a focus group with the NFD first responders (Firefighters and Paramedics) to understand their experiences. The researchers analyzed narrative accounts of fall incidents in anonymized Patient Care Reports (PCRs) (Appendix J), which were provided by the NFD. Additional sections of the PCRs were quantitatively analyzed by the evaluation consultant to understand the characteristics of fallers.

Participants

There were two target populations for this study: older adults age 60 and above who had recently fallen and first responders. The first study sample consisted of

residents of older adult aggregate living facilities and community-dwelling older adults who had contacted the NFD after a fall. Purposive and convenience sampling was used to recruit older adults who had fallen and contacted the fire department from three local aggregate living facilities in Marin county. The NFD Battalion Chief and Director of EMS contacted the three local facilities informing them of our research study. One of the researchers followed up with the three facilities. The third facility was not included in this study since the administrator could not be contacted despite multiple follow-up attempts. Facility administrators from the two facilities were given a letter (Appendix A) requesting permission to hold the focus groups at their establishment and a flyer (Appendix B) to recruit participants. According to the NFD, most older adult fallers who receive emergency services typically reside in one of these facilities. One of the facilities was a skilled nursing facility (SNF) while the other was an assisted living facility. For phone interviews, a list of community-dwelling older adults who contacted the NFD after a fall was generated from their PCR database. A letter of recruitment (Appendix C.1 & Appendix C.2) was sent out by the Battalion Chief to older adults who had contacted the NFD after a fall to solicit participation in a phone interview to discuss their fall experience.

The second study sample was first responders from the NFD. First responders had staff meetings and EMS trainings on Tuesdays. The Battalion Chief and Director of EMS allowed the researchers to use that day of the week to conduct the focus group. Due to the nature of the first responders' job, convenience sampling was used to recruit participants for the focus group.

Ethical and legal considerations. Since older adults and first responders were participants in this study, protection of their rights was important. Thus, the researchers received approval from the Dominican University of California Institutional Review Board for Protection of Human Subjects (IRBPHS approval #10109) (Appendix D). In addition, the Occupational Therapy Code of Ethics and Ethics Standards (2010) was applied as needed. The principles of nonmaleficence, autonomy and confidentiality were the focus for this research study.

The principle of nonmaleficence refers to practitioners refraining from causing harm, inflicting injury, or wronging others (American Occupational Therapy Association, 2010). Older adult participants of this study could have experienced some psychological discomfort and/or embarrassment when describing their experience of falling in the focus groups. The first responder participants could have felt discomfort in talking about their skills and abilities in responding to falls. To address this concern and before starting the study, the researchers provided all the participants with a Research Participant's Bill of Rights (Appendix E). This document informed participants of the nature of the study and that they had the right to refuse to answer any questions and withdraw from the study at any time.

Autonomy and confidentiality refers to "the concept that practitioners have a duty to treat the client according to the client's desires, within the bounds of accepted standards of care and to protect the client's confidential information" (American Occupational Therapy Association, 2010, p. 5). In this study, the researchers received personal information from the participants. To respect the client's desires in regards to their decisions to partake in the study, a signed consent to participate form was obtained.

By signing the form, the participants also gave consent to voice record the focus groups and phone interviews. The PCRs that the NFD provided to the researchers were anonymized. All personal references and identifying information were eliminated when the recordings were transcribed, and all subjects were identified by numerical code only, thereby assuring confidentiality regarding the subject's responses. The information was only accessed by the researchers, the faculty advisor, and the evaluation consultant. The researchers had five research assistants who helped with the data collection process. In order to keep all information confidential, the research assistants signed a confidentiality agreement (Appendix F). Only the researchers, the faculty advisor, research assistants, and the community partners saw the coded transcripts. One year after the completion of the research, all written and recorded materials will be destroyed. Data obtained were used for educational and research purposes only.

Potential limitations. There were several limitations in this study. Because the research was conducted with older adults from a local community in Marin County, California, the results of the study may not generalize to older adults in other communities because of demographic differences. There was a small sample size for the focus groups and phone interviews. Also, limited information from the retrospective data gathered from PCRs may have affected the results, especially regarding individuals' mental health status. One study that examined the possibility of EMS partnership in an injury prevention program found that prospective analysis is more superior to retrospective analysis in gathering injury prevention information (Weiss, Chong, Ong, Ernst, & Balash, 2003). Future studies should utilize prospective analysis procedures to obtain more accurate results regarding older adults' fall risk factors. Lastly, because this

study was conducted to fulfill the researchers' thesis requirement, time constraints were another limiting factor during the research process.

Data Collection

The researchers conducted one-hour focus groups at the two selected local aggregate senior living facilities. There was a total of 14 participants (n=9 for one facility; n=5 for the other facility). A one-hour focus group with NFD first responders (n=12) was also conducted. In the focus groups, the older adults were asked to reflect on their experience of falling and the first responders reflected on their experiences of responding to falls. To begin the focus groups, the researchers introduced themselves, described occupational therapy and occupational therapists' interest in fall prevention, and presented the purpose of the focus group. Participants in each focus group signed a consent form (Appendix G) before participating. Focus group questions were generated specifically for each group (Appendix H & Appendix I). Prompts were also added under each focus group question that guided and expanded discussion. Two of the researchers facilitated the discussions while the third researcher took field notes. The focus groups helped the researchers understand more about falls from the perspectives of older adults and first responders.

In addition, the researchers conducted phone interviews lasting 20-30 minutes with community-dwelling older adults who contacted the NFD after a fall. Of an original list of 33, the researchers were able to complete four phone interviews. The researchers used a semi-structured interview guide with prompts (Appendix J) for the phone interviews that explored the experiences and impact of falls among these older adults. Participants were informed during the phone call that participation in the study was

completely voluntary. Consent to participate in the phone interviews was obtained verbally and documented by the researchers. Audio recordings from the focus groups and phone interviews were transcribed verbatim with participants' identifying factors eliminated.

In addition to the focus groups and the phone interviews, the researchers collected data from Patient Care Reports (PCRs). PCRs contained information regarding any incident in which the NFD provided services. For the purpose of this study, PCRs completed by the NFD for each fall incident and contained information about the individual who received emergency services were reviewed. PCR information collected included demographics, medical history, medications, reason for call, and a narrative section of the incident. Of all PCRs available during the 2012 calendar year, the NFD's computer programmer was able to obtain 922 PCR narratives by filtering out the PCRs that did not pertain to older adults age 60 and above and contained one of the following keywords: "fall", "fell", "down", "ground", "floor", "tripped", "dizzy" and "lightheaded". Near falls were also included in the study. Of the 922 narratives selected, 412 were complete falls and 59 were near falls.

Data Analysis

The researchers used quantitative and qualitative methods to analyze the data. For quantitative methods, the evaluation consultant working with the NFD quantitatively analyzed data collected from the PCRs, while the researchers used an original PCR coding sheet (Appendix K) to gather further information about the fall incident from the narrative portion of the PCRs (Appendix L). The coding sheet was designed and reviewed multiple times by the researchers along with the evaluation consultant. Inter-

rater reliability was established through multiple meetings between the researchers and the evaluation consultant in which coding choices from sample narratives were compared and rationales were discussed. Once the researchers and research assistants completed the coding of PCR narratives, the data was given to the evaluation consultant. The consultant used SPSS to analyze the PCRs and used descriptive statistics to quantitatively analyze several sections, which included information on the scene, patient, and patient assessment results. The consultant generated frequencies and means and made comparisons between complete fall and near falls, which included gender, age, location (residence, care facility, other) and setting (indoor vs. outdoor).

The researchers qualitatively analyzed data gathered from the focus groups and phone interviews to better understand the perceptions of older adults and first responders regarding falls. Transcriptions of audio recordings were completed and the researchers coded for important and recurring themes that helped answer the research questions regarding characteristics of older adult fallers, older adults' experiences with falls, first responders' experiences with fall-related falls in older adults, degree of depression in older adults who had fallen, and next steps for fall prevention.

Results & Discussion

Research Question #1: What were the characteristics of older adults who had recently fallen in a local community?

Demographics. From the 922 PCR narratives that were selected, 412 were complete falls and 59 were near falls. The average age of complete falls was 81 years. The average age for near falls was similar at 81 years. The majority of patients who experienced a fall were female (62%) and lived alone (47%).

Circumstances of Falls. Falls are typically categorized as mechanical or medical. Figure 2 illustrates the cause of falls based on the 412 complete falls in older adults 60 and over in 2012. In this study, 53% of falls were due to mechanical reasons while 29% were due to medical reasons. Mechanical falls that had a primary medical cause accounted for 4% of cases. In 14% of cases, not enough information was provided from the PCR narratives to make the determination of the cause or the fall was not witnessed and the patient could not provide information regarding the incident. The cause of near falls differed from complete falls in that 93% of near falls were due to a medical reason.

Figure 2. Causes of Falls in Older Adults

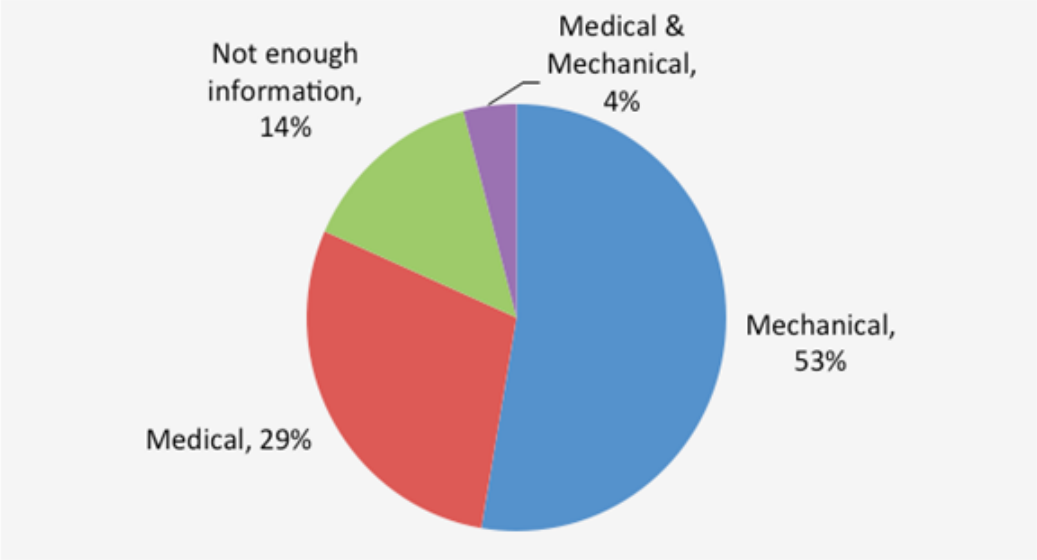

Figure 2: Pie chart that demonstrates the percentage of mechanical, medical, and medical and mechanical falls in older adults who contacted NFD in the 2012 calendar year. From "Engaging with First Responders to Prevent Falls in Older Adults," by Novato Fire Protection District, 2013, p. 10.

The PCR narratives frequently contained the patient, caregiver, or witness's stated reason for the fall. Table 1 shows the top reasons for both mechanical and medical falls. The most frequently stated reason for a mechanical fall was a ground level trip/slip/stumble or a fall from an object (i.e. bed, chair, bike, and ladder). For medical falls, weakness (e.g., "my legs gave out") was the top reason for a fall. Table 1 excludes "medical and mechanical" reasons due to the small number in that category and cases in which no reason was provided. Near falls were also excluded from Table 1.

Table 1

Top Reasons for Falls: Mechanical and Medical

Mechanical	%	Medical	%
Trip/Slip/Stumble/Fall from object	74	Weakness	36
Loss of balance	20	Dizzy	32
Transfer	3	Syncope	22
Reaching	3	Illness/Medical event	14
		Loss of balance	11

Note. From "Engaging with First Responders to Prevent Falls in Older Adults," by Novato Fire Protection District, 2013, p. 10.

Based on the coded PCR narratives, 57% of complete falls and 68% of near falls occurred within the participant's home/residence, and 47% of complete falls occurred when the older adult was alone. Table 2 lists the tasks that the participants were engaged in at the time of the fall. The task was noted in 70% of complete falls and 83% of near falls. The majority of complete falls occurred when the individual was walking (46.7%). Changing position or elevation was the second most common activity at the time of the fall (23.2%). A large number of individuals who experienced near falls were either in a stationary sitting or standing position (49%) or walking (30.6%).

Table 2

Task Engaged in at Time of Fall

Task	Fall		Near Fall	
	no.	%	no.	%
Walking	135	46.7	15	30.6
Changing Position/Elevation	67	23.2	3	6.1
Getting into/out of bed; adjusting in bed	23	8.0	2	4.1
Transfer to or from wheelchair	14	4.8	0	0.0
Sit to stand or stand to sit	13	4.5	1	2.0
Reaching up or bending down	12	4.2	0	0.0
Step onto or off of an object	5	1.7	0	0.0
Stationary	49	16.9	24	49.0
Standing	35	12.1	14	28.6
Sitting	14	4.8	10	20.4
Activities of Daily Life	22	7.6	5	10.1
Toileting	18	6.2	3	6.1
Bathing/Dressing	4	1.4	1	2.0
Cooking	0	0.0	1	2.0
Recreation	12	4.1	2	4.1
Exercise	9	3.1	2	4.1
Gardening	3	1.0	0	0.0
Other	4	1.4	0	0.0

Note. Percentages were based on a total of 289 falls and 49 near falls where a task was indicated in the narrative section of PCRs. From "Engaging with First Responders to Prevent Falls in Older Adults," by Novato Fire Protection District, 2013, p. 15.

In 22% of complete falls and 42% of near falls, older adults had an existing medical condition that may have contributed to their fall. Polypharmacy was a concern as older adults may have seen different doctors for their medical conditions and be

prescribed different medications. In this study, 46.5% of complete falls and 47.1% of near falls, the older adult participants were taking five or more medications. The average number of medications taken at the time of fall was approximately five for complete falls and four for near falls. Six percent of falls indicated that a history of substance or alcohol abuse was involved. Current use or history of substance use was prevalent in individuals age 60 to 69 years (18%).

The use of adaptive equipment (i.e. walker, cane, and wheelchair) was present for 9.5% of complete falls and the average age of older adults who fell due to an adaptive equipment was 85.6 years. Adaptive equipment, most frequently walkers (6%), was more likely to be present in older adults 90 years and older (15%) and was associated with indoor falls (home/residence 11%; facility 13%).

Environmental/physical hazards were involved in 16% of complete falls (34% outdoor falls; 8% indoor falls) and none reported in near falls. Commonly cited hazards were steps or curbs (10%), ladders and furniture (5%), and rugs or mats and clutter or debris (1%). Older adults under the age of 80 were more likely to have a physical hazard involved in the fall. The average age in which an environmental/physical hazard was involved in a fall was 77.4 years.

Physical consequences of falls are shown in Figure 3. Frequently cited symptoms of falls were pain (53%), open wound such as a cut or skin tear (34%), and head injury (20%). Consequences of falls were not stated in 17% of complete falls and 68% of near falls.

Figure 3. Physical Consequences of Falls

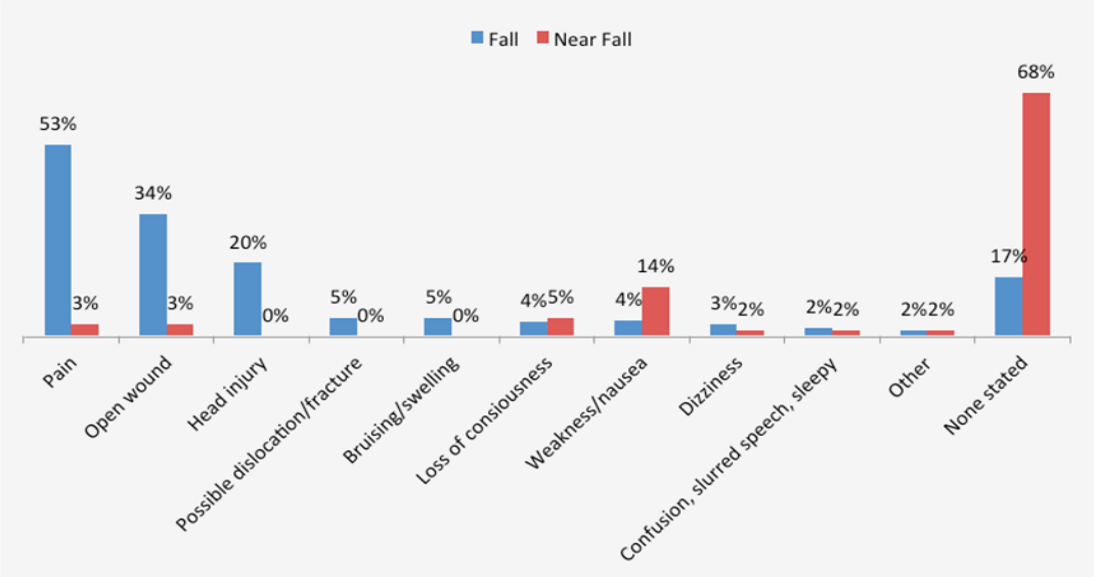

Figure 3: Bar graph demonstrating the percentages of noted physical consequences of 412 falls and 59 near falls. From "Engaging with First Responders to Prevent Falls in Older Adults," by Novato Fire Protection District, 2013, p. 18.

Characteristics of older adults and their fall experience may be useful to consider for future fall prevention programming. For example, since our results showed that a majority of the falls were mechanical falls, home assessment and modifications may take priority as an intervention. Similar to other studies, most of the older adult fallers were females who lived alone and were taking at least five or more medications. Therefore first responders may want to keep these risk factors in mind as they encounter community-dwelling older adults. Additionally, program developers may want to consider the learning styles of older adult females and also address medication side effects in order to increase programs' effectiveness.

Because older adults tend to fall when walking and changing positions, having older adults practice fall prevention techniques during functional mobility may help them

access those techniques more easily when participating in daily activities. Since occupational therapists have expertise in assessing the person and making detailed observations, they can create and implement fall prevention techniques based on the client's goals and level of functioning.

Research Question #2: What were the experiences of older adults who had recently fallen in a local community?

Older adult participants' experiences with falls. Six key themes emerged from focus groups with older adults in care facilities and phone interviews with community-dwelling older adults: perceptions on causes of falls, desire for independence, negative feelings triggered by falls, occupational consequences of falls, actions taken after the falls, and older adult participants' perceptions of first responders. The research findings provide additional insight into potential causes and effects of falls in older adults and also implications for clinical practice and future fall prevention programs.

Table 3

Older Adult Participants' Experiences with Falls

Themes
1. Perceptions on causes of falls
2. Desire for independence
3. Negative feelings triggered by falls
4. Occupational consequences of falls
5. Actions taken after falls
6. Older adult participant's perceptions of first responders

Perceptions on causes of falls. Many older adult participants expressed a lack of awareness of the environment and also a lack of understanding regarding the cause of falls. Due to the lack of awareness of the environment, several participants fell as a result of losing their balance when they tripped on a shoelace, an uneven surface such as the carpet, or when their shoe was caught on an object. Additionally, many participants were not able to state the reason for their falls, especially when the fall was medically-related.

When older adults were asked if they knew the reason for their falls, they stated:

"I was standing on my steps watching the dogs in my front yard, and the next thing I knew I was on the ground."

"I don't know what happened. All of a sudden I was flying and went down like that."

"I just suddenly fell, and it was a hard, hard fall."

While a large number of falls are due to mechanical factors, findings suggest that more attention should be given to medical falls, which are often unpredictable and, therefore, more difficult to prevent. Educating health care providers and first responders on medical conditions that are often associated with falls and fall risk in older adults may be an effective strategy to increase awareness of medical falls and help providers better identify older adults at risk for falls in care facilities and the community.

Medications were another factor related to experiencing falls. Older adults often take medications prescribed by different doctors based on their health issues, which could potentially increase older adult participants' fall risk. During one of the phone interviews one participant stated:

"They give me all these pain killers. I have the tendency to think that some of them may be affecting my balance."

While medical symptoms, such as weakness and cognitive impairments, can trigger falls in older adults, the addition of medication side effects can worsen the situation and increase risk of falling even more. Family members, health care providers, and first responders caring for older adults who are taking multiple medications should be alert regarding fall risk.

The older adult participants also expressed difficulty changing old habits at home which can be a contributing factor to falls. The older adult participants stated:

"You do so many things out of habit. You don't think about it."

"When I'm at home, I find it extremely difficult to do because you have old patterns and I'm thinking, 'It would take you a much longer time to change those habits if you were at home.'"

One participant was able to practice safer habits after moving into the care facility, suggesting that environmental factors and one's habits and routines often play a significant role in either hindering or facilitating healthy behaviors. According to the EHP model, adapting or modifying the environment is one strategy to produce changes in performance range (Cole & Tufano, 2008). Therefore, providing older adults with home assessments and modifications can be an effective strategy to promote healthy behaviors and reduce older adults' fall risk. Because occupational therapy practitioners are trained to consider the habits, routines, and environmental factors of clients, they can provide older adult fallers with specific strategies and recommendations to help them reduce falls and increase their chance of living independently within their own homes.

Desire for independence. The second theme that emerged from the older adult focus groups and phone interviews was the participants' desire to remain independent within their own homes and communities despite experiencing multiple falls and fall-related injuries. Several participants expressed the need to help themselves rather than depend on others. They did not feel comfortable asking for help from family or caregivers even when they needed it, which contributed to fall incidents for some. Because many older adults are accustomed to independence in their daily lives, it is difficult for them to accept their limitations, receive help from others, and adopt new behaviors, especially within their homes. A few participants mentioned that they continued with their usual activities despite experiencing a fall, which may actually increase their risk of falling. Older adults who have a strong desire for independence may not be receptive to receiving care or services after a fall especially when a serious injury is not present. Older adult participants in the focus groups and phone interviews stated:

> *"...I'm a very independent person. It's very hard for me to ask for help."*
>
> *"Another thing is having to depend on people even though they're more than willing, you know? They want to help and they try to help, but it's tough to do that if you've never had any help."*
>
> *"...I reached down to pick something up, and I should have called my aide, but again it's a matter of we all want to maintain our own independence as long as possible, so that was kind of an independent reflex."*
>
> *"My family didn't suggest it because they knew that I would say, "Wait a minute! I didn't hurt myself"...but they were always concerned. You know...I don't like*

having people hang over me and go "Ooh ooh". Please don't ever do that to me…"

"But do you know why we keep doing things at home and you don't really think about? 'cause you're trying to be independent! You don't want to go somewhere. You want to stay home, but you won't think about that. If all your life you were a take charge person because you had to be…"

Older adults' desire for independence may contribute to a recurrence of falls leading to more severe injuries. Several participants who were recurrent fallers at home expressed that they did not make many changes in their daily lives after a fall. Furthermore, in their pursuit to "age in place", several participants minimized the magnitude of their falls either by refusing help from others or choosing to hide their fall incidents from health care providers and family members. The older adult participants' desire to maintain and hold on to their independence often resulted in further falls and fall-related injuries leading to hospitalizations and a permanent transition into a care facility. When older adult participants were asked to share their fall experiences, they commented:

"I was also very concerned about losing my independence, and so I wasn't letting anyone know that I was falling...and then after I had the fall that put me in the hospital. I fell into a corner so I hit kind of both sides of my head."

"...well, then again you, you know, you keep telling yourself that 'Oh, I'm capable. It's just a one- time thing even though you've fallen 14 times in a year.' You know, 'Oh, I won't do that again so I won't fall.' And I didn't want anyone

to know because then my family - if they had been aware of how often I had fallen, they probably would have insisted that I needed more care and help."

"So always you're thinking, 'That's okay. You fell and you hurt yourself.' You don't think about, 'Hey, oh poor me. Put me away. Put me somewhere they can care for me.' You just say, 'It's just a fall.'"

"...I did want to tell you that this morning my roommate fell, and she was doing things that she shouldn't do, and that just because she wants to go home so she's trying really hard to exhibit that she can do things alone."

Older adults who value their independence appear to have a tendency to minimize their fall experiences, which prevents them from receiving the appropriate services to reduce the risk of falls and fall-related injuries. Additionally, older adults who are admitted to nursing homes may also have the tendency to display certain behaviors in order to appear to be more independent than they are. Because older adults may not provide an accurate report regarding their history of falls and fall injuries, first responders, health care professionals and care facility staff need to be vigilant in making keen observations and conducting thorough evaluations of older adults who are at risk for falls to make appropriate discharge recommendations in order to minimize falls. Furthermore, emphasizing that fall prevention interventions can help older adults live meaningfully and independently within their homes and communities might increase their receptivity towards participating in fall prevention programs and receiving appropriate services to reduce falls.

Negative feelings triggered by falls. Negative feelings and remarks were noted in a majority of the older adult participants regarding their fall incidents. They used words

such as, “shock”, “mad”, “jerk”, “stupid”, “embarrassing”, “foolish” and “fear of fall”, to describe their emotional responses. When participants were asked how they felt during the time of the fall, they responded:

“I felt like a big jerk. I couldn’t...I couldn’t remember why I was there in the first place...and such confusion...certainly foolish.”

“You feel pretty stupid after a while.”

“It is hard to accept your limitations.”

“I fainted, and I was embarrassed that I fell.”

“I kind of laugh because it was stupid.”

Falling can be a traumatizing event for older adults especially when they have a limited or lack of understanding of circumstances that contribute to falls. When older adults experience embarrassment or a fear of falling, they may reduce their participation in activities, which often leads to a further decline in their physical health and an increased risk for falling. The participants’ negative comments and remarks seemed to reflect their tendency to attribute falls to their own short-comings rather than other factors, such as environmental barriers, that may have contributed to the falls. Older adults who continue to have negative feelings and thoughts about themselves after a fall may gradually enter a helplessness state, which may decrease their fall self-efficacy, or their perceived ability to avoid falls. Fall prevention programs that utilize an interactive approach to facilitate sharing among older adult fallers would allow them to process and express their emotions in a positive manner and provide a support network to minimize the risk for depression and other mental health conditions that may arise as a result of falls.

Occupational consequences of falls. When asked about how the falls have changed their occupations in daily life, most of the older adults responded that at one point or another they have experienced a decrease in a certain activity, including ADLs, IALDs, leisure, and social participation. Older adult participants with severe medical conditions were restricted to their beds in order to prevent falls from occurring. The participants stated:

> *"Two times lately I fell. I avoid it. I don't go walking and stuff. Well, I go walking a little bit, but I try not to walk too much...I avoid falling here. I stay in bed."*
>
> *"I spend a lot of time in bed. That's the only place that I don't hurt."*

One participant found it difficult to complete household activities, including doing the dishes and regular housework, after a fall. Another participant became more dependent on adaptive devices as she transitioned from using a cane to walker after experiencing a fall. Having to learn how to use a new adaptive device and incorporate it into one's daily routine for functional mobility may be challenging. If not used properly, adaptive equipment may lead to additional falls. Another participant required a long term stay in an assisted living facility and was no longer able to drive after experiencing a fall incident. Older adults who experience even one fall may experience drastic changes in their ability to engage in daily activities and age in place.

Older adult participants' social and leisure activities were also impacted as a result of falls. When participants were asked how their fall incidents affected their daily life, they stated:

> *"Falls that I had at home caused me greater isolation because I was worried about falling in public. I did twice and it was just - it's so difficult - so embarrassing when you fall that you want to avoid that, you know, the public situation. So I was isolated more."*
>
> *"Well, there's almost everything that I can't do anymore. I can't go fishing. I can't go out. I can't do any of the sports at all."*

The embarrassment that is associated with falls can lead to a decrease in social participation with family and friends and also within one's community. Continued social isolation may lead to a higher risk of depression, which reinforces sedentary behaviors and a progression towards a deconditioned state in older adults. Losing the ability to continue with leisure activities may impact older adults' physical health and quality of life. Additionally, once leisure is eliminated in one's life, social participation is limited as well. Therefore, older adults who are not able to participate in leisure activities can fall into the same vicious cycle of social isolation, depression, further physical decline, and additional falls. Physical consequences of falls also impact older adults' occupational participation because the sequelae of injuries such as fractures, swelling, and surgeries may put them in an immobilized state for a period of time. As one older adult mentioned, *"You lose something when you don't exercise and your mental capacity for balance and everything."* Not having the opportunity to strengthen and maintain overall fitness through engaging in occupations, such as household chores, functional and community mobility, leisure, and social participation, can limit older adults' physical and cognitive skills and increase their risk of experiencing falls and fall-related injuries (Murphy, Williams, & Gill, 2002). According to the EHP model, creating strategies can

maximize a person's performance in various tasks (Cole & Tufano, 2008). Therefore, older adult fallers who create strategies to reduce falls in the home and community through occupational therapy fall prevention interventions will be more likely to participate in meaningful occupations, including ADLs, IADLs, leisure, and social participation.

Actions taken after the falls. While some older adult participants implemented changes to prevent future falls, other participants did not believe there was a need to make changes. Older adult participants that made changes often became more aware of their surroundings, implemented environmental modifications, such as adding grab bars and handrails, learned how to fall during their rehabilitation, or moved into a care facility after experiencing a fall. One participant received a home safety assessment from a health care provider at Kaiser and was in the process of putting up handrails at home. Another participant installed a stair chair and bought better shoes to prevent from falling. The participant also stated that she was being more aware of her surroundings and was starting to use her cane more often. Additionally, she calls her family members or neighbors for help and assistance when she goes grocery shopping in the community.

A few participants did not make any changes in their daily lives after a fall because of their desire to engage in their normal routines and maintain their independence. Because the older adult participants were not receptive to receiving help and services from others, they gradually developed maladaptive strategies when participating in daily activities. As a result, there is a high chance that their fall risk will increase as a result of the unsafe behaviors and patterns. When the older adult

participants were asked if they made any changes in their daily lives after their fall incidents, they explained:

> *"They always want somebody to observe me, but really I think about how can I do this and be safe...So I do things in my room that I probably shouldn't, but I always think about, 'Okay, if you do fall, you're going to fall across the bed and at least that won't be a dangerous thing.' But I still shouldn't do it."*
>
> *"I use the wall, and I lean against the wall and I just slide down. That keeps me from falling forward or falling backwards."*

Older adults who refuse to take preventive actions after a fall incident may be more likely to experience recurrent falls due to their likelihood of developing maladaptive strategies during their daily routine. Results suggest that older adults' strong desire to maintain their independence is a contributing factor to this unhealthy pattern and lifestyle. Therefore, emphasizing to older adults that their chance of maintaining their independence will actually increase if they seek out help early on may be an effective strategy to encourage participation in fall prevention programs and, thereby, reduce falls and fall injuries in older adults.

Older adult participants' perceptions of first responders. Older adult participants' perceptions of first responders can impact their receptiveness towards the emergency care and services. One participant expressed anger and frustration regarding her interactions with some first responders she has encountered in the past:

> *"All I wanted to do was end my life...but they came in and I was naked and this upset one of the lady fire fighters. She got into my bathroom, grabbed my bathrobe, and threw it in my face. I mean give me a break."*

"He was mean and nasty talking down to me and I wanted to report him so bad…"

Her negative experience with one of the first responders caused her to refuse service from that individual as she was transported to the hospital. She believed that the individuals lacked respect and sensitivity towards her situation during a couple calls, one of which was a suicide attempt. During emergency situations in which older adults are experiencing distress, interactions with first responders can highly impact their mental state and willingness to receive services. Thus, first responders' ability to build rapport with older adults when providing care can highly impact older adults' health outcomes. Furthermore, some older adult participants expressed uncertainty regarding the role of first responders in fall prevention because of their busy schedules. Instead, they felt that it would be more appropriate and beneficial for a therapist to provide fall prevention services. First responders may be better able to provide additional services regarding fall prevention, including screenings and referrals, if they receive in-depth education and training on the specific needs of older adults as part of their standard training curriculum.

Research Question #3: What were the experiences of first responders regarding fall-related calls in older adults?

First responders' experiences with fall-related calls in older adults. Four themes that emerged in the focus group with the first responder participants were: perceptions on causes of falls, challenges with older adult fallers, challenges with care facility staff and caregivers, and perspectives of current and future training. Findings revealed that first responder participants face numerous challenges when responding to fall-related calls. These challenges and barriers prevent first responder participants from

providing optimal services to older adult fallers. Considering first responder participants' challenges with fall-related calls could enhance fall prevention efforts from the perspective of emergency care and promote healthy aging for the elderly community.

Table 4

First Responders' Experiences with Fall-related Calls in Older Adults

Themes
1. Perceptions on causes of falls
2. Challenges with older adult fallers
3. Challenges with care facility staff and caregivers
4. Perspectives of current and future training

Perceptions on causes of falls. First responder participants from the focus group discussed a variety of factors that lead to falls in older adults. They identified both medical and mechanical factors, including weakness, being left alone, getting up in the middle of the night, pets, living conditions, and tripping hazards. However, two factors that they emphasized were polypharmacy and alcohol abuse, which were commonly seen in their community. The first responder participants explained that older adults often visit multiple doctors, who prescribe different medications that may conflict with each other. As a result of polypharmacy, older adults may experience various side effects, such as impaired balance, vision, and cognition. Because first responders have access to older adults' medications during a call, further education regarding the effects and interactions between certain medications that are associated with falls may better equip first responders in identifying fall risk factors in older adults.

According to the first responder participants, alcohol abuse was one of the primary contributors to falls in older adults. The first responder participants explained that some older adults, especially those that deal with alcohol abuse, often refuse to make healthy changes in their daily lives and are unwilling to receive any help or services. The participants stated that some older adults did not make any changes even when Adult Protective Services intervened. One first responder participant reasoned that older adults' fear of losing their independence may lead to denial, resulting in a lack of motivation to seek out appropriate services. This finding was also noted in the focus groups and phone interviews with the older adult participants. The fear and denial that older adults experience can lead to further falls and injuries, which is a major problem for first responders because they often encounter the same older adults who are falling on a regular basis.

Challenges with older adult fallers. As part of routine practice, first responder participants are required to follow certain protocols and ask specific questions to assess the problem and obtain a thorough medical history, including patients' current medications, existing medical problems, allergies, and other pertinent information. These protocols help them complete the necessary paperwork (i.e., PCRs) and provide accurate information to hospital staff in emergency departments. First responder participants had difficulty obtaining such information from older adults either due to their confusion, hearing or cognitive impairment, memory loss, or inability to focus and follow-through with questions. Thus, gathering a full and accurate assessment of older adult fallers was difficult for the first responder participants. One participant explained:

"The biggest challenge for me when dealing with elderly people is trying to get a good history from them as far as medications, their medical problems, their allergies, or whether they have pain...It's gonna take 10 minutes of your time just to figure out one question."

First responder participants expressed the most frustration regarding repeated non-injury falls in older adults, also informally referred to as "repeat offenders". The first responder participants provide "lift assists" for "repeat offenders" on a regular basis to simply pick them up and put them back into their chairs or beds. They typically provide "lift assists" for community-dwelling older adults with alcohol abuse and also older adults with dementia living in care facilities. First responder participants expressed a sense of helplessness regarding this particular group of older adults who receive frequent "lift assists". While the first responders expressed a genuine desire to provide "repeat offenders" with the care that they need, they were frustrated and exhausted at the same time because of older adults' refusal to change their unhealthy behaviors. When asked about their experiences when responding to falls in older adults, one of the first responder participants responded:

"The biggest toll is in the support of people who fall a lot due to various types of abuse but don't want to change the situation. So we are the catch-all net that goes out every time that happens. We can't refuse them...we're out there putting them back in bed because they don't want to be seen in the hospital. They don't want to stop the drinking or drugs or whatever it is causing them to fall and so we get caught in the whole bang going picking them up".

"Lift assists" are a major problem because they can potentially result in serious injuries if older adults continue to neglect their health and well-being as a result of alcohol or drug abuse. Additionally, first responders are using their time and energy to provide services to individuals that do not require emergency care. As a result, individuals who are in need of emergency care may not be receiving those services due to the high number of recurrent non-injurious falls in older adults. Because incidents of "lift assists" were not documented in the PCRs during the 6-month period in which the research data was collected, the number of falls that actually occurred during that period most likely exceeds our findings, suggesting that this problem needs to be addressed in order to effectively prevent falls in older adults.

A strategy to address first responders' challenges with older adult fallers, specifically in regards to communication barriers, is to provide first responders with further education and training on effective communication strategies, specifically with older adults who have cognitive impairments and mental health conditions. According to the EHP model, establishing specific skills through the teaching of new skills can improve performance outcomes (Cole & Tufano, 2008). Therefore, first responders who establish new skills in effectively assessing and communicating with older adult fallers will be better equipped to provide preventive services to reduce falls in the elderly.

Challenges with care facility staff and caregivers. A number of first responder participants also expressed frustration regarding the communicating with staff and caregivers in living facilities due to various reasons, including a language barrier and a lack of communication and service coordination. First responder participants expressed that staff often expect them to fix all the problems when falls occurred. They stated that

facility staff rarely complete any form of pre-assessment of older adult fallers prior to first responders' arrival, most likely due to liability reasons. First responder participants also stated their belief that facility staff would rather have them transport older adult fallers to the hospital even if an injury is not present because of overcrowding reasons. When the first responder participants' were asked to elaborate on their experiences with facility staff during fall-related calls in older adults, they responded:

> *"It also seems like we have a new trend that the care facilities are doing less and less pre-treatment prior to calling us and it's like a standard issue that if the patient is found on the ground, we get called. Period."*
>
> *"Some of them are worse than others...It's almost like, their hands are so full, 'Oh look you guys are here. Here you go.'"*
>
> *"...they get frustrated with us when we say, 'No, this person is not hurt. We are not taking them.'"*
>
> *"They hand you this gigantic stack of paper work, and that's about it."*

With the growing older adult population, care facilities are impacted with a growing number of older adults who are in need of special care and direct services. Improved communication and collaboration between first responders and care facilities in clarifying protocols and coordinating a better flow of services can be beneficial for both sets of providers especially when providing care to older adult fallers. Further education and training regarding fall prevention strategies and assessment techniques may empower facility staff to be more involved in caring for older adults before and after a fall. Occupational therapists can promote fall awareness in care facilities by providing fall prevention presentations or consultative services to facility staff on how to identify fall

risks and implement fall prevention strategies. Furthermore, occupational therapists have the knowledge and skills to help older adults live safely and independently within their own homes. Connecting older adult fallers with occupational therapy services at an early stage may prevent the number of older adults in care facilities from increasing, thereby, ensuring that older adults residing in facilities are receiving the appropriate care, attention, and services in order to promote their health and well-being.

Perspectives of current and future training. Regarding training in geriatric care, first responder participants stated that they do not receive specific education on medical falls, mental health assessments, and ways to prevent falls. One program they used was the Vial of Life, a program that allows individuals to have their complete medical information listed on a form and posted in a prominent place ready for medical emergencies. The problem first responders found with using the Vial of Life was that the information was often written by hand, and, therefore, unreadable most of the time. The first responder participants mentioned using Adult Protective Services (APS) occasionally. However, the participants did not always take advantage of this service possibly because they were not equipped to assess and identify individuals who would benefit from APS. In addition, the first responder participants were not aware of available resources for older adult fallers, especially for "repeat offenders". Because first responders play a vital role in caring for older adult fallers on a regular basis, additional education and training on specific topic areas, such as common neuro-degenerative, cognitive, and mental health conditions seen in older adults and effective communication and listening strategies, can better prepare first responders to obtain an accurate medical history, identify fall risk factors, and refer older adults to the appropriate services.

Although the first responder participants recognized falls in older adults as a major problem, there were mixed perceptions regarding their role in providing preventive services for older adult fallers. While some participants believed extra training is necessary to promote prevention efforts, others felt that it is not part of their scope of practice to implement fall prevention interventions because they do not spend a lot of time with patients during each call and their training is focused primarily on responding to acute conditions and situations. A few of the participants attempted to administer a new pilot protocol, the Patient Health Questionnaire-2 (PHQ-2), to screen older adults for depression prior to the focus group. The majority of the first responder participants expressed slight resistance in utilizing the PHQ-2 during calls either because of time constraints in an emergency setting, the likelihood of obtaining mixed answers and results especially during a call, or their discomfort in asking the questions. They suggested that it would be more appropriate to administer the PHQ-2 in a clinical setting as opposed to an emergency setting.

Overall, the first responder participants provided many suggestions that were directed to other health care providers, while very few emphasized the role of emergency services in fall prevention. Because integrating preventive services within an emergency setting is still a novel concept to most first responder participants, more time and energy needs to be directed into fostering this outlook and goal in first response teams in order to motivate emergency personnel to step out of their comfort zones to gain more knowledge and skills to contribute directly to fall prevention efforts.

Research Question #4: What was the degree of depression in older adults who had recently fallen?

Based on older adults' medical history in the PCRs, a mental health condition was present in 12% of complete falls and 10% of near falls. Individuals with dementia accounted for 8% of falls and those with depression accounted for 6% of falls. A mental health condition was found primarily in older adults living in care facilities. Because PCRs and first responders' routine assessments do not emphasize mental health status, there is a possibility that there were more older adult fallers with mental health conditions that were not identified.

One older adult participant during a phone interview reported that he was experiencing depression before he started falling. He believed his depression increased even more after he injured himself from a fall. Because this participant was falling on a regular basis and experienced multiple injuries, including a broken nose and arm and a concussion, he seemed to have accepted falls as a normal event at this stage of his life. This most likely contributes to his on-going depression and helpless state. Additionally, because of his pain and weakness, he has fallen into a pattern of restricting his leisure and social activities resulting in him staying in bed majority of the time, leading to increased social isolation and further depression.

> *"...depression problem right now, and I've had it for a while 'cause I've been on disability since '98 when all of this started. Sometimes I feel a little bit more depressed when I injure myself."*

Older adults who lose their independence and the ability to age in place may also develop signs of depression. Two older adult participants from a focus group

experienced a period of sadness when they had to transition from living at home to a care facility as a result of their falls.

> *"Because I cried for two days that I was going to have to come here in order for my physician to, you know, release me from the hospital."*
>
> *"I cried every day after I got here because, you know, I was not use to it. But I knew I had to be here. But I would cry every day, almost all day long...I still have a little bit of that now."*

Interestingly, a few older adult participants, who reported developing a fear of falling after their fall incident, became more aware of their surroundings and learned strategies to prevent future falls. They did not, however, mention restricting their activities, which is usually very common in older adults who experience a fear of falling.

Based on results from both quantitative and qualitative data, depression was noted in a small percentage of the older adult participants. However this may be due to limited information provided in the PCRs and older adult participants who may not have felt comfortable enough to share their feelings during the focus groups or phone interviews. Because there is a possibility that older adults may be in denial regarding their health status, healthcare professionals, first responders, and family members need to be more cautious and observant of older adults' behaviors because they may not always be providing an accurate report on their fall history. Providing older adults with an opportunity to share their fall experiences with other fallers and find support in each other might help alleviate some of the negative feelings that are associated with falls.

Although past studies have demonstrated a relationship between falling and depression (Eggermont, Penninx, Jones, & Leveille, 2012; Painter et al., 2012), the PCR

findings for this study revealed a small percentage of older adult fallers with concurrent mental health conditions, such as depression. However, older adult participants' negative feelings, such as self-blame, embarrassment, and sadness, suggested that many participants attributed falls to their own shortcomings and personal factors rather than extrinsic factors. This emotional response was also found in a previous study that explored older adults' perceptions of fall prevention programs (Calhoun et al., 2011). Older adults who experience multiple falls may have a lower self-esteem and a loss of motivation as a result of the negative thoughts associated with falls. Additionally, a majority of older adult participants restricted their daily activities, including regular housework, leisure and socialization, after experiencing a fall. Many studies have shown that restriction of daily activities is a more significant risk factor for depression in older adults than physical diseases or predisposing factors (Fiske, Wetherell, Gatz, 2009; Murphy, Williams, & Gill, 2002). Further studies are needed to explore the relationship between falls and depression and the effectiveness of depression treatments in reducing fall rates.

Research Question #5: What steps can be taken to decrease fall risk in older adults?

Older adults' suggestions. To help prevent falls, older adults suggested learning how to use adaptive devices such as canes and walkers. When asked by the interviewer if they might be interested in working with an occupational therapist to do home evaluations and receive educational materials, some older adult participants agreed. The majority of older adult participants believed that home safety assessments and modifications are effective strategies to prevent falls. However, costs related to home assessments and modifications seemed to be a concern for the older adult participants.

Most of the participants were open to receiving education regarding fall prevention strategies. One older adult participant believed that receiving education regarding fall prevention from the fire department and also specific recommendations on environmental changes from an occupational therapist were the most valuable to her, especially in a personal one-on-one context. The participant stated:

> *"The one on one personal memorable part was - we did have the fire department come to talk to us about their services and what they could do - the general idea of fall prevention. They passed out flyers, you know, get better by taking like rugs and items that you can easily trip over and removing those for you in the environment. Those sorts of things, and I found those very valuable...And the other valuable information was when someone came to my home that is specifically, you know, you need a grab bar by your bathtub close to your toilet. They asked me to do some regular household things and sort of advised - and I'm not talking about the fire department in this regard, sorry, but when an occupational therapist came to my home. Then it was better because they were telling me specific things for me so that I did feel better."*

Older adult participants were also interested in working with the first responders to do screenings and are open to suggestions and receiving education that might help them reduce their risk for falls. Although, the older adults were open to receiving suggestions, some of them seemed unreceptive, depending on the number of falls they have experienced. Older adult participants who experienced only one fall as a result of a known cause were less receptive to fall prevention services. For instance, one participant

who experienced a fall because she tripped on her untied shoelace did not think she needed help since she knew the reason why she fell. Another participant

Sometimes lack of education also interferes with looking for help. One older adult participant was not aware of what services an occupational therapist could provide for him, but after the interviewer explained what occupational therapy is and how he could possibly benefit from it, he said he would consider it.

There also seem to be mixed findings regarding preventive services for falls. There was a debate during one of the focus groups with the older adult participants regarding the effectiveness of providing education at an earlier age versus a later age when a fall incident has already occurred. One participant suggested that it would be beneficial to educate younger people on falls by teaching them how to care for their grandparents. Another participant expressed that this approach may not be beneficial because she felt that people are not likely to change their behaviors if they have never experienced a fall.

First responders' suggestions. Many of the first responder participants believed that home safety assessments and modifications are effective strategies to prevent falls. The first responders expressed their interest in seeing other agencies that would provide education to older adults regarding home safety assessments. One participant commented:

> *"I would like to see an agency or whatever going into people's homes educating them about tripping hazards, extension cords, put grab handles in the shower or bathroom, areas they're vulnerable, where they don't take their walker or cane."*

Also, first responder participants seemed to be concerned about the costs of home assessments and the availability of professionals who are able to provide home modifications to older adults. A participant stated:

> *"I think one of the thing that's missing here is not just the education on fall prevention but the funding source and the able-bodied people to do, to go through the homes, to put in the grab bars or pick up the rugs...do that sort of thing because the person likely to fall down who is our target group is probably not the person who is able to do any of these things or maybe not afford them."*

First responder participants suggested implementing changes in their reporting system in order to provide appropriate referrals for patients. In addition, some of the participants suggested a "clearing house" with access to all resources or a program with one standard telephone number, like 911, to call for resources. They also believed that changes within the healthcare system, such as increased communication between physicians and pharmacists regarding patients' medications and side effects, would prevent future falls in older adults.

Summary of suggestions. Educating older adults is essential to increase awareness of fall prevention. Some older adults, especially those who experienced multiple falls, may be less receptive to receiving services from healthcare professionals and first responders because of their learned helplessness, the belief that nothing could improve their situation or benefit them. Additionally, it is uncertain which educational method is most effective in reducing falls in older adults who receive emergency services. Past studies demonstrate that providing educational materials after a fall incident may not be effective because older adults may be too overwhelmed during a call

to receive the information. One strategy to resolve this issue is for healthcare professionals, such as occupational therapists, to provide education that is specific to older adults' fall-related needs within their homes to increase their likelihood of applying the information into their daily lives. More research needs to be done in order to explore older adults' receptivity towards preventive services and also educational methods that are effective in reducing falls and fall risks for older adults who contact the fire department for emergency services.

Based on several studies, providing referral resources to older adults appeared to be effective only if an intense follow-up system was established to ensure that the individuals are making use of the referrals (Shah et al., 2010; Shah et al., 2006). This finding aligns with first responders' perspectives in that a number of older adults who fall repeatedly will not seek out services on their own. Involving occupational therapists to follow-up with older adults and also provide direct services, such as home safety assessments and modifications, may be an effective strategy to prevent repeated falls.

Because first responder participants experienced difficulty communicating with older adults, as evidenced in a previous study, receiving training on communication strategies and psychosocial issues specifically found in older adults, such as dementia, Alzheimer's disease, and depression, may provide them with the skills they need to more accurately assess patients' needs and health outcomes in relation to falls (Peterson et al., 2009). Additionally, training staff and caregivers in living facilities on set protocols, assessment techniques, environmental modifications, and other fall prevention strategies may build a stronger partnership between first responders and staff in caring for older adults.

Collaborative relationships between healthcare professionals, such as occupational therapists, and first responders can be the first step in more effectively targeting older adults that experience repeated falls and providing them with the appropriate interventions to reduce falls. Since first responders encounter many older adults on a regular basis due to falls and some older adults may not receive any treatment until they have fallen multiple times, partnering with occupational therapists who have the knowledge and skills to prevent falls in the elderly can ultimately reduce fall risks, injuries, and fall-related costs. Falls in older adults are a major public health concern, and occupational therapy practitioners, as well as occupational therapy students, can play a vital role in utilizing their expertise in fall prevention in a novel community setting to enhance older adults' health and quality of life. Future research is needed to examine whether occupational therapy fall prevention services provided through an emergency setting is effective in reducing falls and fall risks in older adults.

Conclusion

Statistics show that the older population is growing as the Baby Boom generation reaches 60 years of age and older. As adults age, their risk of falling increases, which can lead to injuries and a fear of falling (CDC, 2013). First responders often come into direct contact with older adults who have fallen, and occupational therapists have an extensive knowledge in the area of fall prevention. If first responders and occupational therapists work in a collaborative partnership to identify fall risks and increase awareness of fall prevention, the number of falls and the costs of falls may be reduced and the ability of older adults to engage safely in meaningful occupations may increase.

This study sought to identify fall risk factors in older adults who contacted first responders after a fall, explore the experiences of community-dwelling older adults who had fallen, and examine the experiences of first responders at a local fire district in Marin County. The data was collected via phone interviews, focus groups, and coding of PCRs regarding older adults' fall incidents. Identifying fall risk factors and understanding the experiences of older adult fallers and first responders may increase awareness on ways to prevent falls and enhance older adults' quality of life by reducing their fall risks. Occupational therapists and first responders together can develop fall prevention strategies to promote the health and well being of older adults.

The results showed that the majority of the fallers were female with an average age of 81 years and the majority of falls occurred indoors, specifically within participants' homes. More than half of the falls were mechanical, of which 74% were due to a trip or slip. In addition, almost half of the participants who had complete falls reported taking five or more medications. The older adult participants reported a lack of awareness of their surroundings and the reason for their falls. Additionally, a large number of the older adult participants expressed a strong desire to stay independent, which resulted in maladaptive behaviors and a refusal to seek help or services. As a result, their fall risk increased, leading to more severe injuries and drastic consequences. Based on the PCR narratives, 12% of the fallers had a mental health condition, with 6% being depression. First responder participants stated that many falls are the result of polypharmacy and alcohol use. In addition, they reported that older adult fallers are unwilling to make additional changes in their lives. First responders also experience communication barriers when providing services to older adults, caregivers, and staff at

care facilities. First responder participants believe that they lacked training and education on referral resources for older adult fallers.

Provision of educational materials and referral resources, training for first responders and staff in care facilities on a formal and informal basis, and the collaboration of first responders and occupational therapists can potentially decrease fall risks in older adults. Occupational therapists and first responders can partner to conduct home safety assessments and develop evidence-based fall prevention programs based on the characteristics found in older adult fallers and also older adults' desire to stay independent. Future studies need to explore the relationship between depression and falls in older adults who receive emergency services, in addition to the effectiveness of occupation-based fall prevention programs in emergency settings. With the knowledge gained from this study along with future follow-up studies, occupational therapists and first responders can form collaborative partnerships to reduce falls, fall-related injuries and costs, and help older adults live meaningful and productive lives within their home and community.

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Appendix A

Dominican University of California
Letter of Permission from Agency Directors

(Date)
Dear _____,

Thank you for agreeing to be a data collection site for our study. This letter confirms that you have been provided with this brief description of our research study, which concerns factors related to older adults and falls. The goals of this study are to identify current trends in fall incidents among older adults living in Novato, California, to examine the perceptions of community-dwelling older adults who have contacted the Novato Fire District (NFD) after a fall, to examine the perceptions of first responders in the NFD regarding falls and fall prevention, and examine the relationship between falls and depression.

The desired outcome is to build collaborative relationships between occupational therapists and first responders in reducing falls in the elderly in order to promote the health and wellness of older adults. This study is an important part of our graduate requirements for the Occupational Therapy major, and is being supervised by our Thesis Advisor, Dr. Ruth Ramsey, from Dominican University of California, Department of Occupational Therapy.

We hereby request permission to conduct our research study at (name of facility). We will need a meeting room to hold one one-hour focus group, and would like to post flyers around the facility as a way to recruit 8-12 participants, ideally individuals who have experienced at least one fall incident. Participants will be asked to share their thoughts and experiences on the topic of older adults falling, as well as reflect on their own experiences with falls. To grant your approval for our request to conduct research at your establishment, please sign and date this letter below and return it to us in the enclosed self-addressed, stamped envelope, or in person, as soon as possible. Please feel free to contact us if you have any questions about this study.

We will ensure that our data collection does not interfere with your regular schedule activities, and that your residents are treated ethnically and with the highest respect and sensitivity. If you have any questions about the research, you may contact us at (831)682-4580 or email us at monica.fernandez@students.dominican.edu. If you have further questions you may contact our research supervisor, Dr. Ramsey at (415)257-1393, ruth.ramsey@dominican.edu, or the Institutional Review Board for the Protection of Human Subjects at Dominican University of California at (415)257-1389.

After our research study has been completed in May 2013, we will be glad to send you a summary of our research results. Thank you very much for your time and cooperation. Our thesis group is looking forward to working with you on this study.

Sincerely,

Monica Fernandez, Anita Hin, and Chelsea Prado
Dominican University of California
Department of Occupational Therapy
50 Acacia Ave.
San Rafael, CA 94901

I agree with the above request

_____	_____	_____
Signature	Title	Date

Appendix B

Focus Group on Falls in Older Adults

(Date) (Time)

Dominican University of California's Occupational Therapy students will host a focus group to better understand experiences with falls. Please join us if you are:

- **65 years of age or older**
- **have experienced a fall**

What is occupational therapy?

The primary goal of occupational therapy is to improve and maximize function and performance in people of all life stages.

We are conducting this research in partnership with the Novato Fire District to learn how to prevent falls in the community.

Appendix C.1

Letter of Recruitment for Phone Interview with Older Adults

[NFD letterhead]

March 8, 2013

The Novato Fire District is partnering with the Occupational Therapy Department of Dominican University of California to study falls in older adults. We hope to learn more about falls and how they can be prevented. In this phase of the study, Occupational Therapy students are conducting telephone interviews with some of our past patients. You have been selected as a possible participant in this study because at some time in the last five months the Novato Fire District provided services to you due to a fall.

Your participation in this study would be very helpful as we explore this health issue. All information you share with the interviewer will be kept confidential. However, please know that your decision to participate is completely voluntary. If you do not wish to participate just let the students know when they call you.

Thank you,

Ted Peterson

Appendix C.2

Letter of Recruitment for Phone Interview with Older Adults

March 8, 2013

Hello, our names our Monica Fernandez, Anita Hin and Chelsea Prado. We are graduate students in the Department of Occupational Therapy at Dominican University of California in San Rafael. We would like to invite you to participate in a phone interview as part of our research study on falls in older adults. The Novato Fire District has invited us to collaborate with them to explore the trends of falls in older adults living in Novato and to examine the experiences and perceptions of community-dwelling older adults who have previously fallen and first responders from the Novato Fire District regarding falls and fall prevention. Our goal is to identify ways to help older adults prevent falls.

We would appreciate your participation in this 20-30 minute phone interview. If you are selected for the interview you will be called in the next few weeks. If you prefer to not participate in the phone interview, please feel free to let us know during the phone call. Your participation is completely voluntary.

Thank you for your time and we look forward to meeting you!

Sincerely,

Monica Fernandez, OTS

Anita Hin, OTS

Chelsea Prado, OTS

Appendix D

Institutional Review Board Approval Letter

DOMINICAN UNIVERSITY of CALIFORNIA 1890

February 26, 2013

Chelsea Prado

Dear Chelsea:

I have reviewed your proposal (entitled, Building Collaborative Relationships Between Occupational Therapists and First Responders to Promote Fall Risk Awareness in Older Adults) submitted to the Dominican University Institutional Review Board for the Protection of Human Subjects (IRBPHS Application, #10109). I am approving it as having met the requirements for expedited review.

In your final report or paper please indicate that your project was approved by the IRBPHS and indicate the identification number.

I wish you well in your very interesting research effort.

Sincerely,

Martha A Nelson

Martha Nelson, Ph.D.
Chair, IRBPHS

cc: Ruth Ramsey

Institutional Review Board for the Protection of Human Subjects
Office of the Associate Vice President for Academic Affairs • 50 Acacia Avenue, San Rafael, California 95901-2298 • 415-257-1310
www.dominican.edu

Appendix E

DOMINICAN UNIVERSITY of CALIFORNIA
RESEARCH PARTICIPANT'S BILL OF RIGHTS

Every person who is asked to be in a research study has the following rights:

1 To be told what the study is trying to find out.

2 To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.

3 To be told about important risks, side effects or discomforts of the things that will happen to her/him.

4 To be told if s/he can expect any benefit from participating and, if so, what the benefits might be.

5 To be told what other choices s/he has and how they may be better or worse than being in the study.

6 To be allowed to ask any questions concerning the study both before agreeing to be effects. If such a decision is made, it will not affect his/her rights to receive the care or privileges expected if s/he were not in the study.

7 To receive a copy of the signed and dated consent form.

8 To be free of pressure when considering whether s/he wishes to be in the study.

9 To be told what sort of medical treatment is available if any complications arise.

10 To be free of pressure when considering whether s/he wishes to be in the study.

If you have questions about the research, please feel free to ask the researchers. If you have further questions you may contact our research supervisor, Ruth Ramsey, at (415) 257-1393 or the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), which is concerned with protection of volunteers in research projects. You may reach the IRBPHS Office by calling (415) 257-1389 and leaving a voicemail message, or FAX at (415) 257-0165, or by writing to IRBPHS, Office of Associate Vice President for Academic Affairs, Dominican University of California, 50 Acacia Avenue, San Rafael, CA 94901

Appendix F

Confidentiality Agreement for Human Subject Research Assistants

Human subject research includes confidential and personal matters, some of which may involve a subject's rights of privacy protected by law, attorney-client privileged communications, and proprietary information. I agree to maintain confidentiality with respect to any private or personal information that I become aware of, or have access to, during the course of my activity as a researcher or research assistant. In providing support to a research project, I am considered a "confidential employee." I am prohibited from releasing information to or discussing information with anyone not employed in this specific research project, except as I am directed by the faculty advisor or as is necessary in the ordinary course of performing my duties in the research activity.

I agree to maintain confidentiality of these matters while I am working on the research project and following the completion of my work association on this activity.

At all times during my participation, I shall promptly advise the primary investigator and faculty advisor of any knowledge that I may have of any unauthorized release or use of confidential or personal information, and shall take reasonable measures to prevent unauthorized persons from having access to, obtaining, or being furnished with any such information.

Print Name:_____

_____ _____

Signature Date

The policies were explained to me by:

_____ _____

Name Title

Office of Institutional Research for Protection of Human Subjects
50 Acacia Avenue San Rafael, CA 949401 (415) 485-3278

Appendix G

DOMINICAN UNIVERSITY of CALIFORNIA
CONSENT TO BE A RESEARCH SUBJECT

Purpose and Background

Ms. Monica Fernandez, Ms. Anita Hin, and Ms. Chelsea Prado, graduate students in the Department of Occupational Therapy at Dominican University of California, are conducting a research study on falls in older adults. The purpose of this research study is to identify trends related to falls occurring among older adults and to examine the perceptions of community-dwelling older adults who have previously fallen and emergency medical services providers from the Novato Fire District regarding falls and fall prevention. Additionally, the research explores the relationship between falls and depression in older adults.

As the older adult population expands, there will continue to be an increasing number of falls in the elderly. The unique collaboration between first responders, who often come into contact with older adults who fall, and occupational therapists, who are experts in fall prevention, can potentially reduce the number of falls seen in older adults. In order to develop this partnership between first responders and occupational therapists, it is important to examine the current trends related to falls in the elderly and to better understand older adults' experiences with falls, specifically in relation to depression, and first responders' experiences in caring for older adults who have fallen.

Procedures

If I agree to be a participant in this study, the following will occur:

1. I will participate in a one-hour focus group, which will include a personal life history, as well as thoughts and feelings on the topic of older adults falling.

2. I will be audio-recorded during the focus group. All personal references and identifying information will be eliminated when the recordings are transcribed, and all subjects will be identified by numerical code only, thereby assuring confidentiality. Only the researchers, the faculty advisor, and the community partners will access recorded materials, including the audio-recordings, field notes, and transcripts. One year after the completion of the research, all written and recorded materials will be destroyed.

3. I may request a written summary of the study.

Risks and/or Discomforts

1. I understand that my participation involves no physical risk, but may involve some psychological discomfort, given the nature of the topic being addressed in the focus group

2. I will be discussing topics of a personal nature and I may refuse to answer any question that cause me distress or is an invasion of my privacy. I may elect to stop the study at any time and may refuse to participate before or after the study is started without any adverse effects.

Benefits

There will be no direct benefit to me from participating in this study. The anticipated benefit of this study is a deeper understanding of falls and fall prevention in older adults and the opportunity to experience peer support either in the area of falling or in responding to calls related to falls in the elderly.

Questions

I have talked to Ms. Fernandez, Ms. Hin and Ms. Prado about this study and have had my questions answered. If I have further questions about the study, I may contact them at monica.fernandez@students.dominican.edu, anita.hin@students.dominican.edu, chelsea.prado@students.dominican.edu or their research supervisor, Ruth Ramsey, Ed.D., OTR/L, Occupational Therapy Department, Dominican University of California, (415) 257-1393.

If I have any questions or comments about participation in this study, I should talk first with the researchers and the research supervisor. If for some reason I do not wish to do this, I may contact the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), which is concerned with the protection of volunteers in research projects. I may reach the IRBPHS Office by calling (415) 257-1389 and leaving a voicemail message, by FAX at (415) 257-0165 or by writing to the IRBPHS, Office of the Associate Vice President for Academic Affairs, Dominican University of California, 50 Acacia Avenue, San Rafael, CA 94901.

Consent

I have been given a copy of this consent form, signed and dated, to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. I am free to decline to be in this study or withdraw my participation at any time without fear of adverse consequences.

My signature below indicates that I agree to participate in this study.

_____	_____
SUBJECT'S SIGNATURE	DATE
_____	_____
SIGNATURE OF RESEARCHER	DATE
_____	_____
SIGNATURE OF RESEARCHER	DATE
_____	_____
SIGNATURE OF RESEARCHER	DATE

Appendix H

Focus Group Script: Older Adults

Introduction

(OT students will introduce themselves)

Hello, we are occupational therapy students from Dominican University of California in San Rafael. As occupational therapists, our goal is to help individuals do the things they find purposeful and meaningful, whether it is to work, play, or socialize. Sometimes people face challenges in accomplishing these activities due to their health and/or external circumstances. Occupational therapists' role is to bridge the gap between people's current condition and where they want to be functionally.

For the past few months, we have begun a research study on falls in older adults. As most of you know, first responders (paramedics and EMTs) are often called when people fall, so they are also interested in how to prevent falls, especially in older adults. In fact, we were invited by the Novato Fire District to work with them doing this research. One of the goals of our research is to better understand contributing factors to falls and how falls can be prevented in older adults through the collaboration between occupational therapists and first responders. In order to gain a deeper understanding of this issue, we are here today to talk with you about your experiences with falls. We want to let you know that this focus group session will be audio-recorded. However, we assure you that everything you say here will be kept confidential and will only be used anonymously for research and educational purposes. Before we start, please sign the informed consent form provided to you and return it to _____.

Definition of a fall

To help us all understand falls in the same way, we want to talk a little bit about what a fall is and provide you with some examples. A fall is when a person unintentionally comes to rest on the ground or any lower surface. For example, an older adult can fall when getting out of bed to go to the bathroom, slipping on a loose rug, walking on uneven surfaces with poor lighting, or feeling dizzy due to medication side effects. Many times, there is a combination of various factors that lead to falls. Does anyone have any questions before we begin?

<u>The following questions will guide the discussion of the focus group:</u>

1. To begin our discussion, I would like you all to think back on the last time you fell. Tell us about that time.

   Prompts:

(What do you think caused you to fall?)
(Where were you when you fell?)
(What were you feeling at the time?)
(How did you respond to the fall? What actions did you take?)

2. What changes did you experience in your daily life after a fall?
   Prompts:
   (What activities did you find challenging after the fall?)
   (How did the fall affect your daily routine?)
   (How did the fall affect your mental state or mood?)

3. How did the fall affect your independence and quality of life?

4. How did the fall affect your social life?

5. By a show of hands, how many of you felt down or helpless in your daily life after a fall? Tell us more about that.

6. By a show of hands, how many of you felt less motivated to do the things you use to enjoy doing after a fall? Tell us more about that.

7. What concerns or thoughts do you have about falling again?

8. What changes did you make after a fall?
   Prompts:
   (How many people talked to their doctors or nurses more?)
   (How many people started taking exercise classes?)
   (How many people tried to learn more about how to prevent falls?)

9. What do you think would help you fall less in the future?
   Prompts:
   (What kind of support would likely help you fall less?)
   (What would people in your situation need in order to prevent falls?)
   (What can you do to fall less?)

10. What do you think would help prevent falls in the future?
    Prompt:
    What do you think about having someone from the Novato Fire District or another person visit you in your home to help you assess ways to prevent falls?

Other Prompts:
(What if they conducted screenings and referrals?)
(What do you think about education materials?)
(What about home evaluations and modifications?)
(What do you think about working with an occupational therapist?)

11. Are there any further thoughts, comments, or questions you would like to share?

Thank you for taking the time to participate in this focus group! We appreciate all your comments and feedback. We hope this was beneficial for you as it was for us. Thank you again for your time.

Appendix I

Focus Group Script: First Responders (Firefighters and Paramedics)

Introduction

(OT students will introduce themselves)

Hello, we are occupational therapy students from Dominican University of California in San Rafael. As occupational therapists are licensed health professionals who help individuals of all ages do the things they find important and meaningful, whether it is to work, play, or socialize. Sometimes people face challenges in accomplishing these activities due to their health and/or external circumstances. Occupational therapists' role is to bridge the gap between people's current condition and where they want to be functionally.

For the past few months, we have begun a research study on falls in older adults. We want to better understand contributing factors to falls and how falls can be prevented in older adults through the collaboration between occupational therapists and first responders. In order to gain a deeper understanding of your role and expertise as first responders, we are here today to talk with you about your experiences in responding to calls related to falls in the elderly. We want to let you know that this focus group session will be audio-recorded. However, we assure you that everything you say here will be kept confidential and will only be used anonymously for research and educational purposes. Before we start, please sign the informed consent form provided to you and return it to _____.

Definition of a fall

For the purposes of our research, we are defining a fall as when a person unintentionally comes to rest on the ground or any lower surface. Today, we will be talking about both mechanical and medical falls. Does anyone have any questions before we begin?

<u>The following questions will guide the discussion of the focus group:</u>

1. By a raise of hands, who here are the paramedics? Who are the EMTs?

2. Thinking back on all the calls you've responded to in the past year, what percentage of those calls was related to falls in the elderly?

3. In your experience as a first responder, what do you think typically cause or contribute to falls in older adults (e.g. medications, clutter, ETOH, depression)?

4. Tell us about your experience in caring for older adults who have fallen.

5. What type of training have you received in responding to falls in older adults?

6. How do you feel about your preparation and training in caring for older adults who have fallen?

7. What challenges do you face when responding to calls related to falls in the elderly?
   Prompts:
   (How do you feel about your interactions with older adults?)
   (What is your relationship like with the staff at the assisted living and skilled nursing facilities that you normally visit?)

8. What do you think would help prevent falls in older adults?
   Prompts:
   (Fall prevention training?)
   (Exercise?)
   (Safety training?)
   (Environmental modifications?)
   (Screening, referral, education?)
   (Communication with primary care physicians (PCP)?)
   (Understand benefits of seeing PCP?)
   (Medication reconciliation?)

9. What do you think would help you to better respond to falls in older adults?
   Prompts:
   (Education on how to care for the elderly?)
   (Training on how to communicate with older adults?)
   (Training on geriatric mental health?)

10. Think back on the last couple of calls for falls in the elderly that you've responded to. Where would you have referred them to if you had a list of resources to choose from?

11. Are there system changes that you think could help prevent falls (e.g., monthly meetings with healthcare professionals)?

12. Are there any further thoughts, comments, or questions you would like to share?

Thank you for taking the time to participate in this focus group! We appreciate all your comments and feedback. We hope this was beneficial for you as it was for us. Thank you again for your time.

Appendix J

Phone Interview Script: Older Adults

Introduction

Hello, my name is _____. I am an occupational therapy student from Dominican University of California in San Rafael. I am part of a team of faculty and students conducting a study with the Novato Fire District on falls in older adults. I am calling you today to talk with you about your experiences with falls because I was given your name by the Novato Fire District as someone who may have fallen recently. I want to let you know that this interview will take about 20-30 minutes and will be audio-recorded. However, everything you say will be kept confidential and will only be used anonymously for research and educational purposes. May I have your consent to participate in this interview?

Continue if consent is given. If not, thank them for their time and terminate the call.

Thank you for agreeing to be a part of this interview. I will now ask you some questions about your experiences with falling.

<u>The following questions will guide the interview with the older adults:</u>

1. Can you tell me about the last couple of times you fell?
2. How did you react to the fall? What was that like for you?
3. How did you feel after you fell? Right away? A while after?
4. What emotions come to mind when you think back on those previous falls?
5. Were you feeling sad or down before or around the time you fell?
6. Were you feeling less motivated to do the things you usually do before or around the time of the fall?
7. What did you do after you fell?
8. What services did you receive after the fall?
   Prompts:
   (Did you see a doctor?)
   (Were any referrals made?)
   (What services do you think would have helped?)
9. In what ways has the fall impacted your daily life at home and out in the community?

10. How did the fall impact your social life?

11. Did you feel down or helpless in your daily life after a fall? Tell us more about that.

12. Did you feel less motivated to do the things you use to enjoy doing after a fall? Tell us more about that.

13. What steps did you take to help keep you from falling again?
    Prompts:
    (Did you talk more with your doctor?)
    (Did you get your vision checked?)

14. Since the time you last fell, have you made any changes in your living arrangements? If so, what?
    Prompts:
    (Living with a relative?)
    (Moved downstairs?)

15. Did you make any changes in your home? If so, what?
    Prompts:
    (Did you arrange anything differently within your home, such as throw rugs or furniture?)
    (Did you start using any new equipment or devices, such as grab bars or nightlights?)

16. What else do you think would help prevent falls in the future?
    Prompt:
    What do you think about having someone from the Novato Fire District or another person visit you in your home to help you assess ways to prevent falls?
        Other Prompts:
        (What if they conducted screenings and referrals?)
        (What do you think about receiving education materials?)
        (What about home evaluations and modifications?)
        (What do you think about working with an occupational therapist?)

Thank you for your participation in this interview! Your thoughts and experiences will be very helpful for our research study. Thank you again for your time.

Appendix K

Dominican University of California: Department of Occupational Therapy
NFD Patient Care Report (PCR) Narrative Coding Sheet

AO #_____ Coded by_____ Date of Incident_____

1a. Stated reason for fall (check all that apply) ☐ Trip ☐ Loss of balance ☐ Reaching ☐ Transfer ☐ Dizziness/Lightheaded ☐ Fainted ☐ Weakness ☐ Other:_____ ☐ Near fall ☐ Not a fall (stop coding here) ☐ Not stated 1b. Primary Cause of Fall (check one) ☐ Mechanical ☐ Medical ☐ Medical → Mechanical ☐ Not sure	2. Medical/Person Factors (check all that apply) ☐ Poor nutrition ☐ Dehydration ☐ Medical Condition Specify: _____ ☐ Recent hospitalizations ☐ Vision impairment ☐ Alcohol or drug use ☐ Mental Condition o Dementia o Depression o Confusion o Other Mental Condition Specify: _____ ☐ Other:_____ ☐ Not stated
3. Others Present when First Responders arrive (check one) ☐ Caregiver ☐ Spouse ☐ Child ☐ None ☐ Other: _____	

Notes: _____

Mechanical/Contextual factors :

4a. Location
- ☐ Indoors – home or residential facility
- ☐ Indoors – other:_____
- ☐ Stairs
- ☐ Outdoors:_____
- ☐ Not stated

4b. Task
- ☐ Standing
- ☐ Reaching
- ☐ Toileting
- ☐ Bathing/Dressing
- ☐ Getting in/out of bed
- ☐ Transfer
  - o Bed
  - o Toileting
  - o Bathing/Dressing
  - o Chair/Couch
  - o Car
  - o Other_____
- ☐ Cooking
- ☐ Walking
- ☐ Gardening
- ☐ Other:_____
- ☐ Not stated

4c. Hazards
- ☐ Rug/Mat
- ☐ Step, curb, or stairs
- ☐ Clutter/Debris
- ☐ Other:_____
- ☐ Not stated

4d. Adaptive Equipment
- ☐ Walker
- ☐ Cane
- ☐ Wheelchair
- ☐ Other:_____
- ☐ Not stated

Incident Outcome

5a. Physical consequences of fall (check all that apply)
- ☐ Pain
- ☐ Loss of consciousness
- ☐ Fracture(s)
- ☐ Dizziness
- ☐ Open wounds
- ☐ Head injury
- ☐ Other:_____
- ☐ Not stated

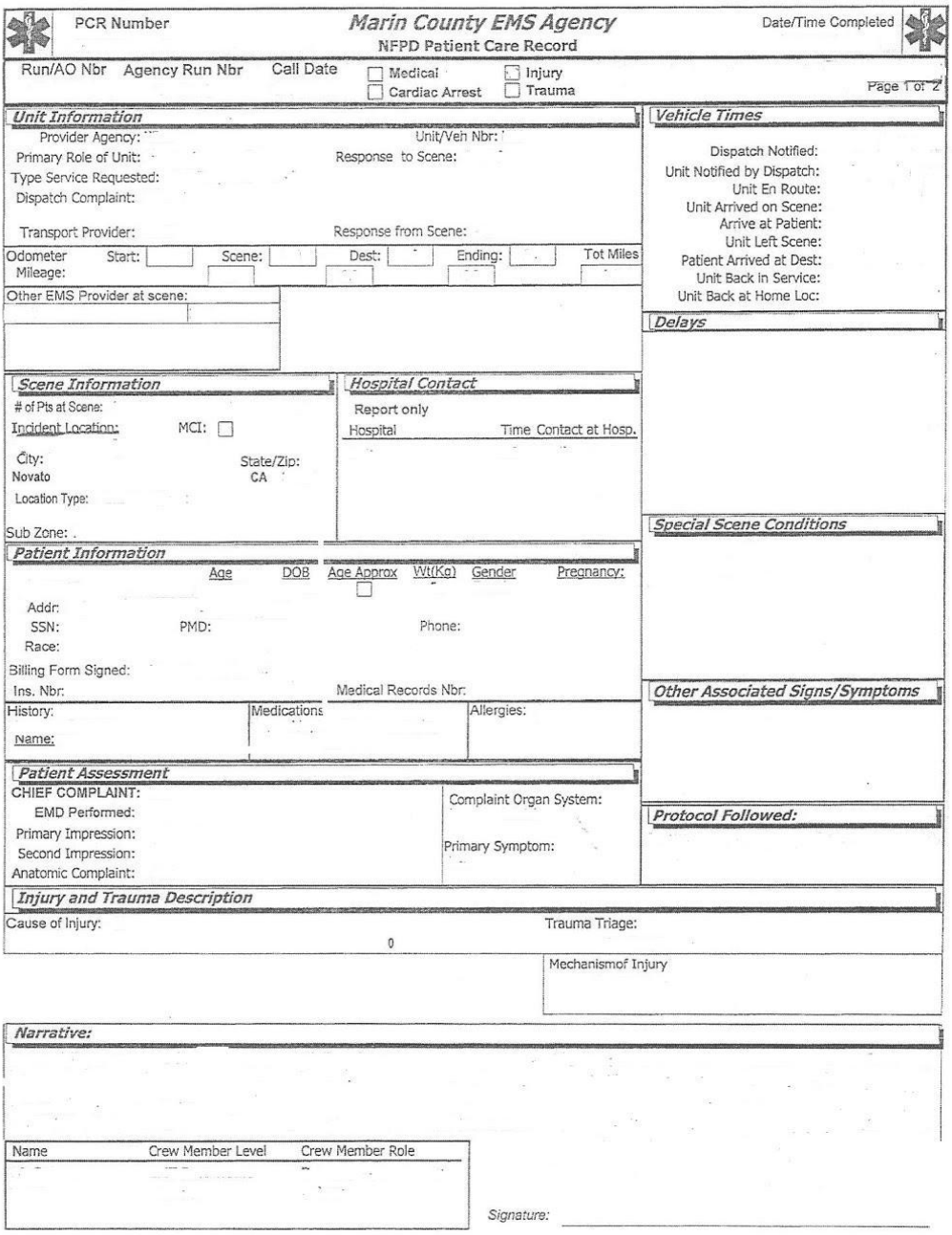
5b. Transport to hospital
- ☐ Yes – NFD
  - ☐ NCH
  - ☐ KTL
  - ☐ MGH
  - ☐ Other:_____
  - ☐ Not stated
- ☐ Yes – self transport
- ☐ No

5c. Referral to resources
- ☐ No
- ☐ Yes
  - ☐ Medical provider

Other:_____

Appendix L

Patient Care Report (PCR)



PCR Number

Marin County EMS Agency
NFPD Patient Care Record

Date/Time Completed

Run/AO Nbr Agency Run Nbr Call Date ☐ Medical ☐ Cardiac Arrest ☐ Injury ☐ Trauma

Page 1 of 2

Unit Information
Provider Agency:
Unit/Veh Nbr:
Primary Role of Unit:
Response to Scene:
Type Service Requested:
Dispatch Complaint:
Transport Provider:
Response from Scene:
Odometer Start: Scene: Dest: Ending: Tot Miles
Mileage:
Other EMS Provider at scene:

Vehicle Times
Dispatch Notified:
Unit Notified by Dispatch:
Unit En Route:
Unit Arrived on Scene:
Arrive at Patient:
Unit Left Scene:
Patient Arrived at Dest:
Unit Back in Service:
Unit Back at Home Loc:

Delays

Scene Information
# of Pts at Scene:
Incident Location: MCI: ☐
City: Novato State/Zip: CA
Location Type:
Sub Zone:

Hospital Contact
Report only
Hospital Time Contact at Hosp.

Special Scene Conditions

Patient Information
Age DOB Age Approx ☐ Wt(Kg) Gender Pregnancy:
Addr:
SSN: PMD: Phone:
Race:
Billing Form Signed:
Ins. Nbr: Medical Records Nbr:
History: Medications Allergies:
Name:

Other Associated Signs/Symptoms

Patient Assessment
CHIEF COMPLAINT:
EMD Performed:
Primary Impression:
Second Impression:
Anatomic Complaint:
Complaint Organ System:
Primary Symptom:

Protocol Followed:

Injury and Trauma Description
Cause of Injury:
Trauma Triage:
0
Mechanismof Injury

Narrative:

Name Crew Member Level Crew Member Role

Signature: _____

Run/AO Nbr Agency Run Nbr Call Date

Patient Care Report

Physical Exam:

Neuro: Spine:

Head: Abdomen:

Pupils: Pelvis:

Face: Upper Ext:

Neck: Lower Ext:

Thorax: Skin:

Lungs:

Time PTA	
☐	Procedure: Size of Procedure Equipment: Successful IV Site: Number of Attempts: Procedure Successful: Response: Complication: Remarks:
☐	Procedure: BG Level: Response: Complication:
☐	BP: Pulse: Resp: Resp Effort: GCS: Eye: Verbal: Motor: Total: Qualifier: RTS: BP Method: Skin Color: Skin Temp Skin Moisture Oher Assessments Temperature: Pulse Ox: Pain Scale Position: Cardiac Rhythm: Ectopy:
☐	BP: Pulse: Resp: Resp Effort: GCS: Eye: Verbal: Motor: Total: Qualifier: RTS: BP Method: Skin Color: Skin Temp Skin Moisture Oher Assessments Temperature: Pulse Ox: Pain Scale Position: Cardiac Rhythm: Ectopy:
☐	BP: Pulse: Resp: Resp Effort: GCS: Eye: Verbal: Motor: Total: Qualifier: RTS: BP Method: Manual Cuff Skin Color: Normal Skin Temp Skin Moisture Oher Assessments Temperature: Pulse Ox: Pain Scale Position: Cardiac Rhythm: Ectopy:

Disposition / Destination

Incident/Patient Disposition: Destination Type:

Destination Reason: Hospital Del. to:

Dest. if Other than Hospital: Intended destination for patient prior to diverison:

Primary Payment Method:

CMS Service Level:

Name	Crew Member Level	Crew Member Role

Signature: _____