FALLS: THE COMMUNITY-DWELLING ELDER

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Abstract

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The rapid growth of the elder population and overall chronic disability among older age groups provides a challenge for the health care system in assessing and providing health care that will balance the increasing need of medical intervention and the struggle of the elderly population to remain independent. Successful fall prevention entails identifying at-risk elders and implementing measures that impede or minimize patient injury. This article examines the risk factors and clinical indications for screening community-dwelling elders who are at risk for falls. It focuses on three areas that can directly impact balance and performance of the elder: polypharmacy, frailty and compliance with safety recommendations. While most falls do not result in death or severe injury, the physical and emotional impact can result in decreased performance of activities of daily living and greatly reduce an individual’s quality of life. Effective fall prevention not only entails an understanding of the intervention needs during acute and chronic phases post fall, but requires proactive strategies to decrease the risk factors that impact the elder’s life leading to polypharmacy, frailty and the struggle for continued independence.
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Dedication

This project is dedicated to my wonderful husband Bryan for all his support and encouragement in reaching my dream.
Falls: The Community-Dwelling Elder

The significance of the growth in the aging of the U. S. population has been stated repeatedly. It is estimated that by the year 2030, the number of older Americans will nearly double, and older adults will make up about 20 percent of the entire U. S. population (Mathieson, Kronenfeld, & Keith, 2002). Such a demographic trend brings with it many issues and challenges for health care and health care providers. Although people are living longer, they are also living with more chronic health conditions and disabilities which can be complicated by falls (Mathieson et al.).

Falls are the most common cause of hospitalization and are the leading cause of death due to injury in people aged 65 years and over (Draganich, Zacny, Klafta, & Karrison, 2001). In any one-year, between one-third and two-thirds of those over 65 years of age are likely to fall. This figure rises to about half of those over 80 years of age. Falls have a significant impact upon the health of elderly people: however, many falls go unreported especially if not associated with serious injury. Elderly often blame themselves for their own carelessness and do not regard a fall with any great importance or they may feel it is a natural part of the aging process. Limitations in performance of activities of daily living (ADL) and a loss of general independence as a result of a fall may contribute to further risk of falling (Kinn & Clawson, 2002).

Walking, changing position, and tripping over an obstacle are among the most reported causes of falls by elderly persons (Draganich et al., 2001). In hospitalized patients, 4 to 12 falls occur per 1,000 bed days, ranking injury due to a fall the 10th most common claims presented to insurance agencies (Kimbell, 2002). The health care cost and emotional repercussions of falls among older adults is immense due to disabling conditions, recovery in hospitals and rehabilitation institutions, and high death rate. The U. S. spends an estimated $20.2 billion
annually for the treatment of fall injuries in older adults, with the majority spent on hip fracture care (Roman, 2004). Hip fractures are the most feared complication of falls. Up to 20 percent of people sustaining a hip fracture become non-ambulatory, and only 14 percent to 21 percent recover their ability to carry out instrumental ADL’s making it possible to return home and independent living. More than 250,000 older adults are hospitalized each year for fractured hips at a cost in excess of $10 billion. More than 90 percent of hip fractures occur in persons over the age of 70. Projections for incidence of hip fractures in the future show that they will double by the middle of the 21st century (Roman, 2004).

Physical, emotional and psychological traumas are serious consequences from falls among older adults. These traumas can include serious injury, prolonged hospital stays, more difficult recovery, permanent disability, a heightened fear of falling, and the loss of confidence, mobility and capacity for independent living. Twenty-five percent of the elderly who sustain hip fractures die within six months of the injury, and more than 50 percent of community-dwelling older adults who survive hip fractures are discharged to nursing homes and require rehabilitation for more than a year (Casteel et al.). Although most falls do not result in death or severe physical injury, the psychological trauma often results in a fear of falling, which in itself is a risk factor for more falls and can greatly impact an individual’s quality of life (Casteel, Peek-Asa, Lacsamana, Vazquez, & Kraus, 2004). The fear of falling can result in self-induced restrictions in activity that could lead to muscle and lower extremity strength depletion, thus restricting mobility and consequently reducing physical functioning (Li, Fisher, Harmer, McAuley, & Wilson, 2003). Decline in ADL performance and reduced participation in social activities can be affected for up to three years after a fall. Those with multiple falls or who sustained serious injury experience greater decline in ADL function (Burstein & Miller, 2003).
It is the purpose of this paper to explore the risk factors that can influence functional stability of community-dwelling elders. Health status is not the only risk factor to consider during an evaluation of an at-risk elder. Components such as situational and environmental elements play a considerable part and should be evaluated and factored into the intervention. It is generally accepted that most falls have a multifactorial etiology, with both intrinsic and extrinsic factors involved. Intrinsic factors are those related to the elder’s physical and cognitive function. Extrinsic factors are those which are included in the environmental hazards of everyday life. The likelihood of a fall increases with the number of risk factors, supporting the need for multifactorial approaches to the problem (Kinn & Clawson, 2002). Screening and intervention components used to prevent falls should encompass assessment, appropriate referral to community resources, and evaluation of the outcomes. (Speechley & Tinetti, 1991).

Although overall chronic disability among older age groups has decreased in the last few decades, management of disability and maintenance of functional independence among elderly adults remain salient issues. Increasingly, research has emphasized the importance of health promotion and the maintenance of functional independence in older adults. Informal health care practices such as caregiving by a spouse or adult child have been cited as a way of maintaining health and functioning among elders while simultaneously reducing medical expenditures (Mathieson et al., 2002). If the focus of care is to be on delivery of care that values prevention and reduced cost who better than the nurse practitioner who has been prepared in health promotion and prevention in the primary care setting?

Theoretical Framework

The theoretical framework for this paper is the Nursing Model for Chronic Illness Management developed by Corbin and Strauss (1991). This model is an extension of the illness
trajectory framework that describes chronic illness as having nine possible phases. The first two phases are (a) Pretrajectory, in which preventing chronic illness is the goal, and (b) trajectory, which begins with diagnosis of a chronic illness. The remaining phases are crisis, acute, stable, unstable, comeback, downward and dying. These phases represent the ways that a chronic illness can be manifested.

A major premise of the illness trajectory framework is that changes can be made in the way an illness is experienced even when progression of the disease cannot be altered. Five guidelines for nursing management of a chronic illness are described in the Corbin and Strauss model. Among them, intervening through patient teaching is identified. To develop an effective plan of care, different interventions may be needed during different phases of illness. Although phases of the illness are not necessarily linked to specific events, falls and injury represents a transition that imposes numerous demands on patients, family and healthcare providers (Hughes, Hodgson, Muller, Robinson, & McCorkle, 2000). Nurse practitioners can direct health care efforts from the more expensive illness-focused approach to a more cost-effective wellness-focused approach (Davidson, 1999).

**Review of Current Literature**

There is extensive literature in the prevalence of falls in the community-dwelling elder over 65 years of age. Relevant studies examine the relationship of chronic illness impacting the intrinsic factors that are associated with a patient’s physiologic deficiency related to health. These include reduced vision or hearing, vestibular or proprioceptive dysfunction, dementia, cardiac arrhythmia, transient ischemic attacks, dehydration, postural hypotension and medication use (Smith, 2003). In specific, this paper focuses on specific areas (polypharmacy, frailty and compliance with safety instruction and intervention) influencing gait stability.
Polypharmacy

Literature reports have presented associations between falls and functional impairments in body systems that play a role in maintaining stability, such as proprioception, muscle strength, and reaction time. Specific classes of medications have been assessed as to their role as potential contributors to falls. Often medications such as psychotropic agents, antihypertensive agents, and diuretics are considered the principle classes of drugs responsible for causing falls. Elderly patients often experience multiple diseases necessitating multiple prescriptions. Many of these drugs can increase instability, interfere with coordination and can cause postural hypotension, all of which lead to a general interference with a patient’s ability to sense reality and to be oriented to the environment (Smith, 2003).

High numbers of multiple prescriptions give rise to concern about potential drug interactions and adverse effects on a patient’s intrinsic ability to judge the environment. According to a recent survey on prescription drugs, 55 percent of Americans older than 65 years take three or more prescription drugs on a regular basis, and 40 percent stated that they have more than five drugs in their medicine cabinets, prescribed by their primary care provider (Smith, 2003).

Frailty

The geriatric syndrome of frailty has been the subject of intensive research efforts in the last 10 years, concurrent with the growth of the relatively new field of geriatric medicine and the exponential increase in the numbers of elderly people living in developed nations. Frailty and disability often overlap but are not the same. Disability indicates loss of function, whereas frailty indicates instability and the risk of loss, or further loss, of function. Frail elders are in a state of
unstable disability. Small stressors such as cold weather, an attack of bronchitis or a fall can produce deterioration in function, threatening independence (Storey & Thomas, 2004).

An important dimension of frailty is the loss of reserve capacity where a number of physiological systems are easily tipped over the threshold of clinical failure. Then, when an acute problem occurs, it may place the elder at a much higher risk for falls leading to fractures, infections, disabilities, hospitalization, institutionalization and death. Decreases in functional ability and greater difficulty in performing everyday tasks leads to dependence. Frail elders tend to have coexisting illnesses that occur late in life and are long-standing, but some frail people have not been diagnosed with any particular disease, but become weak, thin and dependent (Storey & Thomas, 2004).

Perception of Safety/Compliance

Existing literature shows us that falls are the most common cause of hospitalization in people 65 years and over (Kinos & Clawson, 2002). Home exercise programs, home modification and gait training all improve safety, but noncompliance occurs from 5 percent to 91 percent of the time, resulting in wasted health resources (Vivian & Wilcox, 2000). Using education as the primary strategy for promoting patient compliance and lifestyle changes could improve safety. It is the “why” falls continue to be the leading cause of injury and death for the community-dwelling elder that is the largest gap in our current knowledge base. In performing a literature search this author found extensive information on the subject of falls and intervention, but limited information that focuses on safety as perceived by the elder. Therefore further research that asks the elder about their perceived meaning of safety needs to occur. In addition the compliance or lack of compliance is subjective and needs to be defined by the elder themselves in order to find a plan of care they perceive as functional, yet will meet their safety needs.
Clinical Indications

Falls may occur when a health care professional has failed to assess for underlying risk factors that may contribute to this event. A single fall is not always a sign of a major medical problem or an increased risk of subsequent falls. It may simply be an isolated event, however, recurrent falls, defined as more than two falls in a six month period, should be evaluated for treatable causes (Kimbell, 2002). The elderly population experiences a high prevalence of chronic illness and functional disabilities that complicate medical intervention and recovery from injury. Effective management of fall prevention depends on adequate understanding of the information and intervention needs during acute and chronic phases of post fall care, and the long lasting health issues compounded by the fall.

Assessment is an integral part of preventing falls. An accepted definition of a fall is “unintentionally coming to rest on the ground, floor or other lower level” (Roman, 2004). The risk factors responsible for a fall can be intrinsic or extrinsic. Some intrinsic changes occur naturally with aging, others are the result of a disease process. Body systems can be affected by these changes, leading to falls. Extrinsic causes of falls in the elderly are the easiest to prevent. A variety of extrinsic factors, such as poor lighting, unsafe stairways and irregular floors surfaces, increases the frail elder’s tendency to fall and injure themselves in the home during the course of routine activities (Roman, 2004).

For the frail elderly person who falls during routine activities, the focus should be on both extrinsic and intrinsic factors. These individuals have begun to decline and are at high risk for continued losses of function. Further, events such as falls and injury may not only result from the initial decline, they may accelerate it. These elderly may benefit from physical therapy targeting upper and lower body extremity weakness, balance, and gait abnormalities. Conversely,
preventive efforts for more vigorous elderly persons should target activity physical activities such as using stairs or climbing stairs. The emphasis on the safe performance, rather than the avoidance, of activities is consistent with the overall goal of elderly persons remaining as active and independent as possible. (Speechley & Tinetti, 1991).

An additional challenge occurs when the health problem or event of interest has a multifactorial etiology. A fall is an example of a multifactorial event that results from interplay among intrinsic, situational, and environmental factors. Investigators have identified multiple chronic diseases and disabilities, such as cognitive impairment, upper and lower extremity disability, arthritis, visual impairment, and gait disorders, as predispositions to falling. The strong association between chronic disabilities and falling may lead to the conclusion that intrinsic factors predominate in fall etiology and that falling is a health problem only for frail elderly persons. It is important to identify the prevalence, circumstances, and sequelae of falls across the spectrum of elderly persons so that clinical assessment and preventive efforts can be targeted appropriately (Speechley & Tinetti, 1991)

Medication Management

A critical element of the targeted history is a review of medications and supplements, including prescription, over-the-counter, herbal and illicit drugs. The health care provider must become knowledgeable about the potential for all medications, especially the most frequently prescribed ones, to contribute to falls. The initiation of a new drug therapy in the previous two weeks, and a variety of medications (such as diuretics, major tranquilizers, anti-hypertensive, anti-arrhythmias, hypoglycemic agents and any medication that is likely to affect balance) have been associated with increased risk of falling in elderly patients (Roman, 2004).
As the baby boomer generation enters the new millennium facing chronic conditions that come with age, such as, diabetes mellitus, high cholesterol, arthritis and hypertension, multiple-drug regimens will be more common. Medication management components include counseling by health care providers on medication side effects weighting the risk benefit in illness management, drug interactions and self-monitoring for negative medication reactions, as well as the effectiveness of all medications.

The scope of alcoholism among the elderly is substantial and approximately 62 percent of people 60-94 drink alcohol; 13 percent of men and 2 percent of women report heavy use (Ellison, 2004). The elderly who self medicate with alcohol and who is already in ill health are at greater risk for fall. Reasons that may contribute to increased use are usually stress related to life changes such a death of a spouse, retirement, depression or social isolation. It is important for the nurse practitioner to screen elders that may be at high risk asking pertinent questions that deal with everyday stressors and events causing emotional turmoil. Alcoholism is a hidden epidemic among the elderly and if left untreated this condition can cause a negative impact on the optimal health of the elderly (Ellison, 2004).

**Conditions Associated With Frailty**

Frailty may not be a disease, but there is no question that certain diseases and medical problems play a large role in it. Frailty can happen precipitously in unfortunate cases where a person is healthy and active one day and frail and dependent the next, but most often the path to frailty is gradual, as impairments accumulate, illnesses take their toll, and strength fails. There is a continuum of frailty, from the relatively healthy but slower frail elders, to the cachectic person who has only weeks to live. These phases of chronic illnesses can impact health status and transition may not be easily identified, and often go untreated.
Chronic under-nutrition leads to fatigue, weakness, cachexia and micronutrient deficiencies. Anorexia is a natural part of the aging process, but can be worse in the frail elderly as a result of eating problems caused by certain chronic illness. For example, degenerative joint disease, chronic pain and chronic use of pain medication can cause changes in appetite and gastrointestinal function often exacting a high toll on the quality of life. Unintentional weight loss (loss of body mass) is a major symptom of frailty and is also associated with aging, but can accelerate as the result of a wide range of variables including reduced physical activity, loss of central nervous system function resulting in loss of motor units, inadequate intake of protein, and changing endocrine function.

Osteoporosis which literally means “porous bones,” is the underlying cause of virtually all broken bones in people older than 65 years. The vertebrae, hips and wrists are particularly susceptible to osteoporotic fractures. Arthritis, especially osteoarthritis, or degenerative joint disease, is very common in the elderly. The hips and knees are affected more often than other joints. This kind of health issue creates problems with pain, stiffness and limitation of function and leads to an abnormal gait predisposing to falls (Storey & Thomas, 2004).

Atherosclerosis produces frailty as less oxygen reaches the tissues and organs as well as causing small imperceptible strokes, which in turn, lead to vascular dementia resulting in nutrient deprivation of muscles, slowed walking speed and ultimately, sarcopenia.

Depression is the most common psychiatric problem affecting the elderly, and can result in a reduction in mobility and a pervasive feeling of fatigue. Depression also produces a slowing of thought processes and can mimic dementia. Depressed elderly are more likely to develop major illnesses, such as myocardial infarction and have more difficulty recovering. Depression is also a major cause of anorexia and weight loss in the elderly.
Cognitive impairment can lead to a decline in mental processing time and reaction speed, resulting in more frequent falls. Safety is often compromised when the older person cannot problem-solve and attention is impaired. Acute confusion, or delirium, can be triggered by an illness or in some cases, a medication reaction. Dementia is a progressive loss of cognitive function, with Alzheimer’s being the most common type, and vascular dementia the second most common type (Storey & Thomas, 2004).

Compliance

The ultimate goal in caring for elders is continued independence, so it is not surprising that educating patients and family members continues to be the strongest theme for continued adherence to the plan of care. Making effort to get to know a patient by asking about members of their family, likes and dislikes, usual routine, and hobbies and interest can be time well spent and can help in establishing a pleasant rapport and later in developing a realistic plan of care. Keeping open lines of communication, being available for questions and discussions on health care issues that impact everyday life situations will keep the care focused and individualized, promoting positive outcomes (Vivian & Wilcox, 2000). Patients are more likely to adhere to treatment plans if they are involved in setting goals and in determining the process for meeting these goals.

Intervention

Age, daily medication use, lack of exercise, history of falls and chronic illness are identified as increasing the odds of falls in the elderly. Intervention components used for abating falls include a multifaceted intervention including elimination of domestic environmental hazards, management of medications, identification of patient’s level of risk, reassessments of
the intervention plan, reinforced maintenance and positive risk-reduction strategies (Stel, Smit, Pluijm, & Lips, 2004).

Falls and their sequelae are suffered by the entire spectrum of elderly persons. However, the relative contribution of intrinsic characteristics, activity and the environment may differ depending upon the person's functional level. Preventive strategies need to be tailored to the likely predisposing and precipitation factors of individual elderly person and subjected to regular review as the mix of factors changes with time (Speechley & Tinetti, 1991).

Pretrajectory is the health screening the elder receives annually. Interventions can start with counseling of healthy life style management and maintenance while trajectory is the result of natural aging process or a health crisis. The elder can move in and out of the other nine stages any number of times requiring adjustment and evaluation to meet the needs of the elderly. Effective provider management depends on adequate understanding of the transition or phase the elder may be experiencing and what intervention may be required to meet their needs.

Further Research

Most falls have a multifactorial etiology, with both intrinsic and extrinsic factors involved (Kinn & Clawson, 2002). Relevant studies examine the relationship of functional adaptations and chronic illness and while intervention such as exercise programs, home modifications, gait training and medical management prove helpful and improve safety, they do not address the compliance issue of long-term follow through of the elder. Further study into this phenomenon would provide insight to the understanding of the elder’s perceived meaning of fall prevention, allow for a better line of communication between the elder and health care providers when planning fall intervention promoting better long term follow through.
Conclusion

Intervention efforts provided to the independent elderly can help maintain that independence, and can have the greatest impact on both the individual and the health care system. Prevention is primary. Because falls represent such a large contribution to the loss of independence, assessment addressing risk factors and fall prevention has a very strong potential impact. Assessment and evaluation of medication management, functional status and involvement of the patient in health maintenance is paramount in the prevention of falls for the community-dwelling elder. It is the nurse practitioner who is in the perfect position to evaluate elders at risk for falls, and can continue to instruct, refer and support independent living for the community dwelling elder.
References


